SECTION 3
PUBLIC COMMENTS AND DOE RESPONSES

3.0 PUBLIC COMMENTS AND DOE RESPONSES

This section presents a side-by-side display of the comments received by the U.S. Department of Energy (DOE) during the public comment period on the *Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SPD Supplemental EIS)* and DOE's response to each comment. To find a specific commentor or comment in the following pages, refer to the "List of Commentors" immediately following the Table of Contents. This list is organized alphabetically by commentor name and shows the corresponding page number(s) where commentors can find their comment(s).

If a commentor provided comments through a postcard, form letter campaign, or petition, that commentor is referred to a copy of that postcard or form letter. This section only contains one representative copy of each postcard, form letter, or petition.

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Commentor No. 1: Tom Ferguson

From: Tom Ferguson
Sent: Tuesday, July 24, 2012 11:53 AM
To: spdsupplementaleis@saic.com
Subject: public comment on Draft Pu SEI

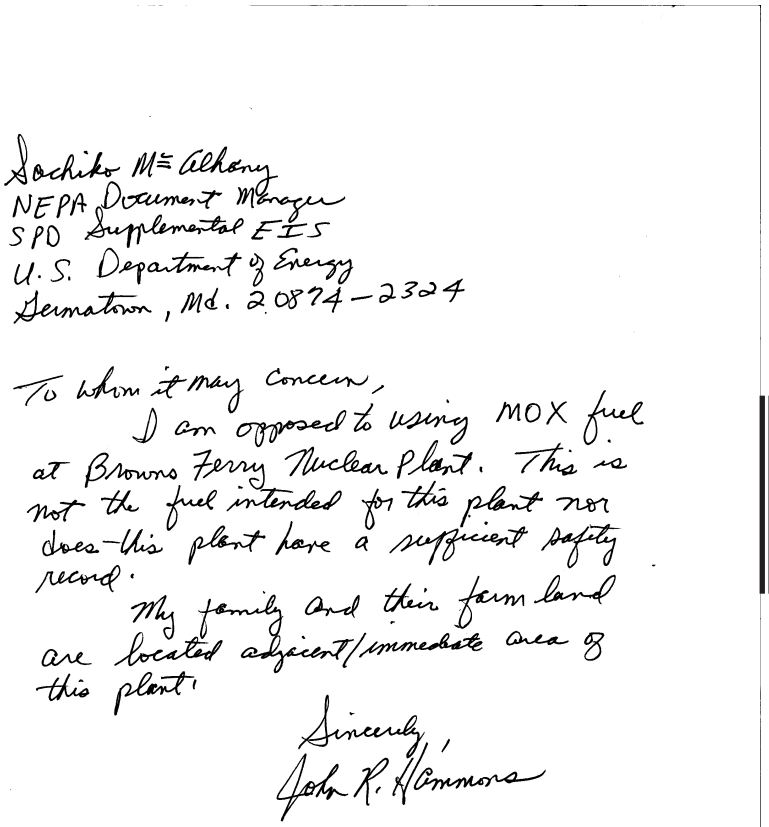
I would support option 1. immobilization and oppose the so-called MOS fuel option as expensive, unnecessary, expensive and a proliferation risk *1-1*

tom ferguson

1-1 DOE is considering four options for the disposition of 13.1 metric tons (14.4 tons) of surplus plutonium: (1) immobilization and vitrification at the Defense Waste Processing Facility (DWPF) at SRS; (2) MOX fuel fabrication and use in domestic commercial nuclear power reactors; (3) processing at H-Canyon/HB-Line and vitrification at DWPF; and (4) preparation for potential disposal as contact-handled transuranic (CH-TRU) waste at the existing Waste Isolation Pilot Plant (WIPP), a deep geologic repository in southeastern New Mexico. All of the action alternatives evaluated in this *SPD Supplemental EIS* are considered to render surplus plutonium into a proliferation-resistant form or result in proliferation-resistant disposal.

Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

Commentor No. 2: John R. Hammons



Sochiko McAlhany
NEPA Document Manager
SPD Supplemental EIS
U.S. Department of Energy
Germantown, Md. 20874-2324

To whom it may concern,

I am opposed to using MOX fuel at Browns Ferry Nuclear Plant. This is not the fuel intended for this plant nor does this plant have a sufficient safety record.

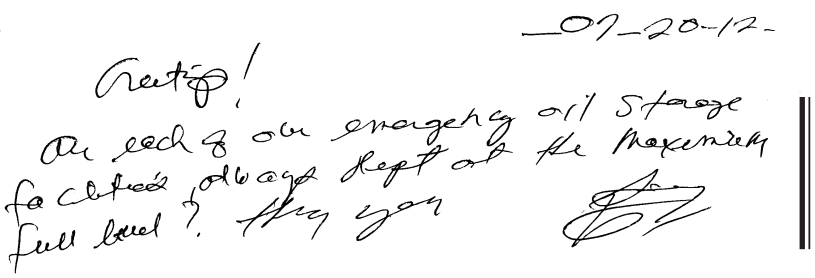
My family and their farm land are located adjacent/immediate area of this plant.

Sincerely,
John R. Hammons

2-1

2-1 Presently available information and analysis leads TVA to believe that the Browns Ferry Nuclear Plant has the capability to safely utilize MOX fuel with minor modifications. The potential impacts of accidents involving the use of MOX fuel in TVA's reactors are not expected to be meaningfully different from the impacts associated with the use of LEU fuel, as described in Appendix I, Section I.1, and summarized in Chapter 2, Section 2.6. Before MOX fuel could be used at Browns Ferry, NRC would perform a comprehensive safety review, which would include information prepared by TVA, as part of the 10 CFR Part 50 license amendment process. For further discussion, refer to Section 2.4, Topic A, and Section 2.5, Topic A, of this CRD.

Commentor No. 3: Hans J. Kaufmann, Jr.



3-1

3-1 An adequate supply of diesel fuel is maintained to ensure the operability and safety requirements for the time period assumed in the facility safety design-basis.

Commentor No. 4: Robert L. Anderson

From: Robert Anderson
Sent: Sunday, August 05, 2012 9:39:39 PM
To: spdsupplementaleis@saic.com
Subject: Invitation to attend hearing on draft surplus pu disposition

Hi, I received your card inviting me to participate in one of the New Mexico hearings. I would urge you to put on a hearing for the people in the central, large city of the state Albuquerque also. This city is directly effected by anything that happens upstream at Los Alamos and effected are not just Los Alamos, Santa Fe and Carlsbad. Espanola is also effected. I don't expect you will get a full range of responses if you leave out Albuquerque and Espanola. *4-1*

Let me know if you plan a meeting here as I will surely attend. As a short comment on anything that happens at Los Alamos regarding nuclear materials I think there is a total disregard to the fact that our water supply here comes from the river that flows past Los Alamos and any major earthquake, or man-made disaster at Los Alamos NL effects not just the Los Alamos but all the cities in central New Mexico along the river. Problems there are our problems. Think of it this way. Any disaster at LANL of major proportions means most of central New Mexico, including our capital city of Santa Fe are likely to be uninhabitable also. *4-2*

The simple fact is that this lab is in the most wrong of places, at the headwaters of most of the cities of our state. There should be no nuclear materials related work of any kind done upstream from here.

I ask you all at DOE to show some common sense before this stuff comes south on us.

Sincerely,
Robert L. Anderson

4-1 In response to requests for additional public hearings and an extension of the comment period, DOE added a public hearing in Española, New Mexico, held on September 18, 2012, to the six meetings that DOE had initially scheduled and extended the comment period through October 10, 2012. Ultimately, New Mexico-based hearings were held in Carlsbad, Española, Los Alamos, and Santa Fe. As a convenience to the public, DOE also made the public hearing available for viewing on the *SPD Supplemental EIS* website.

4-2 This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9). The chances of a severe earthquake accident sufficient to result in a significant release of radioactive material from LANL are extremely unlikely to beyond extremely unlikely. If a severe earthquake were to cause a building collapse (a beyond-design-basis earthquake) as discussed in Appendix D, radioactive materials could be released as a result of impacts, spills within the building, and possibly fires. These mechanisms could result in airborne releases and the principal means of public exposure would be via inhalation. As noted in Appendix D, Section D.1.5.2.11, activities are underway to improve the performance of PF-4 in the event of a large earthquake and to mitigate potential impacts if such an earthquake were to occur. A severe earthquake is not projected to release any liquids to the Rio Grande or to the canyons on LANL that intermittently flow into the Rio Grande. A small amount of radioactive material emitted into the air could be deposited directly on the surface of the river if the wind was blowing in that direction at the time of the accident. Most materials would be deposited on land and because most of that material would bind to the soils, very small amounts of additional material would be expected to reach the Rio Grande. Because of these considerations, DOE does not expect that the Rio Grande would be an exposure pathway of concern in the event of a severe earthquake affecting PF-4. The potential effects of land contamination following a severe accident are described in Appendix D, Section D.2.9.1, of this *SPD Supplemental EIS*.

If such an event were to occur, DOE would implement a recovery plan that would include assessing the potential for further public exposure and conducting cleanup to mitigate adverse effects on the public. The LANL Emergency Preparedness program, which combines Federal and local emergency response capabilities, is discussed in Chapter 3, Section 3.2.6.5.

Commentor No. 5: Congressman Ben Ray Luján, Member of Congress, House of Representatives

BEN RAY LUJAN
3RD DISTRICT, NEW MEXICO

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330 CANNON HOUSE OFFICE BUILDING
WASHINGTON, D.C. 20515
PHONE: 202-225-6190
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811 SAINT MICHAEL'S DRIVE SUITE 104
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COMMITTEE ON NATURAL RESOURCES

SUBCOMMITTEES ON
INDIAN AND ALASKA NATIVE AFFAIRS
WATER AND POWER

COMMITTEE ON SCIENCE AND TECHNOLOGY

SUBCOMMITTEES ON
ENERGY AND ENVIRONMENT
TECHNOLOGY AND INNOVATION

Congress of the United States
House of Representatives
Washington, DC 20515

August 7, 2012

Thomas P. D'Agostino
Under Secretary for Nuclear Security
Administrator, National Nuclear Administration
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585

Dear Administrator D'Agostino,

Over the past few days, some of my constituents have approached me and my office with concerns and inquiries regarding the Department of Energy's proposed Surplus Plutonium Disposition plan. I appreciate the process established by the DOE and the National Nuclear Security Administration to provide public comment prior to the drafting of the Environmental Impact Statement and upon its completion, however, due to the widespread interest among my constituents, I urge you to expand upon your outreach efforts in my Congressional District. *5-1*

As you know, New Mexico has a long tradition of proudly supporting nonproliferation efforts while ensuring that the natural resources and way of life in New Mexico are protected. Due to the great interest in this proposal, I strongly recommend that the Department extend the comment period and conduct additional public meetings to both inform local officials and the general public of the Department's proposed plans as well as to listen to the perspectives of the community. As the Surplus Plutonium Disposition proposal could broadly affect the residents of my District, it is important that New Mexicans are well-informed of the plan and are provided an opportunity to discuss their concerns directly with Department officials.

I look forward to your response.

Sincerely,

Ben Ray Luján
Member of Congress

TUCUMCARI OFFICE
404 W. PT. 66 BLVD.
TUCUMCARI, NM 88401
PHONE: 575-461-3029
FAX: 575-461-3192

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RIO RANCHO OFFICE
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RIO RANCHO, NM 87144
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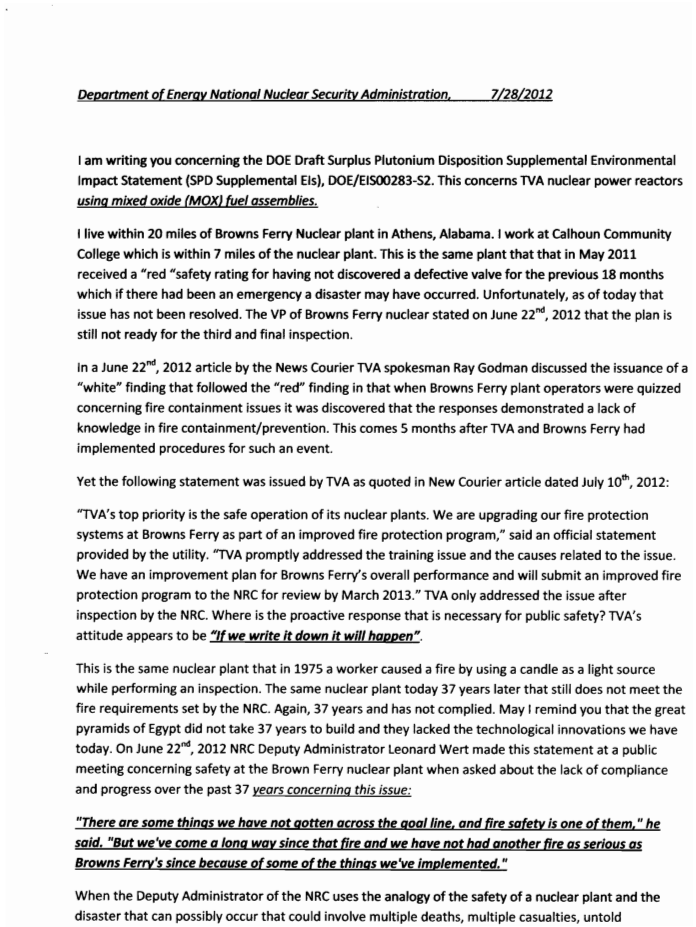
FARMINGTON OFFICE
800 MUNICIPAL DRIVE
FARMINGTON, NM 87401
PHONE: 505-324-1005
FAX: 505-324-1026

LAS VEGAS OFFICE
P.O. BOX 1368
LAS VEGAS, NM 87701
PHONE: 505-454-3035
FAX: 505-454-3265

PRINTED ON RECYCLED PAPER

5-1 In response to the request to expand outreach efforts, DOE added a public hearing in Española, New Mexico, held on September 18, 2012, to the six meetings that DOE had initially scheduled and extended the comment period through October 10, 2012. In total, DOE held four public hearings on the *Draft SPD Supplemental EIS* in New Mexico.

Commentor No. 6: Larry S. Pollock



Department of Energy National Nuclear Security Administration, 7/28/2012

I am writing you concerning the DOE Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SPD Supplemental EIs), DOE/EIS00283-S2. This concerns TVA nuclear power reactors ***using mixed oxide (MOX) fuel assemblies.***

I live within 20 miles of Browns Ferry Nuclear plant in Athens, Alabama. I work at Calhoun Community College which is within 7 miles of the nuclear plant. This is the same plant that that in May 2011 received a "red "safety rating for having not discovered a defective valve for the previous 18 months which if there had been an emergency a disaster may have occurred. Unfortunately, as of today that issue has not been resolved. The VP of Browns Ferry nuclear stated on June 22nd, 2012 that the plan is still not ready for the third and final inspection.

In a June 22nd, 2012 article by the News Courier TVA spokesman Ray Godman discussed the issuance of a "white" finding that followed the "red" finding in that when Browns Ferry plant operators were quizzed concerning fire containment issues it was discovered that the responses demonstrated a lack of knowledge in fire containment/prevention. This comes 5 months after TVA and Browns Ferry had implemented procedures for such an event.

Yet the following statement was issued by TVA as quoted in New Courier article dated July 10th, 2012:

"TVA's top priority is the safe operation of its nuclear plants. We are upgrading our fire protection systems at Browns Ferry as part of an improved fire protection program," said an official statement provided by the utility. "TVA promptly addressed the training issue and the causes related to the issue. We have an improvement plan for Browns Ferry's overall performance and will submit an improved fire protection program to the NRC for review by March 2013." TVA only addressed the issue after inspection by the NRC. Where is the proactive response that is necessary for public safety? TVA's attitude appears to be ***"If we write it down it will happen"***.

This is the same nuclear plant that in 1975 a worker caused a fire by using a candle as a light source while performing an inspection. The same nuclear plant today 37 years later that still does not meet the fire requirements set by the NRC. Again, 37 years and has not complied. May I remind you that the great pyramids of Egypt did not take 37 years to build and they lacked the technological innovations we have today. On June 22nd, 2012 NRC Deputy Administrator Leonard Wert made this statement at a public meeting concerning safety at the Brown Ferry nuclear plant when asked about the lack of compliance and progress over the past 37 *years concerning this issue:*

"There are some things we have not gotten across the goal line, and fire safety is one of them," he said. "But we've come a long way since that fire and we have not had another fire as serious as Browns Ferry's since because of some of the things we've implemented."

When the Deputy Administrator of the NRC uses the analogy of the safety of a nuclear plant and the disaster that can possibly occur that could involve multiple deaths, multiple casualties, untold

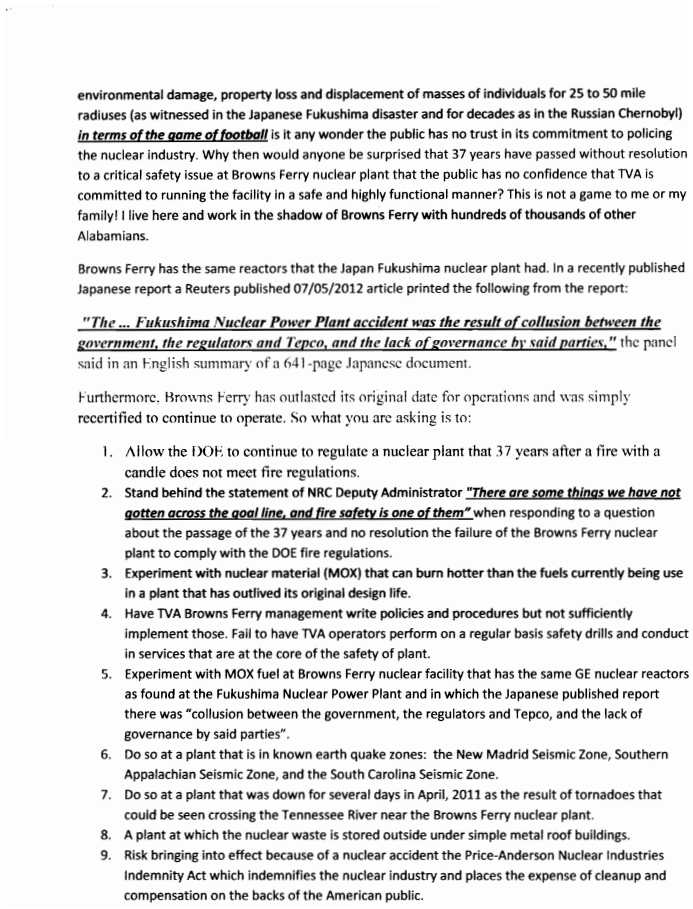
6-1

6-1 NRC has an established safety and licensing process for all domestic commercial nuclear facilities, which necessarily would include any domestic reactors that choose to use MOX fuel. Operation of any domestic commercial reactor which uses MOX fuel would be subject to NRC regulations, license conditions, and requirements. As described in Appendix J, Section J.3, of this *SPD Supplemental EIS*, reactor accident analyses consider natural phenomena hazards such as floods, tornados, earthquakes, and unstable foundation conditions. For more information, see the *Browns Ferry Nuclear Plant Updated Final Safety Analysis Report* (TVA 2009). Presently available information and analysis leads TVA to believe that the Browns Ferry Nuclear Plant has the capability to safely utilize MOX fuel with minor modifications. The potential impacts of accidents involving the use of MOX fuel in TVA's reactors are not expected to be meaningfully different from the impacts associated with the use of LEU fuel, as described in Appendix I, Section I.1, and summarized in Chapter 2, Section 2.6.

Accident analyses for U.S. nuclear power reactors already consider the radiological impacts of accidents like the Fukushima accident in that the safety evaluations include evaluation of beyond-design-basis accidents. As discussed in Appendix J, Section J.3, the analysis in this *Final SPD Supplemental EIS* compares the accident results for partial MOX fuel and full LEU fuel cores to determine whether the use of MOX fuel in these TVA reactors would make any substantive difference in the potential risks associated with the accidents analyzed. The beyond-design-basis accidents include severe accidents with a subsequent loss of containment similar to the accident at Fukushima. The results show that the consequences of such an accident, should it occur, would be comparable, regardless of whether the reactor was using a partial MOX fuel core or a full LEU core. DOE does not believe that the accident at the Fukushima Dai-ichi Nuclear Power Station changes this conclusion. At the time of that accident, the Fukushima Dai-ichi Nuclear Power Station's Unit 3 was operating using a partial MOX fuel core. However, at least one authority has determined that the accident involved failures unrelated to the use of MOX fuel, and there is no evidence to suggest that the presence of MOX fuel in Unit 3 increased the consequences of the accident (ONR 2011). For further discussion, refer to Section 2.5, Topic C, of this CRD.

Browns Ferry Nuclear Plant's used nuclear fuel is temporarily stored in a specially designed and engineered fuel pool. The pool's floor and walls are multiple feet thick, and it contains large volumes of water (300,000 gallons [1,100,000 liters] or more) to help ensure no releases of radioactive material to the environment. The

Commentor No. 6 (cont'd): Larry S. Pollock



environmental damage, property loss and displacement of masses of individuals for 25 to 50 mile radiuses (as witnessed in the Japanese Fukushima disaster and for decades as in the Russian Chernobyl) ***in terms of the game of football*** is it any wonder the public has no trust in its commitment to policing the nuclear industry. Why then would anyone be surprised that 37 years have passed without resolution to a critical safety issue at Browns Ferry nuclear plant that the public has no confidence that TVA is committed to running the facility in a safe and highly functional manner? This is not a game to me or my family! I live here and work in the shadow of Browns Ferry with hundreds of thousands of other Alabamians.

Browns Ferry has the same reactors that the Japan Fukushima nuclear plant had. In a recently published Japanese report a Reuters published 07/05/2012 article printed the following from the report:

"The ... Fukushima Nuclear Power Plant accident was the result of collusion between the government, the regulators and Tepco, and the lack of governance by said parties," the panel said in an English summary of a 641-page Japanese document.

Furthermore, Browns Ferry has outlasted its original date for operations and was simply recertified to continue to operate. So what you are asking is to:

1. Allow the DOE to continue to regulate a nuclear plant that 37 years after a fire with a candle does not meet fire regulations.
2. Stand behind the statement of NRC Deputy Administrator ***"There are some things we have not gotten across the goal line, and fire safety is one of them"*** when responding to a question about the passage of the 37 years and no resolution the failure of the Browns Ferry nuclear plant to comply with the DOE fire regulations.
3. Experiment with nuclear material (MOX) that can burn hotter than the fuels currently being use in a plant that has outlived its original design life.
4. Have TVA Browns Ferry management write policies and procedures but not sufficiently implement those. Fail to have TVA operators perform on a regular basis safety drills and conduct in services that are at the core of the safety of plant.
5. Experiment with MOX fuel at Browns Ferry nuclear facility that has the same GE nuclear reactors as found at the Fukushima Nuclear Power Plant and in which the Japanese published report there was "collusion between the government, the regulators and Tepco, and the lack of governance by said parties".
6. Do so at a plant that is in known earth quake zones: the New Madrid Seismic Zone, Southern Appalachian Seismic Zone, and the South Carolina Seismic Zone.
7. Do so at a plant that was down for several days in April, 2011 as the result of tornadoes that could be seen crossing the Tennessee River near the Browns Ferry nuclear plant.
8. A plant at which the nuclear waste is stored outside under simple metal roof buildings.
9. Risk bringing into effect because of a nuclear accident the Price-Anderson Nuclear Industries Indemnity Act which indemnifies the nuclear industry and places the expense of cleanup and compensation on the backs of the American public.

6-1 cont'd

6-1 cont'd

6-2

6-3

fuel pools at Browns Ferry have been modified to safely store more used fuel. The nuclear industry and NRC have studied the potential impact of an F-5 tornado and determined that the used fuel would remain safely covered. Initial reports from the Fukushima Dai-ichi Nuclear Power Station show little damage to the used fuel stored in the plant's fuel pools.

6-2 As summarized in Chapter 4, Section 4.1.2, and described in detail in Appendices I and J of this *SPD Supplemental EIS*, the risks associated with both normal operations and accidents for a partial MOX fuel core and full LEU fuel core are expected to be comparable. The risks associated with the postulated accidents would be small. These risks include consideration of seismic hazards (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9).

6-3 Use of MOX fuel at Browns Ferry Nuclear Plant would be at the discretion of TVA and subject to NRC approval of appropriate amendments to the applicable licenses. In the process of evaluating such a license amendment request from TVA, should one be requested, NRC would consider the effects of MOX fuel, if any, on Browns Ferry's plans for used fuel storage.

As summarized in Chapter 4 and Chapter 2, Section 2.6, and described in detail in Appendices I and J of this *SPD Supplemental EIS*, the impacts associated with using a partial MOX fuel core versus a full LEU fuel core in the reactors at the Browns Ferry Nuclear Plant are expected to be similar. See the response to comment 6-1 regarding the safety of the Browns Ferry Nuclear Plant. The Price-Anderson Act is outside the scope of this *SPD Supplemental EIS*.

Commentor No. 6 (cont'd): Larry S. Pollock

The NRC should be conducting studies on how to decommission and not expand the nuclear plants in the United States. We should follow Germany's lead in closing all nuclear plants by date certain and focus on the future of energy which is green energy. Germany has committed to moving to green energy and is well on its way to doing so. They understand there is no good solution to destructive possibility of nuclear power which we have already experience at 3 mile island, Russia experience Chernobyl and now Japan has Fukushima. Most individuals would chant the mantra "NOT IN MY BACK YARD". However, my mantra is "NOT IN ANYONES BACK YARD".

The only option I support is #1 short of decommissioning the plants:

Glass can-in-canister immobilization of the surplus plutonium and subsequent filling of the canister with high-level radioactive waste (HLW) at Defense Waste Processing Facility (DWPF) at the Savannah River Site (SRS).

Furthermore, let me assure you that if the nuclear industry had to obtain private insurance for the nuclear facilities instead of having made themselves indemnified at the expense of the American public these plants would have never been built.

I strongly oppose the use of any MOX fuel at any nuclear facility in these United States or in the world.

Thank you for having taken the time to read and add my comments to the public record.

Respectfully submitted,

Larry S. Pollock

6-4

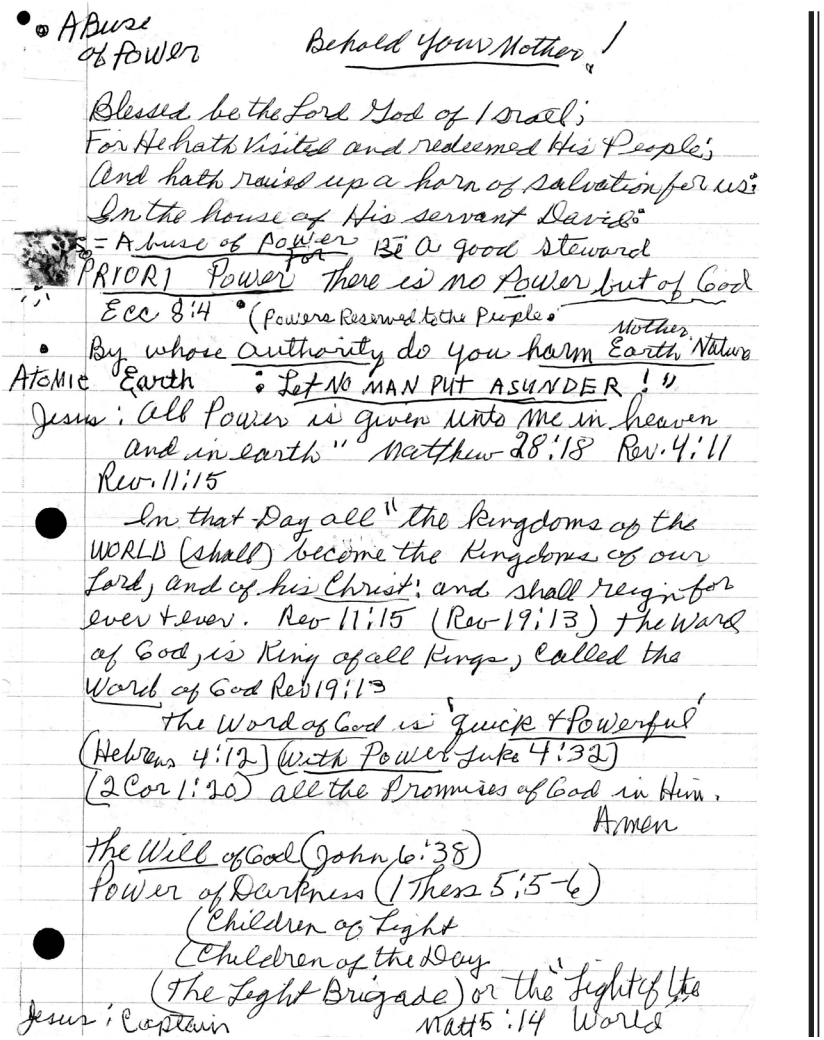
6-5

6-5 cont'd

6-4 The United States' policy on the continued use of nuclear energy is not within the scope of this *SPD Supplemental EIS*.

6-5 DOE acknowledges the commentor's opinion.

Commentor No. 7: Eileen J. Jenkins



Abuse of Power — Behold your Mother!

Blessed be the Lord God of Israel;
For He hath visited and redeemed His People;
And hath raised up a horn of salvation for us;
In the house of His servant David.

= Abuse of Power — Be a good steward
PRIOR1 Power — there is NO Power but of God
Ecc 8:4 (Powers Reserved to the People.

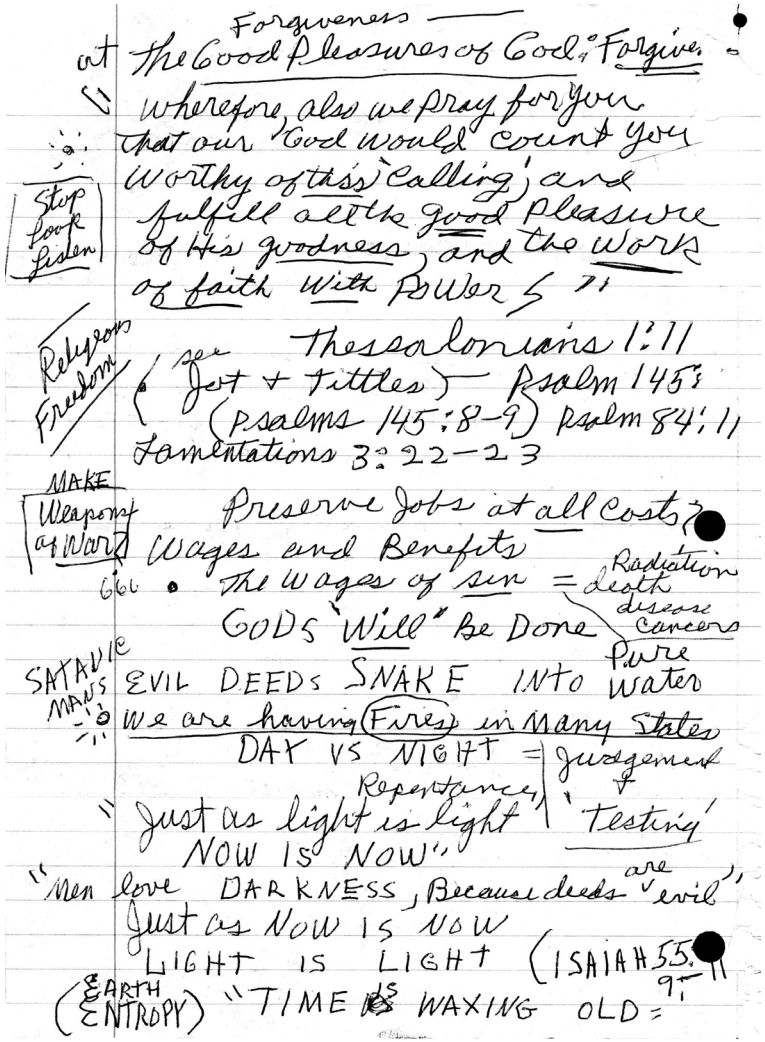
By whose authority do you harm Mother Earth Nature
Atomic Earth : Let NO MAN PUT ASUNDER!"
Jesus: All Power is given unto me in heaven and in earth" Matthew 28:18 Rev. 4:11 Rev. 11:15

In that Day all "the Kingdoms of the WORLD (shall) become the Kingdoms of our Lord, and of his Christ: and shall reign for ever + ever. Rev 11:15 (Rev 19:13) + the Word of God, is King of all Kings, called the Word of God Rev 19:13
the Word of God is 'quick + Powerful' (Hebrews 4:12) (with Power Luke 4:32) (2 Cor 1:20) all the Promises of God in Him. Amen

the Will of God (John 6:38)
Power of Darkness (1 Thess 5:5-6)
(Children of Light
(Children of the Day
(The Light Brigade) or the "Light of the
Jesus: Captain Matt 5:14 World

7-1 **7-1** DOE acknowledges the commentor's opinion.

Commentor No. 7 (cont'd): Eileen J. Jenkins



7-1 cont'd

Response side of this page intentionally left blank.

Commentor No. 8: Mary Jo Carey

From: Jo Carey
Sent: Tuesday, August 14, 2012 5:57 PM
To: spdsupplementaleis@saic.com
Subject: Plutonium

Dear Ms. McAlhany:

I am very concerned about Department of Energy plans for surplus plutonium. No additional plutonium should be brought to Los Alamos National Laboratory (LANL), which has a cleanup mission and cannot meet seismic standards in the case of a severe earthquake. This is to say nothing about the winding, precipitous roads used to access Los Alamos! The Waste Isolation Pilot Plant (WIPP) has a limited mission and does not have the capacity for all surplus plutonium. Stop the Mixed Oxide (MOX) Plutonium Fuel Program and immobilize and safely store plutonium until technically sound, suitable disposition facilities are available. *8-1*

It seems very dangerous for this plutonium to be shipped here and there. Can't there be one safe place in which to reconstitute the plutonium instead of endangering more populations? Please think this out very carefully. You have a tremendous responsibility here. *8-2*

Sincerely,
Mary Jo Carey

8-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The potential consequences of postulated accidents can be found in Tables 4–6 through 4–8; however, the chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if Fast Flux Test Facility (FFTF) fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

8-2 In developing the proposed action and reasonable options for pit disassembly and conversion and surplus plutonium disposition, DOE has determined that transportation of plutonium materials between sites cannot be avoided. The alternatives analyzed in this *SPD Supplemental EIS* were developed recognizing that

Commentor No. 8 (cont'd): Mary Jo Carey

plutonium materials are currently stored at multiple DOE sites and individual sites have their own specific capabilities with respect to pit disassembly and conversion and plutonium disposition. Appendix E of this *SPD Supplemental EIS* presents the transportation analysis methodology, assumptions, and results. The packaging to be used would meet all applicable regulatory requirements, as summarized in Appendix E, Section E.3. As presented in Section E.12, for all alternatives, it is unlikely that the transportation of radioactive material and waste would cause an additional fatality as a result of radiation, either from incident-free operation or postulated transportation accidents.

Transportation risks are analyzed for all alternatives proposed in this *SPD Supplemental EIS*, including the threat of theft and diversion of radioactive materials. As shown in Chapter 4, Table 4–22, under all alternatives, the radiological risks to the public from shipments of radioactive materials would be comparable, with no LCFs expected among the transportation crew or general public along the transportation routes.

Commentor No. 9: Barry Hatfield

From: Barry Hatfield
Sent: Tuesday, August 14, 2012 8:35 PM
To: spdsupplementaleis@saic.com
Subject: Public Comment re. draft Surplus Plutonium Disposition

Dear Ms. McAlhany:

I am very concerned about Department of Energy plans for surplus plutonium. No additional plutonium should be brought to Los Alamos National Laboratory (LANL), which has a cleanup mission and cannot meet seismic standards in the case of a severe earthquake. The Waste Isolation Pilot Plant (WIPP) has a limited mission and does not have the capacity for all surplus plutonium. Stop the Mixed Oxide (MOX) Plutonium Fuel Program and immobilize and safely store plutonium until technically sound, suitable disposition facilities are available. *9-1*

Sincerely,

Barry Hatfield

9-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

Commentor No. 10: Lucy R. Lippard

From: Lucy Lippard
Sent: Wednesday, August 15, 2012 9:01 AM
To: spdsupplementaleis@saic.com
Subject: Plutonium to Los Alamos

August 15, 2012

Dear Sachicko McAlhany:

I am very concerned about Department of Energy plans for surplus plutonium. No additional plutonium should be brought to Los Alamos National Lab (LANL), which has a cleanup mission and cannot meet seismic standards in the case of a severe earthquake. WIPP has a limited mission and does not have the capacity for all surplus plutonium. Stop MOX and immobilize and safely store plutonium until technically sound, suitable disposition facilities are available. *10-1*

Please consider the reswidents of New Mexico and keep nuclear waste on the sites where it was created. We are not a dumping ground. Thank you,

Lucy R. Lippard

10-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

Commentor No. 11: Senator Jeff Bingaman and Senator Tom Udall, United States Senate

United States Senate
WASHINGTON, DC 20510

August 16th, 2012

Thomas P. D'Agostino
Under Secretary for Nuclear Security
Administrator, National Nuclear Administration
US Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585

Dear Administrator D'Agostino,

We are writing today about the Department of Energy's Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SPD DWEIS) and to request additional public hearings in New Mexico. Several of our constituents have requested that two other meetings be held in Española and Taos, in addition to the public meetings already scheduled in Los Alamos and Santa Fe. *11-1*

We request that DOE hold two additional public hearings— one in Espanola and the other in Taos, NM—to ensure that constituents in these four stakeholder communities have an opportunity to learn more about the SPD DWEIS, and share input with DOE.

Thank you in advance for your thoughtful consideration of this request. We look forward to your response.

Sincerely,

Jeff Bingaman
United States Senator

Tom Udall
United States Senator

11-1 In response to requests for additional public hearings and an extension of the comment period, DOE added a public hearing in Española, New Mexico, held on September 18, 2012, to the six meetings that DOE had initially scheduled and extended the comment period through October 10, 2012. In total, DOE held four public hearings on the *Draft SPD Supplemental EIS* in New Mexico.

Commentor No. 12: Helen Rynaski

From: Helen Rynaski
Sent: Friday, August 17, 2012 11:08 AM
To: spdsupplementaleis@saic.com
Subject: surplus plutonium

Dear Ms. McAlhany:

I am very concerned about Department of Energy plans for surplus plutonium. No additional plutonium should be brought to Los Alamos National Laboratory (LANL), which has a cleanup mission and cannot meet seismic standards in the case of a severe earthquake. The Waste Isolation Pilot Plant (WIPP) has a limited mission and does not have the capacity for all surplus plutonium. Stop the Mixed Oxide (MOX) Plutonium Fuel Program and immobilize and safely store plutonium until technically sound, suitable disposition facilities are available. *12-1*

I live downwind of Los Alamos and plutonium was found in the soil of organic farmers following fires there. There is NO SAFE LEVEL of plutonium in the air, water or soil! *12-2*

Sincerely,

Helen Rynaski

12-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

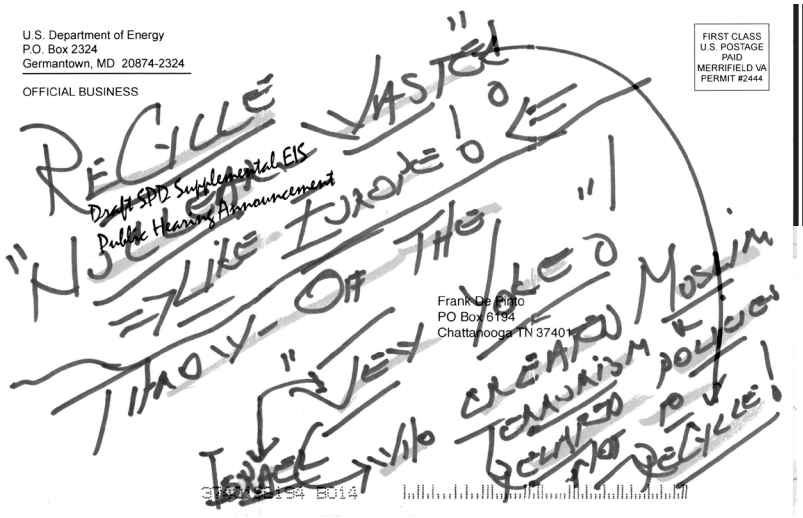
As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

12-2 Appendix D, Section D.1.5.2.11, of this *SPD Supplemental EIS* addresses the potential for wildfire impacts at LANL. Based on past experience and analysis, wildfires are not expected to impact facilities in TA-55, including PF-4.

DOE notes the commentor's concern regarding the health impacts of plutonium.

Commentor No. 13: Frank DePinto



13-1

13-1 As described in Chapter 1, Section 1.2, of this *SPD Supplemental EIS*, the purpose of the Surplus Plutonium Disposition Program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally sound manner and ensuring it can never again be readily used in nuclear weapons. Examining the recycling (reprocessing) of used nuclear fuel is not within the scope of this *SPD Supplemental EIS*; however, DOE remains committed to meeting its obligations to safely dispose of used nuclear fuel and HLW.

Commentor No. 13 (cont'd): Frank DePinto

- .....lowering the 'Temperature-Bar' for 'Human Extinction'.....2150.....'Global Warming'.....

From: **Frank DePinto**
Sent: Thu 6/21/12 1:39 PM
To: timesfree press (letters@timesfreepress.com); Channel 9 Producers (producers@newschannel9.com); channel 12 (comments@wdef.com); channel 3 (news@wrcbtv.com); pulse info (info@chattanoogapulse.com); letters@ajc.com; editorial@nytimes.com; news@chattanoogan.com; letters@usatoday.com; ctc-tribletter@tribune.com; cjohnson@pbs.org; editor@seattletimes.com; letters@oregonian.com; letters@sfchronicle.com; letters@time.com; letters@washpost.com; letters@suntimes.com
6 attachments

Frank DePinto

6/22

.....1) 'human/species extinction' will occur at a temperature-rise of '6-degress' Celsius...predicted, 'approx. 2150.'
.....a) EPA predicts a 'temperature rise' of '7-degrees-Celsius' due to Global Warming/century i.e. carbon and methane global warming gas emissions.
.....2) 'profound' environmental damage i.e. tornadoes, droughts, flooding, melting icebergs and glaciers, food shortages w/related social and political turmoil.....with a '2 degrees-Celsius' increase, predicted 'approx. 2020.'
.....b)the modern Earth has increased its temperature '1 degree-Celsius' in the last 150 years due to the industrial revolution i.e.
carbon-dioxide gas emissions.
.....b) temperatures could easily reach a '10-degree-Celsius' increase by 2150.
.....3) previous 'species extinction' in the last 500 million years i.e. volcanic eruptions dumping carbon gas into the atmosphere.
.....a) the human species is 6 million yrs. old.
.....b) the Earth is 4.5 billions years old.
.....4) NASA has a plan of sending satellite screens into space to block sun radiation, however, that is like trying to 'stop a Heart-attack w/a band-aid.'
.....5) there is some science that says it is 'too-late' to stop the 'extinction-process,' due to the irreversibility of the now carbon/global warming gas saturation-of-Earth's atmosphere.
.....6) the Earth is heading towards a 'carbon-gas-dominated' atmosphere like the planet Venus i.e. 95% carbon gas.

Response side of this page intentionally left blank.

Commentor No. 14: Phoebe Anne Thomas Sorgen

From: Phoebe Anne Thomas Sorgen
Sent: Friday, August 17, 2012 1:28 PM
To: spdsupplementaleis@saic.com
Subject: SURPLUS PLUTONIUM DISPOSITION SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT-public comment

To the U.S. Dept of Energy, NNSA and other relevant decision makers:

Please include my statement in the public comments for the SURPLUS PLUTONIUM DISPOSITION SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT:

http://nnsa.energy.gov/nepa/spdsupplementaleis

Please read and consider at the hearings.

We all agree that plutonium needs to be stored "in a safe, secure, and environmentally sound manner, by converting such plutonium into proliferation-resistant forms that can never again be readily used in nuclear weapons." WMD's are not the only lethal risk, however. The world can be, and is being, poisoned from nuclear power plant releases, so MOX is NOT part of the answer but would be adding fuel to the fire. *14-1*

What have the Dept of Energy, NNSA, and nuclear "regulators" learned from Chernobyl and Fukushima? Have you seen the photos of children with gross deformities/birth defects from Chernobyl radiation? Have you seen the recent report showing that post 3/11/11 Fukushima butterflies are increasingly deformed from the DNA damage caused by radiation released there, and that the deformities magnify with each generation? The MOX fuel at Fukushima, and elsewhere, is treacherous. Our species risks extinction due to nuclear follies. *14-2*

Some say the world will end in fire,
Some say in ice.
From what I've tasted of desire
I hold with those who favor fire.
But if it had to perish twice,
I think I know enough of hate
To say that for destruction ice
Is also great
And would suffice.

-Robert Frost

14-1 In this *SPD Supplemental EIS*, DOE analyzed four options for dispositioning 13.1 metric tons (14.4 tons) of surplus plutonium: (1) fabrication into MOX fuel with subsequent irradiation in a domestic commercial nuclear power reactor, (2) immobilization using a can-in-canister immobilization capability, (3) vitrification with HLW, and (4) disposal as CH-TRU waste at WIPP. As a result of the analysis in this *SPD Supplemental EIS*, DOE believes that the MOX fuel disposition option is comparable to the other options analyzed in terms of environmental impacts.

As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in pressurized water reactors (PWRs) and boiling water reactors (BWRs), including tests using plutonium ranging from reactor-grade to weapons-grade. While there are differences in MOX fuel compared to LEU fuel, these differences are understood and can be addressed using measures such as modifications to reactivity control systems and core fuel management procedures. Before any MOX fuel is used in the United States, NRC would perform a comprehensive safety review, which would include information prepared by TVA or other reactor operators, as part of the 10 CFR Part 50 license amendment process. As summarized in Chapter 4, Section 4.1.2, under normal operating as well as postulated accident conditions, the impacts of operating reactors using partial MOX fuel cores are not expected to change meaningfully from those associated with use of full LEU fuel cores. For further discussion, refer to Section 2.5, Topic B, of this CRD.

14-2 When there is a serious accident at a nuclear power reactor, agencies of the U.S. Government closely evaluate the circumstances to determine whether there are lessons to be learned and applied to nuclear plants in the United States. The Chernobyl reactor was an RBMK type, a high-power, pressure-tube reactor that was moderated with graphite and cooled with water. U.S. reactors have different plant designs, broader shutdown margins, robust containment structures, and operational controls to protect them against the combination of lapses that led to the accident at Chernobyl. As part of the studies performed following the Chernobyl accident, NRC determined that no immediate changes were needed in its regulations regarding the design or operation of U.S. commercial nuclear reactors as a result of lessons learned from Chernobyl (NRC 2012f).

Appendix J, Section J.3.3.3, of this *SPD Supplemental EIS* describes the NRC recommendations developed in response to the March 11, 2011, accident at the Fukushima Dai-ichi Nuclear Power Station in Japan and the subsequent actions

Commentor No. 14 (cont'd): Phoebe Anne Thomas Sorgen

Plutonium is one of the most toxic substances on the planet. Our species cannot afford more plutonium nor "depleted" uranium etc. releases. We must stop producing nuclear waste and instead contain and guard, as best we can, all of the radioactive waste already produced for millennia. Yucca Mt and other potential repositories are not options due to geological shift over time and due to the dangers of transport. For now, the waste is best encased in thick glass (vitrification) and/or dry storage (once cooled adequately) on site, moving offsite only in the many cases of high earthquake risk. ***14-3***

The environmental impacts of using MOX fuel in Tennessee Valley Authority's Browns Ferry Nuclear Plant near Athens, AL and Sequoyah Nuclear Plant near Soddy-Daisy, TN, are potentially devastating on a widespread scale that could far exceed the states of TN and AL.

I urge decision makers to come to your senses and act with courageous wisdom. Recently two activists and I were asked, "Someday, when you are in a casket at a funeral parlor and your friends/family are at the viewing, mourning, what would you like to hear them say about you?"

One said, "I want to hear them say I was a positive change maker, that I did my best towards motivating/organizing people to solve the myriad problems of the world."

The other said, "I'd like to hear that I was a wonderful parent and teacher who made a huge difference in the lives of children."

I replied, "I'd like to hear them say…….Look, she's moving!

Survival of the species is the most basic of all instincts. Our species is naturally intelligent, loving, creative, and flexible...and we have clearly gone astray. I invite you to envision our true destiny as creating a just, peaceful, healthy world for all until our star expires in another six billion years or so. Please join the many good people who are striving to steer us off the lemming paths.

Sincerely,

Phoebe Anne Thomas Sorgen
Commissioner of Disaster and Fire Safety (for i.d. purposes)

TVA has taken to further reduce the likelihood and severity of accidents at its nuclear plants. NRC is incorporating lessons learned from the Fukushima accident in its regulations for U.S. nuclear power reactors. For further discussion, refer to Section 2.5, Topic C, of this CRD.

Accident analyses for U.S. nuclear power reactors already consider the radiological impacts of accidents like the Fukushima accident in that the safety evaluations include evaluation of beyond-design-basis accidents. As discussed in Appendix J, Section J.3, the analysis in this *SPD Supplemental EIS* compares the accident results for partial MOX fuel and full LEU fuel cores to determine whether the use of MOX fuel in these TVA reactors would make any substantive difference in the potential risks associated with the accidents analyzed. The beyond-design-basis accidents include severe accidents with a subsequent loss of containment similar to the accident at Fukushima. The results show that the consequences of such an accident, should it occur, would be comparable, regardless of whether the reactor was using a partial MOX fuel core or a full LEU core. DOE does not believe that the accident at the Fukushima Dai-ichi Nuclear Power Station changes this conclusion. At the time of that accident, the Fukushima Dai-ichi Nuclear Power Station's Unit 3 was operating using a partial MOX fuel core. However, at least one authority has determined that the accident involved failures unrelated to the use of MOX fuel, and there is no evidence to suggest that the presence of MOX fuel in Unit 3 increased the consequences of the accident (ONR 2011). For further discussion, refer to Section 2.5, Topic C, of this CRD.

14-3 As discussed in Appendix I, Section I.1.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed at a commercial nuclear reactor in the same manner as used LEU fuel, by storing it in the reactor's used fuel pool or placing it in dry storage. See the response to 14-1 regarding the comparison of MOX fuel to LEU fuel.

Commentor No. 15: Angela Werneke

From: Angela Werneke
Sent: Saturday, August 18, 2012 12:19 AM
To: spdsupplementaleis@saic.com
Subject: Comment on transport and storage of surplus plutonium in New Mexico

August 17, 2010

Sachiko McAlhany
SPD Supplemental EIS Document Manager
P.O. Box 2324
Germantown, MD 20874-2324
Toll-free Fax: 877-865-0277
spdsupplementaleis@saic.com

Dear Ms. McAlhany:

I am very concerned about Department of Energy plans for surplus plutonium. No additional plutonium should be brought to Los Alamos National Laboratory (LANL), which has a cleanup mission and cannot meet seismic standards in the case of a severe earthquake. Further, the Waste Isolation Pilot Plant (WIPP) has a limited mission and does not have the capacity for all surplus plutonium. ***15-1***

I urge you to stop the Mixed Oxide (MOX) Plutonium Fuel Program and immobilize the plutonium for disposal as a waste, and safely store plutonium until technically sound, suitable disposition facilities are available.

Sincerely,

Angela Werneke

RIVER LIGHT MEDIA
3466 Cerrillos Road J1
Santa Fe, NM 87507-3014

15-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

Commentor No. 16: Joanna Kennedy

From: Joanna Kennedy
Sent: Saturday, August 18, 2012 1:04 AM
To: spdsupplementaleis@saic.com
Subject: new mexico

I am very concerned about Department of Energy plans for surplus plutonium being brought to LANL or WIPP

* LANL is not meeting its waste cleanup schedule, and its facilities do not meet seismic standards in case of a severe earthquake. Bringing thousands of plutonium pits to LANL would further endanger public health and safety and divert resources away from cleanup.
* Doubling the amount of TRU waste coming from SRS will likely exceed WIPP's capacity. As a result, TRU waste from LANL and other sites might not fit into WIPP. ***16-1***
* Plutonium should be immobilized for disposal as a waste so that it can be safety stored until new disposition options are available. Immobilization would also be less expensive than MOX.
* MOX is not viable as there are no utilities that want to use MOX fuel in existing power plants because of its costs, dangers, and the need to make changes to the reactors. ***16-2***

sincerely

Joanna Kennedy

16-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults. DOE and LANL are continuing to take appropriate actions to further improve the safety policies and controls in place at the laboratory and implement facility modifications and upgrades as necessary to improve safety in the event of an earthquake.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9), including a beyond-design-basis earthquake with fire, and describes concerns identified by DNFSB. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 1, Section 1.4, of this *SPD Supplemental EIS,* under all alternatives, DOE would disposition as MOX fuel 34 metric tons (37.5 tons) of surplus plutonium in accordance with previous decisions. The pit disassembly and conversion options analyzed in this *SPD Supplemental EIS*, including the PDCF Option, apply to 27.5 metric tons (30.3 tons) of pit plutonium that DOE has decided to fabricate into MOX fuel (a portion of the 34 metric tons [37.5 tons]), as well as to the 7.1 metric tons (7.8 tons) of pit plutonium for which disposition is under consideration in this *SPD Supplemental EIS,* for a total of approximately 35 metric tons (38.6 tons). Appendix B, Table B–3, lists the annual and total plutonium throughput for the various pit disassembly and conversion options at SRS and LANL. For example, the maximum annual throughput for PF-4 at LANL is 2.5 metric tons (2.8 tons) per year, while the maximum amount of plutonium to be processed could be 35 metric tons (38.6 tons) over the life of facility operation. The amount of plutonium that would be allowed at LANL at any given time would be limited, and shipments of pits to be disassembled there would be timed to support pit disassembly and conversion activities such that the amount of plutonium at PF-4 would not exceed the established material safety limit.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As addressed in Chapter 4, Section 4.1.4, of this *SPD Supplemental EIS*, implementation of any of the alternatives evaluated would generate CH-TRU waste that would be sent to WIPP for disposal. As discussed in Chapter 4,

Commentor No. 16 (cont'd): Joanna Kennedy

Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE is considering four action alternatives for the disposition of 13.1 metric tons (14.4 tons) of surplus plutonium: (1) Immobilization to DWPF Alternative; (2) MOX Fuel Alternative; (3) H-Canyon/HB-Line to DWPF Alternative; and (4) WIPP Alternative. The analyses in this *SPD Supplemental EIS* indicate that none of the alternatives analyzed, including immobilization, involve any substantial risk to the safety of the public. For further discussion, refer to Section 2.2, Topic A, of this CRD.

The decisionmaker may consider cost, among other factors, when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

16-2 Disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts per NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors (see Appendix I, Section I.2).

The environmental, human health, and socioeconomic impacts of using MOX fuel in a nuclear reactor are described in Appendix I, Section I.2, and summarized in Chapter 2, Section 2.6, of this *SPD Supplemental EIS*. The impacts of the use of a partial MOX fuel core are not expected to be meaningfully different from the impacts of reactor operation using a conventional full LEU fuel core. As described in Appendix B, Section B.4, and Appendix I, only minor changes would be needed to commercial nuclear power reactors to use a partial MOX fuel core.

Commentor No. 17: Kenneth J. Collins

From: Kenny Collins
Sent: Saturday, August 18, 2012 7:31 AM
To: spdsupplementaleis@saic.com
Subject: Surplus Plutonium Disposition Supplemental Environmental Impact Statement

Dear sirs,

This material should be stored properly until it can be neutralized. It should not be used as nuclear fuel in nuclear reactors. As witnessed in Fukushima, MOX fuel poses hazards that are easily avoided if you just don't use it. Furthermore, the price of disposing of spent nuclear fuel outweighs the benefit of it's use, and it's time we stopped bolstering the nuclear energy industry. We need to end nuclear power generation completely, and creating tons of nuclear fuel is a step in the wrong direction for mankind. *17-1*

Sincerely,

Kenneth J Collins

17-1 Examining nuclear power generation policy is not within the scope of this *SPD Supplemental EIS*. There are some minor differences between MOX fuel and LEU fuel, such as the amount of actinides in used MOX fuel rods would be higher than in used LEU fuel rods. These differences, however, are not expected to affect reactor safety or meaningfully increase the environmental consequences or risks associated with the use of a partial MOX fuel core. As summarized in Chapter 4 and described in detail in Appendices I and J of this *SPD Supplemental EIS*, the impacts associated with using a partial MOX fuel core versus a full LEU fuel core in commercial nuclear power reactors are expected to be similar. The risks associated with postulated accidents would be small. For further discussion, refer to Section 2.5, Topic A, of this CRD.

Accident analyses for U.S. nuclear power reactors already consider the radiological impacts of accidents like the Fukushima accident in that the safety evaluations include evaluation of beyond-design-basis accidents. As discussed in Appendix J, Section J.3, the analysis in this *SPD Supplemental EIS* compares the accident results for partial MOX fuel and full LEU fuel cores to determine whether the use of MOX fuel in these TVA reactors would make any substantive difference in the potential risks associated with the accidents analyzed. The beyond-design-basis accidents include severe accidents with a subsequent loss of containment similar to the accident at Fukushima. The results show that the consequences of such an accident, should it occur, would be comparable, regardless of whether the reactor was using a partial MOX fuel core or a full LEU core. DOE does not believe that the accident at the Fukushima Dai-ichi Nuclear Power Station changes this conclusion. At the time of that accident, the Fukushima Dai-ichi Nuclear Power Station's Unit 3 was operating using a partial MOX fuel core. However, at least one authority has determined that the accident involved failures unrelated to the use of MOX fuel, and there is no evidence to suggest that the presence of MOX fuel in Unit 3 increased the consequences of the accident (ONR 2011). For further discussion, refer to Section 2.5, Topic C, of this CRD.

As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel, by storing it in the reactor's used fuel storage pool or placing it in dry storage. The use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would displace LEU fuel that otherwise would have been used to power the nuclear power reactor. Use of MOX fuel could increase used nuclear fuel generation by 8 to 10 percent for TVA's Browns Ferry and Sequoyah Nuclear Plants, and from 2 to 16 percent for generic reactors during the period MOX fuel could be used at a reactor.

Commentor No. 18: Elizabeth Christine

Dear Sachicko McAlhany:

I am concerned about current plans held by the Department of Energy to bring surplus plutonium into New Mexico. Los Alamos National Lab does not meet seismic standards in the case of severe earthquake and needs to hold to a cleanup mission regarding materials already stored here. WIPP has a limited mission and does not have the capacity for all surplus plutonium. *18-1*

Please consider safer alternatives. Stop MOX. Instead, mobilize and safely store plutonium until technically sound and suitable disposition facilities are available. Care for the plutonium with the least amount of travel between facilities.

Name Elizabeth Christine

Address [redacted]

Comments are to be submitted by **September 25, 2012**
To:
Sachiko McAlhany
NEPA Document Manager, SPD Supplemental EIS, U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324

18-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

Commentor No. 19: Richard Polese

14 August 2012

Dear Sachicko McAlhany:

I am concerned about current plans held by the Department of Energy to bring surplus plutonium into New Mexico. Los Alamos National Lab does not meet seismic standards * in the case of severe earthquake and needs to hold to a cleanup mission regarding materials already stored here. WIPP has a limited mission and does not have the capacity for all surplus plutonium. *19-1*

Please consider safer alternatives. Stop MOX. Instead, mobilize and safely store plutonium until technically sound and suitable disposition facilities are available. Care for the plutonium with the least amount of travel between facilities.

Name Richard Polese

Address [redacted]

Comments are to be submitted by **September 25, 2012**
To:
Sachiko McAlhany
NEPA Document Manager, SPD Supplemental EIS, U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324

* The potential seismic volatility of the Jemez Mountains and the vast volcanic caldera just above Los Alamos are clearly still areas of potentially violent geologic activity. A cataclysm there will affect future viability of all cities and populations here in northern and central New Mexico. Extremely unwise to bring surplus uranium to LANL! *19-2*

— R. Polese

19-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

19-2 Chapter 3, Section 3.2.2, of this *SPD Supplemental EIS* describes geology and soils conditions at PF-4 at LANL, including the locations of faults, as well as seismic and volcanic hazards. For further discussion, refer to Section 2.3, Topic B, of this CRD. Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9, of this *SPD Supplemental EIS* explicitly evaluate the potential radiological impacts of an earthquake so severe that it would cause major structural damage to the heavily

reinforced PF-4. DOE also considers the potential impacts of volcanic eruptions in Appendix D, Section D.1.5.2.11. As described in Chapter 4 and summarized in Chapter 2, Section 2.6, Table 2–3, risks to the public are expected to be minor from both normal operations and potential accidents under any proposed alternative.

Commentor No. 20: Teresa Roberts

From: Teresa Roberts
Sent: Wednesday, August 22, 2012 3:32 PM
To: spdsupplementaleis@saic.com
Subject: No to Nukes, No to Plutonium

Sachiko McAlhany,Ogenki de irasshaimasu ka?

Please shut down and seize for-profit prisons from the banks who raped our economy and store your plutonium, etc there.

Do not continue to develop LANL. NM is committed to solar and wind power and we do not want your waste or your nuclear facilities.

Further, hands off our public parks!!!

As a taxpayer for decades, I demand my rights as a consumer.

Otherwise, I intend to stop paying taxes.

No more wars, no more nukes, no more 1%ers.

Douka yoroshiku onegai itashimasu.

Teresa Roberts

Registered Voter

20-1	**20-1**	DOE acknowledges the commentor's opinion.

Commentor No. 21: Anna Hansen

From: Anna Hansen
Sent: Thursday, August 23, 2012 11:40 AM
To: spdsupplementaleis@saic.com
Subject: Draft supplemental Plutonum Disposition Environmental Impact Statement

Sachiko McAlhany
SPD Supplemental EIS Document Manager
P.O. Box 2324
Germantown, MD 20874-2324

Toll-free Fax: 877-865-0277

Email: spdsupplementaleis@saic.com <mailto:spdsupplementaleis@saic.com>

Dear Ms. McAlhany:

I am very concerned about Department of Energy plans for surplus plutonium. No additional plutonium should be brought to Los Alamos National Laboratory (LANL), which has a cleanup mission and cannot meet seismic standards in the case of a severe earthquake.The Waste Isolation Pilot Plant (WIPP) has a limited mission and does not have the capacity for all surplus plutonium.Stop the Mixed Oxide (MOX) Plutonium Fuel Program and immobilize and safely store plutonium until technically sound, suitable disposition facilities are available. *21-1*

Not to mention that LANL is now located above a major drinking water supply for the city of Santa Fe and Area G is leaking into the ground water. NO more plutonium or waste at the LANL site. It MUST be cleaned up. *21-2*

Sincerely,

Anna Hansen

Anna Hansen
Dakini Design
Art Director for Green Fire Times
Santa Fe, NM

Love and compassion are necessities, not luxuries. Without them humanity cannot survive.

—Dalai Lama

21-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

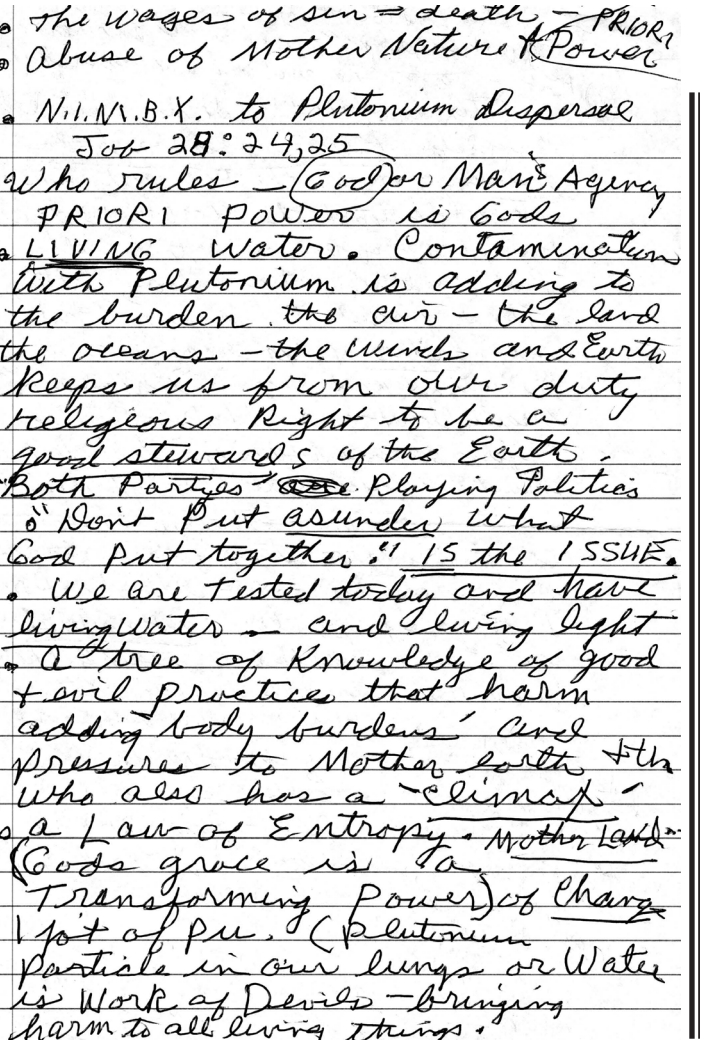
DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

21-2 As evaluated in Chapter 4, Section 4.1.7.3, and summarized in Chapter 2, Section 2.6, Table 2–3, impacts from pit disassembly and conversion operations at LANL on surface water and groundwater resources would be minimal. LANL works

Commentor No. 21 (cont'd): Anna Hansen

cooperatively with the New Mexico Environment Department and City of Santa Fe to monitor three water supply wells in Santa Fe's Buckman well field. As in the past, drinking water sampling in 2011 detected background levels of naturally occurring uranium and gross alpha results near or above screening levels; naturally occurring uranium and its decay products are present in drinking water throughout the region (LANL 2012). No LANL-derived radionuclides were detected in 2011, and repeated sampling since 2001 has shown no evidence of groundwater impacts from LANL operations (City of Santa Fe Water Division 2011, LANL 2012). In 2011, data from the groundwater monitoring network around Technical Area (TA-54), where Area G is located, showed sporadic detections of a variety of contaminants, including pore-gas volatile organic compounds. The temporal and spatial nature of the occurrences did not, however, indicate a release from potential sources at TA-54 (LANL 2012). DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions.

Commentor No. 22: Eileen J. Jenkins

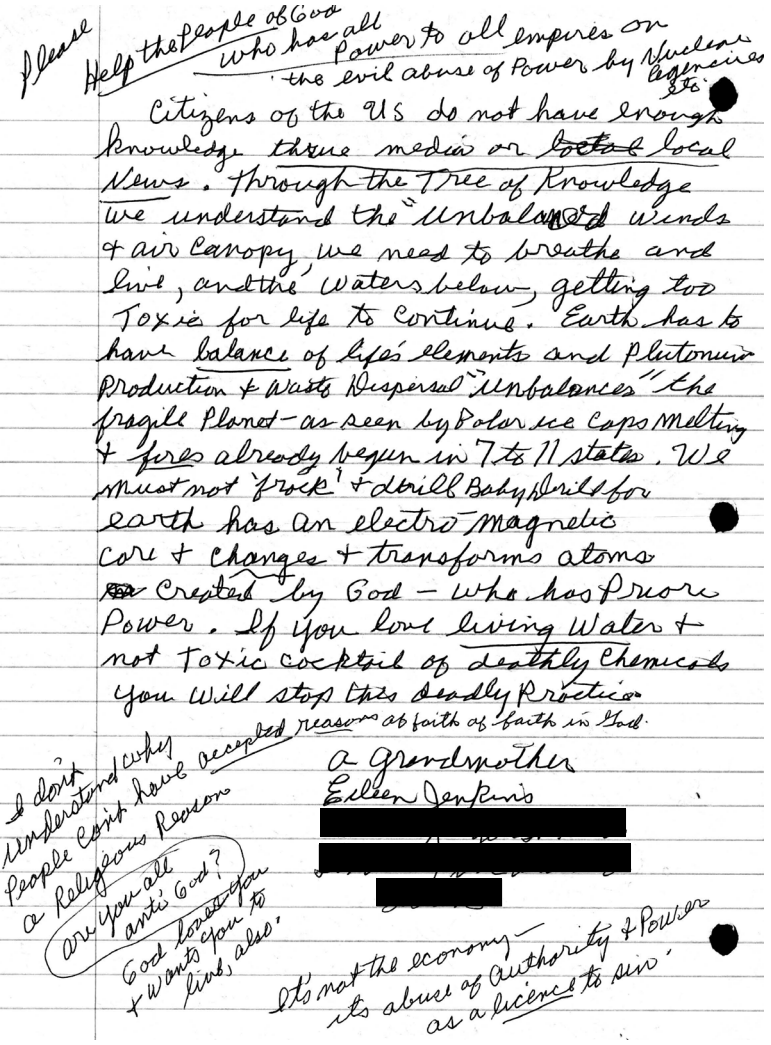


- The wages of sin = death — PRIORI
- Abuse of Mother Nature & Power
- N.I.N.B.X. to Plutonium Dispersal Job 28: 24,25
- Who rules — (God) or Man's Agency
- PRIORI POWER is Gods
- LIVING Water. Contamination with Plutonium is adding to the burden the air — the land the oceans — the winds and Earth it Keeps us from our duty religious Right to be a good stewards of the Earth.
- Both Parties Playing Politics
- "Don't Put asunder what God put together." IS the ISSUE.
- We are tested today and have living Water — and living light
- a tree of Knowledge of good + evil practices that harm adding body burdens and pressures to Mother Earth + the U.S. who also has a "climax"
- a Law of Entropy. Mother Earth
- (Gods grace is a Transforming Power) of Change
- 1 pt of Pu. (Plutonium particle in our lungs or Water is Work of Devils — bringing harm to all living things.

22-1

22-1 DOE acknowledges the commentor's opinion.

Commentor No. 22 (cont'd): Eileen J. Jenkins



Please Help the People of God who has all Power to all empires on the evil abuse of Power by Nuclear Agencies etc.

Citizens of the US do not have enough knowledge thrue media or ~~total~~ local News. Through the Tree of Knowledge we understand the "Unbalanced" winds & air canopy we need to breathe and live, and the waters below, getting too Toxic for life to continue. Earth has to have balance of life's elements and Plutonium Production & Waste Dispersal "Unbalances" the fragile Planet - as seen by Polar ice caps Melting & fires already begun in 7 to 11 states. We must not 'frack' & drill Baby Drill for earth has an electro magnetic core & changes & transforms atoms ~~as~~ Created by God - who has Prior Power. If you love living Water & not Toxic cocktail of deathly Chemicals you will stop this deadly Practice.

I don't understand why people can't have accepted reasons as faith of faith in God.

a Religious Reason

Are you all anti God?

God loves you & wants you to live also.

a Grandmother
Eileen Jenkins
[redacted]

It's not the economy — its abuse of authority & Power as a licence to sin.

22-1 cont'd

Response side of this page intentionally left blank.

Commentor No. 23: Dave Sepich

From: Dave Sepich
Sent: Tuesday, August 28, 2012 12:32 PM
To: spdsupplementaleis@saic.com
Subject: SPD Supplemental EIS

Sachiko McAlhany
NEPA Document Manager
SPD Supplemental EIS
U. S. Department of Energy
P. O. Box 2324
Germantown, MD 20874-2324

Dear Mr. McAlhany:

I completely support the disposal of Surplus Plutonium at the Waste Isolation Pilot Plant in Carlsbad, NM. *23-1*

As a long term citizen of Carlsbad, I have seen the professionalism, focus on safety, and the open communication with the citizens of our community the DOE, and operational contractors have done at WIPP. I am confident that this is the right place to dispose of the Surplus Plutonium waste.

Disposal in salt is the only proven geology for this type of disposal. The transportation system and skilled workforce are already in place, making this the best option for our country for both safety and economy.

Thanks you for the opportunity to comment.

Dave Sepich

23-1 DOE acknowledges the commentor's opinion.

Commentor No. 24: Jayann Sepich

From: Jayann Sepich
Sent: Tuesday, August 28, 2012 3:46 PM
To: spdsupplementaleis@saic.com
Subject: Support of the Disposal of Surplus Plutonium

To Whom It May Concern:

I am a lifelong resident of Carlsbad, New Mexico and am writing to express my support of the proposal to dispose of surplus plutonium in the WIPP facility near Carlsbad. Years ago when WIPP was first proposed I, like many of the citizens of Carlsbad, became educated on the facility and its operations. It is not only the safest disposal solution, it is an important solution for our country.

I have had the opportunity to tour the WIPP facility and am amazed at the intricate safety precautions. Although I am not a scientist, I have read a great deal about WIPP and am convinced that WIPP is the best solution for the disposal of nuclear waste, including surplus plutonium.

Not only is WIPP extremely safe, the process is already in place. The National Academy of Sciences has deemed that the transportation system utilized by WIPP is the "safest transportation system for hazardous materials in this country". Why should the taxpayers of this country spend untold dollars to re-invent the wheel when we have WIPP ready and able to take on this vital task? *24-1*

Of course the citizens of Carlsbad want to see the continuation of WIPP because of the benefits WIPP brings to our community. But we also look beyond that. If our country is to survive, we need to solve the energy crisis---and it is a crisis. The only truly viable solution is nuclear energy. And disposing of nuclear waste at the WIPP facility safely isolates it from the environment forever. We know it works. We know it is scientifically sound. It is the best solution.

Jayann Sepich

24-1 DOE acknowledges the commentor's opinion.

Commentor No. 25: Patrick Woehrle

From: Patrick Woehrle
Sent: Tuesday, August 28, 2012 4:41 PM
To: spdsupplementaleis@saic.com
Subject: LANL SEIS Support

I support increasing the plutonium work being done at LANL to get rid of excess nuclear weapons pits. *25-1*

PW

25-1 DOE acknowledges the commentor's opinion.

Commentor No. 26: Amy M. Barnhart, Executive Director Carlsbad Mainstreet

From: Amy Barnhart
Sent: Tuesday, August 28, 2012 5:10 PM
To: spdsupplementaleis@saic.com
Cc: Robert Defer; Dave Sepich
Subject: In Support of Plutonium Disposition at WIPP

To whom it may concern,

As a Carlsbad Resident who has lived here most of my life, I am fully in support of the surplus plutonium being disposed of at the Waste Isolation Pilot Project.

With a long established record of safety and superior management, WIPP is the ideal location to receive these shipments. There are no regulatory changes needed to accept this new waste, and past shipments received at WIPP have been a similar plutonium-bearing waste. The National Academy of Sciences has termed the transportation system used for moving waste to WIPP as the "safest transportation system for hazardous materials in this country." There is still room at WIPP to receive waste materials and the infrastructure is already in place. Continuing WIPP's waste disposal mission just makes sense.

Additionally, WIPP employs hundreds of Carlsbad residents and its continuing mission effects the community as a whole. WIPP provides jobs suitable to a variety of different education levels and its closure would have a direct, negative impact on the economy of Carlsbad. I can speak to this first hand, as my family moved to Carlsbad in 1986 because of my father's employment with WIPP, where he is still employed to this day. The employees of WIPP have made a profound, positive impact on the city of Carlsbad, as have the companies responsible for its management over the years.

Continuing WIPP's mission is the right thing to do.

Thank you,

--

Amy M. Barnhart
Executive Director
Carlsbad MainStreet
PO Box 302
Carlsbad, NM 88221

26-1

26-1 DOE acknowledges the commentor's opinion.

Commentor No. 27: Leo Jaramillo

From: Leo Jaramillo
Sent: Wednesday, August 29, 2012 9:14 AM
To: spdsupplementaleis@saic.com
Subject: Los Alamos National Laboratory (LANL)

Good Morning:

I would like to communicate my strong support for efforts to allow Los Alamos National Laboratory (LANL) to render unused nuclear weapons Plutonium into forms that would be easier to store and ultimately be reused for peaceful purposes. I also believe that LANL is best positioned to handle this activity since they have the expertise and facilities to securely and safely manage nuclear material. *27-1*

Leo Jaramillo

27-1 DOE acknowledges the commentor's opinion.

Commentor No. 28: Henry Sokolski, Executive Director
The Nonproliferation Policy Education Center

From: Henry D Sokolski
Sent: Wednesday, August 29, 2012 10:35 AM
To: spdsupplementaleis@saic.com
Subject: The Department of Energy's Surplus Plutonium Disposition Supplemental **Environmental** Impact Statement
Attachments: DOE comment on Pu Disposition from NPEC August 29, '12.docx

Dear Ms. McAlhany,

Please find attached the comment of my organization, The Nonproliferation Policy Education Center on The Department of Energy's Surplus Plutonium Disposition Supplemental Environmental Impact Statement and the policy choices the Department derives from that document. Thank you in advance for putting on file as a formal submission to the department.

Sincerely,

Henry Sokolski
Executive Director

The Nonproliferation Policy Education Center
601 North Kent St., Suite 802
Arlington, VA 22209

Response side of this page intentionally left blank.

Commentor No. 28 (cont'd): Henry Sokolski, Executive Director The Nonproliferation Policy Education Center

Sachiko McAlhany, NEPA Document Manager
SPD Supplemental EIS
U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324
Toll-Free Fax: 1-877-865-0277
Email: spdsupplementaleis@saic.com
http://nnsa.energy.gov/nepa/spdsupplementaleis

This is the comment of the Nonproliferation Policy Education Center (NPEC) on DOE's Surplus Plutonium Disposition Supplemental Environmental Impact Statement and the policy choices the Department derives from that document. For reasons explained below NPEC opposes DOE's preferred option of fabricating surplus plutonium into fuel and recycling it in power reactors.

DOE represents its "surplus" plutonium disposition program as designed to reduce the threat of nuclear weapons proliferation from existing weapons-usable plutonium. The technical goal of the program is to convert this material into "proliferation resistant forms that can never again be readily used in nuclear weapons." Naturally, this has to be done in an environmentally acceptable manner.

The current Supplemental EIS deals with a proposed addition of about 13 tons of plutonium to DOE's existing Surplus Plutonium Disposition program, under which DOE decided to "dispose" of 34 tons of plutonium by turning it into power reactor fuel. This was extremely expensive as it involves building a multi-billion dollar plutonium fuel fabrication facility. This option also lends support for advocates of plutonium recycle in South Korea, Iran, India, Japan, Russia, China, and North Korea, which defeats DOE's putative objective of promoting nonproliferation. In its existing program DOE chose to

28-1

28-1 As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) evaluated numerous alternatives for disposition of surplus plutonium, including immobilization. DOE selected an approach for disposition of some of the plutonium declared surplus (68 FR 20134). As discussed in Section 2.2, Topic A, of this CRD, DOE's prior disposition decisions are not addressed in this *SPD Supplemental EIS,* but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium.

Commentor No. 28 (cont'd): Henry Sokolski, Executive Director The Nonproliferation Policy Education Center

sideline the cheaper and more effective option of immobilizing the plutonium by mixing it with fission products in melted glass to form cylinders for true disposal. NPEC believes that not embracing this option was an extremely unwise decision. *28-1 cont'd*

It is a choice, however, that reveals the Department's strong long-standing attachment to recycling of plutonium, whether or not it makes economic sense (it does not) and in disregard of the implications for proliferation. Only a few years ago DOE supported a crash program commercial reprocessing and plutonium recycle under the so-called Global Nuclear Energy Partnership, also with a nonproliferation rationale. This labeling should not mislead the public. It is done to gain public and Congressional support for the first steps in plutonium recycle—commercial fuel fabrication—that if clearly labeled would be unacceptable.

One should note that DOE is proceeding with its fuel fabrication program without a definite customer for the plutonium fuel. TVA has shown interest but has not made a commitment. Use of plutonium fuel on a large scale alters the control characteristics of a reactor and is no simple matter. Whatever happens, however, the project will have provided justification for a substantial plutonium fuel activity at DOE and its laboratories. This is nuclear bureaucratic decision making at its worst. *28-2*

DOE has indicated it would not, as a result of the current public comment process on the Supplemental EIS, reconsider decisions made in the existing program. But one has to know the background to understand DOE's bias toward plutonium recycle. *28-3*

In the supplemental program for the additional 13 tons—covered by the Supplemental EIS—DOE faces the same options: (extremely expensive) fabrication into fuel and recycling in power reactors or immobilization in glass mixed it with radioactive

28-2 Disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts as required by NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors, including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2). This *SPD Supplemental EIS* also provides specific analysis of five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Section I.1).

28-3 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor grade to weapons grade. There are differences in nuclear reactor core physics between MOX and LEU fuel cores, but these differences are understood and can be addressed using measures such as modifications to reactivity control systems and core fuel management procedures. Before any MOX fuel is used in the United States, NRC would perform a comprehensive safety review, which would include information prepared by TVA or other reactor operators, as part of the 10 CFR Part 50 license amendment process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

Commentor No. 28 (cont'd): Henry Sokolski, Executive Director The Nonproliferation Policy Education Center

fission products to make the plutonium essentially unrecoverable. Not surprisingly DOE's preferred alternative is again is to fabricate the additional material into fuel and use it in TVA's reactors. As mentioned, TVA has yet to agree. *28-4*

NPEC's recommendation is that the current mixed oxide power reactor plutonium disposition effort be brought to a halt. Its price is excessive and growing and it is unhelpful from the point of view of nonproliferation. It makes more sense and would be far cheaper to keep the material in guarded storage until such time as we can dispose of it in a way, such as immobilization, that truly promotes nonproliferation. *28-5*

28-4 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In the *Draft SPD Supplemental EIS*, the MOX Fuel Alternative was DOE's Preferred Alternative for surplus plutonium disposition. DOE's preferred option for disposition of surplus non-pit plutonium that is not suitable for MOX fuel fabrication was disposal at WIPP. DOE's preferred option for pit disassembly and conversion of surplus plutonium metal, regardless of its origins, was to use some combination of facilities at TA-55 at LANL and K-Area, H-Canyon/HB-Line, and MFFF at SRS, rather than to construct a new stand-alone facility.

In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose.

28-5 DOE acknowledges the commentor's opinion.

For further discussion, refer to Section 2.1, Topic B, of this CRD. Also see the response to comment 28-1 regarding alternatives and U.S. nonproliferation policy.

Commentor No. 29: Russell Hardy

From: Russell Hardy
Sent: Wednesday, August 29, 2012 11:45 AM
To: spdsupplementaleis@saic.com
Subject: Public comment for SPD SEIS

As a third generation New Mexican and as a resident of Carlsbad, New Mexico, I fully support the DOE's preferred alternative listed in the SPD SEIS including: 1) the conversion of pit-based and non-pit-based plutonium into MOX fuel; 2) permanent disposal of non-convertible, non-pit-based plutonium at the WIPP site; and 3) use of existing facilities at LANL and SRS for the disassembly and conversion of plutonium pits into MOX fuel. *29-1*

Thank you,

Russell Hardy

29-1 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

Commentor No. 30: Dr. David L. Clark

2 minutes – Los Alamos

Surplus Plutonium Disposition EIS
Dr. David L. Clark, August 21, 2012

My name is David Clark and I'm a Los Alamos Laboratory Fellow. I've devoted my career to developing knowledge and expertise on the science and technology of plutonium.

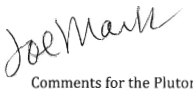
As a scientific leader in this field, I remind everyone that there is well over 2000 metric tons of plutonium throughout the world in various forms. Regardless of your views on how this situation came to be, it is clear that these large inventories must be prudently managed for many centuries. To succeed, we will have to stabilize, store, and/or destroy excess plutonium. I submit that converting 7 metric tons of plutonium from nuclear weapon pits into plutonium oxide is an essential first step in the disposition plan. The NNSA is looking for existing facilities that can do this work. In fact, Los Alamos scientists developed and demonstrated the seminal technology concepts for pit disassembly and conversion that would be used in any facility under consideration. Los Alamos is therefore ideally suited for that mission, and we are currently disassembling pits with this technology today. Los Alamos already has a workforce with the appropriate depth and skill to support that part of the Supplemental EIS, and I support bringing that important mission to Los Alamos.

The second part of the Supplemental EIS explores disposal of plutonium once extracted from pits. The options include vitrification and storage at DWPF, burial at the WIPP, or burning as MOX fuel in a reactor. Storing plutonium in canisters or underground will not reduce the global inventories of plutonium. The only one of these options that will destroy plutonium forever is to burn it in a nuclear reactor. Therefore I support conversion to MOX fuel as the preferred disposition option for our country.

Thank you for the opportunity to participate in this public hearing

30-1	**30-1**	DOE acknowledges the commentor's opinion.

Commentor No. 31: Joe Martz



Comments for the Plutonium Disposition Hearing, Santa Fe, August 23, 2012

Good evening. My name is Joe Martz. I am a plutonium scientist at Los Alamos speaking tonight as a private citizen. I have spent a portion of my career engaged with the technical challenges of nuclear weapon dismantlement, specifically pits. I was a founder of the ARIES technology from which this plutonium disposition plan is based. The science of pit dismantlement is non-trivial, and the techniques we developed were recognized in 1995 with a R&D 100 award, the Oscars of Technology. Ours was the first pure-nuclear weapons technology ever presented with such an award, a recognition of the technical creativity employed in overcoming significant challenges in the recovery of plutonium from pits.

I support the preferred alternative proposed here. A portion of the work under the preferred alternative will be conducted at Los Alamos, much of it by my colleagues. These men and women are exceptional and have devoted decades to ensuring the safe and environmentally responsible dismantlement of pits. Given these technical challenges, it is essential that such expertise by available for this program. Los Alamos uniquely possesses this expertise along with the facility and capability to ensure the safe recovery of plutonium from pits.

I also support the recommendation that excess plutonium be used in the production of mixed uranium/plutonium oxide fuels – known as MOX - for use in nuclear power production. I note that this is the only alternative among those proposed which truly destroys the plutonium, rendering it unusable for weapons. Given the challenges of nonproliferation, the example set by the United States in irreversibly destroying plutonium by burning it in reactors is an important symbol and message to the rest of the world of our commitment to nuclear disarmament.

Finally, I would like to correct a common misconception related to the preferred alternative. Plutonium exists in every single nuclear reactor in the world. It builds up naturally as a result of nuclear burn-up. In fact, roughly half of the power generated in a light-water reactor derives from the fission of plutonium. Another way of saying this, is to note that 10% of all electricity in the US comes from burning plutonium: 1 in 10 light bulbs in this very room is lit by plutonium. Those that suggest that MOX fuel is unsafe because of the plutonium in a reactor simply misunderstand the basic physics of reactor operation. The plutonium from MOX poses no additional risk within a reactor compared to ordinary nuclear fuel.

Thank you providing this opportunity to comment on a critical proposal of relevance to all of us here in New Mexico.

31-1

31-1 DOE acknowledges the commentor's opinion.

Commentor No. 32: Thomas Jaggers

My name is Thomas Jaggers. I have lived in Santa Fe for 9 years and I have two young children, ages 8 and 10.

Whilst I support the move to disassemble plutonium pits and anything else that leads to nuclear disarmament, the DOE's plan to convert those plutonium pits into MOX fuel at LANL is deeply flawed.

The LAHDRA report clearly showed how incapable LANL has been of preventing widespread radioactive contamination of the surrounding environment. And the DOE's own proposal states how ill-equipped LANL is to handle waste. In addition to this, as we know all too well, facilities at LANL are risk of both fire and earthquake, and are not constructed well enough to withstand those threats. *32-1*

So, bringing another 7 metric tons of weapons grade plutonium to LANL for further processing does not inspire me with confidence for the health of myself, my children, the neighboring communities, or our environment. *32-2*

Furthermore, the intent of the plan is to convert that plutonium into MOX fuel, which then has to be used in nuclear power plants in order to be irradiated. That is just kicking the can down the road. It commits the US to years more of nuclear energy, which in light of the Fukushima disaster, we can all see is absolute folly. It threatens worker health, because as the DOE's proposal states, "MOX fuel presents a slightly higher risk of higher doses to workers." And thirdly, it begs the question of what is to be done with the spent fuel when it is spent, and where will that take place? Are then other communities to be placed at risk of further radioactive contamination for thousands of years to come? *32-3*

Based on those facts this plan is both foolhardy and frankly immoral.

Rather than proceed with this plan, the DOE needs to present the nation with plans to rid ourselves of all nuclear weapons and all nuclear power plants as soon as possible, and to look after and steward all radioactive waste in a completely safe manner for as long as it takes. That would be something I would be happy to see my tax dollars spent on. *32-4*

32-1 Chapter 3, Section 3.2.6.3, of this *SPD Supplemental EIS* lists the health effects studies performed in the region around LANL, including the Los Alamos Historical Document Retrieval and Assessment (LAHDRA) project. As indicated in the LAHDRA final report (CDC 2010), "The LAHDRA project's primary purpose was to identify all available information concerning past releases of radionuclides and chemicals from the Los Alamos National Laboratory," (the vast majority of the releases occurred between the 1940s and the 1970s). This *SPD Supplemental EIS* analyzes the potential environmental impacts from operation of facilities at LANL that employ current technologies and practices that minimize the releases of radioactive materials and hazardous chemicals to the environment to protect workers, the public, and the environment, as evidenced by the reporting in LANL's Annual Site Environmental Reports and National Emissions Standards for Hazardous Air Pollutants (NESHAPs) reports. As shown in Chapter 4 of this *SPD Supplemental EIS,* the potential environmental releases associated with the normal operation of proposed surplus plutonium disposition activities at LANL are very small and pose minimal risk to the public.

This *SPD Supplemental EIS* evaluates the waste management impacts of the alternatives and includes the cumulative impacts on each site; the analyses do not indicate that LANL would have any problems managing the waste associated with any of the alternatives. For example, refer to Chapter 4, Section 4.5.3.6.2, Table 4–46, for the total cumulative waste generation at LANL, including the incremental impacts of each of the proposed alternatives.

DOE is aware of the potential for earthquakes and wildfires in the Los Alamos region. Recognizing the risks posed by wildfires, forests at LANL are thinned as part of an ongoing Wildfire Hazard Reduction Program to reduce the fuel load available in the event of a fire. As exemplified in 2000, post-event soil erosion and sediment control measures are implemented to minimize the on- and offsite environmental impact potentials of wildfires (see Chapter 3, Section 3.2.2.2). The risks and potential impacts of a wildfire on the entire LANL site were evaluated in the 2008 *LANL SWEIS*, Appendix D (DOE 2008). PF-4 at TA-55 was not included as a facility that presents a substantial risk due to wildfires because it is constructed of noncombustible materials and is surrounded by a buffer area in which combustible materials, including vegetation, are kept to a minimum. This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9). The chances of a severe earthquake accident are

Commentor No. 32 (cont'd): Thomas Jaggers

extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

32-2 The alternatives evaluated in this *SPD Supplemental EIS* include bringing up to 35 metric tons (38.6 tons) of plutonium pits to LANL for disassembly and conversion and then transporting the plutonium product to SRS for disposition. For further discussion, refer to Section 2.3, Topics A and B, of this CRD.

Environmental impacts are expected to be minor, and there would be little offsite impact on the public from normal operations of surplus plutonium disposition facilities. Operation of surplus plutonium disposition facilities would contribute little to cumulative effects, including health effects among the offsite population. For further discussion, refer to Section 2.2, Topic A, of this CRD.

32-3 An examination of U.S. nuclear energy policies is outside the scope of this *SPD Supplemental EIS*. With respect to disposition of material, this *SPD Supplemental EIS* analyzes four action alternatives for dispositioning 13.1 metric tons (14.4 tons) of surplus plutonium, as described in Chapter 2, Section 2.3, Alternatives. Analyses presented in this *SPD Supplemental EIS* show that impacts in the vicinity of the potentially affected sites would be minor as a result of any of the proposed alternatives. For further discussion, refer to Section 2.2, Topic A, of this CRD. As the analysis in this *SPD Supplemental EIS* shows, as described in Chapter 2, Section 2.6.1, using MOX fuel is not substantially more dangerous to workers or the public. At the time of publication of this *Final SPD Supplemental EIS,* DOE does not have a disposition path assigned to the 13.1 metric tons (14.4 tons) of surplus plutonium. Based on this *SPD Supplemental EIS* and consistent with the requirements of NEPA, DOE may make a decision in a ROD to be issued no sooner than 30 days after its announcement of a Preferred Alternative in the *Federal Register*.

The use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would displace LEU fuel that otherwise would have been used to power the nuclear power reactor. Use of MOX fuel could increase used nuclear fuel generation by 8 to 10 percent for TVA's Browns Ferry and Sequoyah Nuclear Plants, and from 2 to 16 percent for generic reactors during the period MOX fuel could be used at a reactor. DOE expects that increases of this magnitude would be managed within the reactor's normal planning for storage of its used fuel. DOE is evaluating various options for the long term storage of used fuel; however, there would be no substantial increase in risk to the public if used MOX fuel were managed instead of used LEU fuel.

Commentor No. 32 (cont'd): Thomas Jaggers

Examining the construction and operation of a geologic repository for used nuclear fuel and HLW is not within the scope of this *SPD Supplemental EIS*. DOE has terminated the program for a geologic repository for used nuclear fuel and HLW at Yucca Mountain, Nevada. Notwithstanding the decision to terminate the Yucca Mountain program, DOE remains committed to meeting its obligations to manage and ultimately dispose of used nuclear fuel and HLW. For further discussion, refer to Section 2.7, Topic A, of this CRD.

The analysis in this *SPD Supplemental EIS* also demonstrates that the use of a partial MOX fuel core in a commercial nuclear power reactor is not meaningfully different than irradiation of a full LEU fuel core. There is no substantial increased risk to the public or workers from using MOX fuel versus LEU fuel. The only occasion when a small increase in worker dose could potentially occur would be during acceptance inspections at the reactor(s) when the fuel assemblies are first delivered. Workers would be required to inspect the assemblies to ensure there are no apparent problems. As stated in the Chapter 2, Section 2.6.1, discussion of human health impacts on workers in this *SPD Supplemental EIS*, TVA has indicated that any potential increases in worker dose would be minimized through the continued aggressive implementation of existing radiation protection programs, including the use of additional shielding and remote handling equipment, if necessary.

32-4 The United States' nuclear weapons and energy policies are not within the scope of this *SPD Supplemental EIS*.

Commentor No. 33: Donald Silversmith

Surplus Plutonium Disposition
Supplemental Environmental Impact Statement
(SPD Supplemental EIS)

Comment Form

Date: 9/25/2012

Name Donald Silversmith

Organization

Address [redacted]

City, State, Zip Code [redacted]

E-mail [redacted]

Your comments on the Draft SPD Supplemental EIS

(1) Rather than expanding Pt pit disassembly and processing capability at LANL, why not consider out-sourcing of this effort to French and/or Russian facilities?

(2) Since pit disassembly and processing activity expansion at LANL parallels programs at SRS, why not plan to have SRS do the "whole thing" at their facilities, leaving the LANL at no more than the current level of effort? Wouldn't be more efficient and practical to do all the MOX work exclusively at SRS?

PLEASE RETURN THIS FORM TO THE REGISTRATION DESK OR SUBMIT BY SEPTEMBER 25, 2012 TO:
U.S. Mail: Sachiko McAlhany, NEPA Document Manager, U.S. Department of Energy, P.O. Box 2324, Germantown, MD 20874-2324
Toll-Free Fax: 1-877-865-0277
E-mail: **spdsupplementaleis@saic.com**

33-1 **33-1** Sending pits or surplus plutonium to France, Russia, or any foreign country for processing is not a reasonable alternative for a number of reasons, including nonproliferation and security concerns. Specifically, outsourcing pit disassembly and conversion to foreign countries would violate the U.S. nonproliferation policy.

33-2 **33-2** As stated in Chapter 2, Section 2.5 of this *Final SPD Supplemental EIS*, DOE is not prepared to make a decision in the near term regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). The analysis in this *SPD Supplemental EIS* does include options for conducting most surplus plutonium disposition activities at SRS. For further discussion, refer to Section 2.3, Topic A, of this CRD.

Commentor No. 34: Drew Kornreich

Drew Kornreich

I am an employee of Los Alamos National Laboratory. My statements, comments, or opinions are my own and should not be construed to be those of Los Alamos National Laboratory, LANS, LLC, the NNSA, or DOE.

I fully support both the specific mission for Los Alamos to disassemble pits and send the plutonium to Savannah River and the overall mission to dispose of the plutonium via irradiation in commercial nuclear reactors. The excess plutonium has served its purpose in protecting America during the Cold War, and it is only fitting that it now be used to continue supporting American domestic interests via power generation in mixed-oxide fuel.

Regarding the concerns for certifying MOX fuel, we should all recognize that in a typical light-water reactor, approximately one-third of the power generated at the end of core life is from plutonium-based fissions. The US commercial fleet of reactors is constantly converting low-enriched uranium fuel to a form of MOX fuel. Reactors in Europe continue to safely use MOX fuel and the US should not be afraid to use this technology either.

Based on an approximate calculation with the Origen code, a boiling-water reactor fueled with a MOX core will remove about half of the initial inventory of "fissile" isotopes and will eliminate a net of about one-third of the overall inventory of plutonium at the end of three cycles. Thus, burning weapons-grade plutonium in commercial reactors not only converts the weapons-grade plutonium to reactor-grade plutonium, thereby making it unusable in weapons, but also eliminates part of the plutonium inventory. Assuming this one-third plutonium reduction, at the end of the current Surplus Plutonium Disposition Program, the US will have converted 34 metric tons of weapons-grade plutonium into 23 metric tons of reactor-grade plutonium, with the remaining mass being either fission products that protect the residual plutonium from diversion, and energy, which will have provided electrical power to millions of Americans.

The only thing that could make this program even more attractive to me would be for the SPD program to work with the Office of Nuclear Energy to either restart fast-reactor development to further burn reactor-grade plutonium or to work toward closing the fuel cycle via construction of a facility that could reprocess commercial nuclear fuel and feed the MOX plant with reactor-grade plutonium, further increasing the value of the investment in the MOX facility. and continuing to provide carbon-free energy for the indefinite future.

34-1 **34-1** DOE and TVA acknowledge the commentor's opinion.

34-2 **34-2** Recycling (reprocessing) of used nuclear fuel is not within the scope of this *SPD Supplemental EIS*, which evaluates the use of MOX fuel in PWRs and BWRs. There are currently no plans to fabricate fuel for fast reactors. Use of MOX fuel in other types of nuclear reactors would require the preparation of additional NEPA documentation.

Commentor No. 35: John Chamberlin

From: John Chamberlin
Sent: Tuesday, September 18, 2012 11:17 AM
To: spdsupplementaleis@saic.com
Subject: agree

I agree with DOE's preferred option. *35-1*

35-1 DOE acknowledges the commentor's opinion.

Commentor No. 36: Stu McKernan

From: Stu McKernan
Sent: Tuesday, September 18, 2012 5:48 PM
To: spdsupplementaleis@saic.com
Subject: DEO's Preferred option

I agree with DOE's preferred option. It makes more sense to use existing facilities than to spend a huge amount of taxpayer dollars on a limited lifetime facility. *36-1*

Stu McKernan

36-1 DOE acknowledges the commentor's opinion.

Commentor No. 37: Dr. David L. Clark

Statement on Surplus Plutonium Disposition EIS
Dr. David L. Clark, September 18, 2012

My name is David Clark and I'm a senior scientist at Los Alamos National Laboratory. I've come tonight as a citizen and a scientific expert on matters related to plutonium to say that I support the preferred alternative for disposition.

I remind everyone that there is well over 2000 metric tons of plutonium throughout the world in various forms. Regardless of your views on how this situation came to be, it is clear that these large inventories must be prudently managed for many centuries, and we must secure it against theft and diversion. The US and Russia have agreed to dispose of 68 metric tons of weapons usable plutonium as an essential step in reducing the global nuclear danger.

Better still, the NNSA proposes to convert 7 metric tons of plutonium currently in weapons into plutonium oxide and MOX fuel as part of this plan.

The NNSA is looking for existing facilities that can do this work, and all of the facilities described are capable of performing portions of this mission. In fact, Los Alamos scientists developed and demonstrated the seminal science and technology concepts for pit disassembly and conversion that will be used in any facility under consideration. This is not a new activity for Los Alamos, as we are currently disassembling pits and converting them to oxide with this science and technology today. Los Alamos already has a workforce with the appropriate depth and skill to support this effort, and I therefore support Los Alamos continuing that portion of this important plutonium disposition mission.

The second part of the Supplemental EIS explores disposal of plutonium once extracted from pits. The options include vitrification and storage at DWPF, burial at the WIPP, or burning as MOX fuel in a reactor. Storing plutonium glass or ceramic in canisters or underground will not reduce the global inventories of plutonium. The only one of these options that will destroy plutonium (through fission burning), or make it unsuitable for weapons (by changing the isotopic mix) is to burn it in a nuclear reactor. MOX is a proven fuel that has been used for over 30 years around the world that gives a 60% reduction in plutonium inventories after 2 irradiation cycles. I support reducing the global plutonium inventories, and therefore I support conversion to MOX fuel as the preferred disposition option for our country.

Thank you for the opportunity to comment on reducing plutonium inventories.

37-1

37-1 DOE acknowledges the commentor's opinion.

Commentor No. 38: Anonymous

Surplus Plutonium Disposition
Supplemental Environmental Impact Statement
(SPD Supplemental EIS)

NNSA National Nuclear Security Administration

Comment Form

Date: _____

Name _____

Organization _____

Address _____

City, State, Zip Code _____

E-mail _____

Your comments on the Draft SPD Supplemental EIS

SORRY THAT THE SPEAKER DOESN'T UNDERSTAND HER TOPIC WELL ENOUGH TO EXPLAIN IT.

PLEASE RETURN THIS FORM TO THE REGISTRATION DESK OR SUBMIT BY SEPTEMBER 25, 2012 TO:
U.S. Mail: Sachiko McAlhany, NEPA Document Manager, U.S. Department of Energy, P.O. Box 2324, Germantown, MD 20874-2324
Toll-Free Fax: 1-877-865-0277
E-mail: **spdsupplementaleis@saic.com**

38-1

38-1 DOE acknowledges the commentor's opinion.

Commentor No. 39: Anonymous

Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SPD Supplemental EIS)

Comment Form

Date: _____

Name _____

Organization _____

Address What I had to say

City, State, Zip Code Is already been said

E-mail _____

Your comments on the Draft SPD Supplemental EIS

clean up waste & already scheduled
for cleanup.
Not bring more in
to an Unstable location

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Toll-Free Fax: 1-877-865-0277
E-mail: **spdsupplementaleis@saic.com**

39-1

39-1 As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topics A and C, of this CRD.

Commentor No. 40: David Bingham

From: david_bingham
Sent: Thursday, October 11, 2012 8:46 AM
To: spdsupplementaleis@saic.com
Subject: Agree with the U.S. Department of Energy (DOE)

I agree with the U.S. Department of Energy (DOE) plan to make mixed oxide fuel from 34 metric tons of surplus U.S. weapon grade plutonium and 7.1 metric tons (MT) of additional weapons-usable plutonium. *40-1*

David Bingham

40-1 DOE acknowledges the commentor's opinion.

Commentor No. 41: Susan Gordon, Director Alliance for Nuclear Accountability

August 23 Public Meeting, Santa Fe, New Mexico
Draft Supplemental Environmental Impact Statement
on Surplus Plutonium Disposition

Submitted by Susan Gordon, Director
Alliance for Nuclear Accountability

Good evening, my name is Susan Gordon and I'm the director of the Alliance for Nuclear Accountability (ANA), a network of 35 local, regional and national organizations representing the concerns of communities in the shadows of the US nuclear weapons sites. I live in Santa Fe.

I appreciate this opportunity to comment on the Department of Energy's (DOE) Draft Supplemental Environmental Impact Statement on plutonium disposition. I will submit these written comments for the record and ANA will submit more extensive comments by the end of the comment period on September 25, 2012.

New Approach Needed to Plutonium Disposition

The document we are discussing tonight is part of the problem in the challenge to deal with surplus weapons plutonium and not part of the solution. Almost five years in process, this document plows little new ground and only serves to reaffirm the misguided policy to fabricate plutonium into mixed oxide plutonium fuel (MOX). What is urgently needed is for DOE to start over and begin a new process to determine the best options to dispose of the surplus plutonium as nuclear waste. *41-1*

History of Plutonium Disposition

In 2000, the US entered into an agreement with Russia to eliminate surplus weapons grade plutonium. The US chose two parallel disposition strategies: one track to make experimental mixed oxide plutonium fuel for use in unspecified nuclear reactors; and a cheaper quicker, safer track to immobilize plutonium in high-level nuclear waste. DOE subsequently dropped the immobilization option in 2002 without a public process, and has gone on to spend billions building a MOX plant.

In 2003, DOE estimated that construction of the MOX plant would be finished in 2007 and cost $1.6 billion. Under the terms of the plutonium disposition agreement with Russia, both countries were to begin operating MOX facilities in 2007. *41-2*

Where are we now

The US has separated its plutonium disposition program from the Russian program. Russia never wanted a MOX plutonium fuel program unless they could reprocess their spent fuel. The US would not agree to allow reprocessing because that is how plutonium and uranium are removed from spent fuel rods, meaning that it could then be turned back into nuclear weapons if desired, which defeats the goal of putting the plutonium into a form where it can not be used in nuclear weapons in the future. At the point it became clear that Russia's disposition program had turned into an effort to build new breeder reactors that can produce weapons grade plutonium,

41-1 As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS,* but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium.

41-2 The *Agreement Between the Government of the United States of America and the Government of the Russian Federation Concerning the Management and Disposition of Plutonium Designated As No Longer Required for Defense Purposes and Related Cooperation* (Plutonium Management and Disposition Agreement [PMDA]) (USA and Russia 2000) entered into force in 2011. Under the PMDA, the United States and the Russian Federation agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. Russia plans to irradiate its MOX fuel in fast reactors (BN-600 and BN-800) under certain nonproliferation conditions. To that end, Russia has successfully irradiated 21 prototypic MOX fuel LTAs in its BN-600 fast reactor; completed over 50 percent construction of the BN-800 fast reactor; completed formal siting of its MOX fuel fabrication facility; established an integrating contracting office for implementation of PMDA activities; and actively participated with the United States and the International Atomic Energy Agency (IAEA) in negotiating a verification agreement that will enable IAEA to independently verify that the objectives of the PMDA are met. More information on the PMDA is located on the U.S. State Department website at www.state.gov/r/pa/prs/ps/2010/04/140097.htm. The use of MOX fuel in nuclear power reactors is consistent with U.S. nonproliferation policy and international nonproliferation agreements. Use of MOX fuel in commercial nuclear power reactors would render surplus plutonium into a used fuel form that is not readily usable for nuclear weapons.

Commentor No. 41 (cont'd): Susan Gordon, Director Alliance for Nuclear Accountability

the US should have abandoned its MOX program and moved quickly forward with immobilization. *41-2 cont'd*

It is all about the money

And now we get to the numbers, as in tax-payer dollars spent on a failing program. The MOX plant construction has cost an estimated $3 billon with another $3 billion needed to complete construction. Remember, it was only supposed to cost $1.6 billion and start operating five years ago.

The FY 2013 budget request is for $388 million for construction costs of the MOX plant and $499 million for associated plutonium disposition costs.

The out-year projection through 2017 for the MOX program is approximately $900 million a year for an estimated total of $3.6 billion. ANA estimates $17.4 billion will be spent through the remaining life of the program. NNSA refuses to release their numbers. *41-3*

In the earlier presentation, it was suggested that DOE wanted to save money by not building the Pit Disassembly and Conversion Facility at SRS. The truth is that due to the MOX program costs soaring out of control, DOE had to reduce costs somehow, and they never proceeded with the PDCF plans. Congress has wisely pulled all funding from the construction project.

However, it is still going to cost lots more money to disposition the surplus plutonium using MOX and any of the alternatives in the SEIS. And DOE has not provided their estimated costs associated with the alternatives.

Where are the customers?

So, after DOE has spent all this money, the draft document only hints at the problems remaining. They include first and foremost, there is no reactor or customer identified to use MOX fuel. The document is unrealistic and inadequate concerning MOX testing and use. No MOX plant operational schedule is presented, no plan or schedule for MOX testing in TVA or "generic" reactors is presented and no schedule for full-scale use of MOX is presented. Therefore, no Record of Decision can be issued. *41-4*

Soaring MOX Costs Mean More Problems

As it appears that DOE could prepare 34 metric tons of plutonium for disposal as waste for a sum of only $3.4 billion – a figure based on costs estimates given to ANA of $100,000 per kilogram to prepare for disposal as waste – there simply is no choice on what option must now be pursued.

DOE must cancel the costly MOX program, prepare a new PEIS on disposition of plutonium as waste, and focus in the short term on safe, secure storage of plutonium now located at the Savannah River Site, Pantex Site and Los Alamos. A careful review of options to dispose of plutonium as an immobilized waste form will yield the best path forward, a path away from a proliferation-prone and risky attempt to commercialize the use of plutonium as a nuclear power fuel. *41-5*

41-3 Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

41-4 The disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts as required by NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in generic commercial nuclear power reactors, including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2). This *SPD Supplemental EIS* also provides specific analysis of five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Appendix I, Section I.1).

Before any MOX fuel is used in the United States, NRC would perform a comprehensive safety review, which would include information prepared by TVA or other reactor operators, as part of the 10 CFR Part 50 license amendment process. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. If MOX fuel LTAs were required, they would likely be fabricated at MFFF from feedstock supplied by the existing plutonium inventory. There is currently no schedule for LTA fabrication and testing. For further discussion, refer to Section 2.4, Topic A, of this CRD.

A detailed program schedule is not required to perform the environmental impacts analysis in this *SPD Supplemental EIS*. The actual production schedule for MFFF would depend on factors such as license conditions and the specific contracts received from customers to manufacture specific types of MOX fuel. As shown in Appendix B, Table B–2, MFFF is estimated to operate for 21 to 24 years, depending on the amount of surplus plutonium to be fabricated into MOX fuel.

41-5 See the response to comment 41-3 regarding costs. As stated in the response to comment 41-1, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS,* but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. The action alternatives evaluated for the 13.1 metric tons (14.4 tons) of surplus plutonium are the Immobilization to DWPF Alternative, MOX Fuel Alternative, H-Canyon/HB-Line to DWPF Alternative, and WIPP Alternative. For further discussion, refer to Section 2.1, Topic B, and Section 2.2, Topic A, of this CRD.

Commentor No. 42: Concerned Citizens for Nuclear Safety

Concerned Citizens for Nuclear Safety
107 Cienega Street
Santa Fe, New Mexico 87501
505.986.1973
www.nuclearactive.org

TO: U.S. Department of Energy and National Nuclear Security Administration (DOE/NNSA)
FROM: Concerned Citizens for Nuclear Safety (CCNS)
DATE: August 23, 2012
RE: Public Comments about the Draft Supplemental Environmental Impact Statement (draft SEIS) Surplus Plutonium Disposition

CCNS contends that the DOE/NNSA violated the National Environmental Policy Act (NEPA), as this process and the draft SEIS disclose that the agencies have dropped the dual path approach to surplus plutonium disposition by fiat, outside the public NEPA process. Neither the public nor federal and state agencies participated in an open and informed process concerning this significant decision that supports the entire draft SEIS for this project. The DOE/NNSA failure to go forward with construction and operation of the facilities to immobilize and treat as waste the surplus plutonium while going forward with the Shaw-Areva mixed-oxide plutonium (MOX) fuel production facility at the Savannah River further demonstrates a violation of the NEPA process by DOE/NNSA fiat and the commitment of major federal resources to MOX fuel fabrication as the preferred option at the expense of the immobilization-as-waste option for surplus plutonium. The DOE/NNSA made and carried out that decision despite the fact that the agencies knew or should have known that the immobilization and treatment as waste of the surplus plutonium can be accomplished more rapidly, at less cost, and with less environmental and occupational and public health and safety risks than utilization of the surplus plutonium as MOX fuel for domestic nuclear power reactors. Finally, there is no basis in the record of this process that supports the notion that the public and relevant state and federal agencies were informed that the Waste Isolation Pilot Project (WIPP) and the Los Alamos National Laboratory (LANL) were included in it. The prior record of this NEPA process did not disclose the DOE/NNSA intention to utilize these facilities in relation to surplus plutonium disposition.

For these reasons, CCNS contends that the entire draft SEIS is flawed and that a new Programmatic EIS must be redone in order to offer the public and relevant state and federal agencies real choices and meaningful and informed participation in this decision-making process. CCNS therefore also requests that the DOE/NNSA withdraw the current draft SEIS. It is essential for DOE/NNSA to reinitiate the Programmatic EIS process in order to reopen both options for public and state and federal agency review and examination prior to making a final decision in this matter.

CCNS is a 501(c)(3) nonprofit organization and your donation is tax deductible to the extent of the law.

42-1

42-1 DOE does not agree with the opinions of the commentor about DOE's compliance with NEPA and about the need for a new programmatic EIS on storage and disposition of surplus plutonium. This *SPD Supplemental EIS* was prepared in accordance with applicable CEQ and DOE NEPA regulations. As described in Appendix A, Section A.1.1, of this *SPD Supplemental EIS*, in the 2002 amended ROD (67 FR 19432), DOE amended the *Storage and Disposition PEIS* and *SPD EIS* RODs (62 FR 3014 and 65 FR 1608) and cancelled the immobilization portion of the disposition strategy. The 2010 amended Notice of Intent (NOI) (75 FR 41850) described the inclusion of a WIPP Alternative, and the 2012 amended NOI (77 FR 1920) described the inclusion of options for pit disassembly and conversion at LANL. The *Storage and Disposition PEIS* (DOE 1996), *SPD EIS* (DOE 1999), supporting supplement analyses, and decisions announced in the related RODs remain valid and, in accordance with CEQ and DOE NEPA regulations, do not need to be updated before this *SPD Supplemental EIS* can be issued. For further discussion, refer to Section 2.1, Topic A, of this CRD.

Commentor No. 42 (cont'd): Concerned Citizens for Nuclear Safety

CCNS incorporates herein by reference to the comments of the Natural Resources Defense Council, Southwest Research and Information Center, the Alliance for Nuclear Accountability, TEWA Women United, Honor Our Pueblo Existence, George WAND and Nuclear Watch New Mexico.

Response side of this page intentionally left blank.

Commentor No. 43: Beata Tsosie Peña

Tsosie

posejemu;
Un bi agin di, kudawohah Naa Thagi;
Tackiri bo, irisagi ami; hera iri agin ami
Heramho, Naa Ogah poo geh
Sedori eh, aujowhri eh
Nan achuu Quidjo, we are sorry, please forgive us.

43-1

*WIPP must be used for its original purpose, and facilitate the removal of legacy waste in accordance with the NM. Consent Order.
— Surplus Plutonium is not wanted here. Keep it where its made
Mox fuel has no place here, where reactors don't exist, and our lands are already contaminated beyond capacity.*

43-2

Expanded pit processing at PF-4 in Los Alamos and other proposals, must be addressed in a way that allows Indigenous peoples time to do our own analysis, in a space of elemental time and ancestral wisdom.
The risk and harm to our Indigenous human rights as stated in the Declaration of the Rights of Indig. Peoples needs to be addressed.
Too often, industries that no one else would allow in their local environment are proposed as being appropriate adjacent to Native communities or people of color.
This has to stop.
Articles 7, 11, 29 sections (1-3), 30, 31, need to be honored as stated in this Declaration, of which the US is party to.
The expansion of LANL in any form is a continuation of the culture of violence that has impacted our physical, mental, and spiritual well-being.
The quality of Pueblo and private land in impacted communities has been diminished, and our continued existence is threatened when choices are made, that place populations adjacent to nuclear weapons production, disposal, research, storage and transportation.

43-3

Community meetings need to be held in each Pueblo and connecting river communities in partnership with tribal governments, yet also ~~independent of~~ on non-tribal lands, with land grant heirs, and acequia parciantes.

43-1 As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

43-2 The United States supports the United Nations Declaration on the Rights of Indigenous People (Declaration), which, while not legally binding or a statement of current international law, has both moral and political force. It expresses both the aspirations of indigenous peoples around the world and those of nations seeking to improve their relations with indigenous peoples. Most importantly, it expresses aspirations of the United States that this country seeks to achieve within the structure of the U.S. Constitution, Federal laws, and international obligations while also seeking, where appropriate, to improve current laws and Government policies. To this end, Federal agencies continue to be informed by the Declaration as they implement policies and develop new initiatives together with tribal leaders.

Chapter 3, Section 3.2.11, of this *SPD Supplemental EIS* describes minority and low-income populations near LANL. Chapter 4, Section 4.1.6, analyzes the environmental justice impacts of the options for pit disassembly and conversion at LANL and concludes that Native Americans and other minority or low-income populations living near LANL would not be exposed to elevated risks compared to nonminority populations living in the same area from the proposed activities, and the risks associated with these activities are small. For further discussion, refer to Section 2.6, Topic A, of this CRD.

This *SPD Supplemental EIS* includes an analysis for a special pathways receptor that was developed for the 2008 *LANL SWEIS* (DOE 2008) using the best information available to DOE to reflect exposures that could result from traditional living habits, including subsistence consumption of native vegetation (pinyon nuts and Indian Tea [Cota]), locally grown produce and farm products, groundwater, surface water, fish (game and nongame), game animals, other foodstuffs, and incidental consumption of soils and sediments (on produce, in surface water, and ingestion of inhaled dust);

Commentor No. 43 (cont'd): Beata Tsosie Peña

43-4
There are no nuclear power plants in NM. Given the high risks and expense of transporting surplus Plutonium back to LANL, it does not make sense that this is our issue when there are greater clean-up priorities and seismic concerns.

43-5
I am strongly opposed to any activities that would increase expansion of LANL facilities, and would only contribute to the extensive harm already enacted upon our sacred Jemez Plateau and families by LANL legacy waste contamination and current ~~facilities~~ activities.
~~Our communities deserve and are~~
Operations to disassemble PITS should happen where they are currently located and stored! I am against unnecessary transportation and re-location of radioactive materials. These materials are not wanted ~~[illegible]~~ in our backyards where they will only contribute to the negative cumulative impacts on our Peoples.
I condemn the ~~[illegible]~~ possibility of testing and using MOX in ice condenser pressurized water reactors, ~~located near Athens, Alabama, west of Chattanooga, Tennessee~~
we must respect and honor water, or water will go away.
There is still reason for life to continue with other healing options. As with any influences of control gone beyond the comprehension of man. who MANipulated the system, ~~[illegible]~~ There is no shame in admitting, ~~[illegible]~~ the MOX program was mismanaged and a mistake from the start.

43-6
I request additional hearings in Espanola and with eight Northern Pueblos, and an extension for public comment on this issue, and for creative dialogue and solutions amongst those most impacted, inclusive of our unique culturally comprehensive expertise. The Indigenous Peoples of this land are "experts" at being stewards and caretakers of our homelands, and need to be given this equality, ~~with~~

absorption of contaminants in sediments through the skin; and inhalation of plant materials. These pathways are in addition to the meat, milk, produce, water, and sediment consumption reflected in the "offsite resident" pathway assumption. The analysis concludes that persons living near LANL who practice traditional living habits would receive a higher dose than the rest of the populations living in the same area, but the risks associated with the exposures from LANL would be small (see Chapter 4, Section 4.5.3.8.2).

43-3 DOE continues its long-standing practice of engaging area tribal authorities through several mechanisms, including specific accords with four Pueblo governments (Cochiti, San Ildefonso, Jemez, and Santa Clara) whose lands are adjacent to or near LANL. DOE invited Native American tribes, as well as representatives of other Federal agencies, state governments, and the public, to provide comments at seven public hearings held in Alabama, New Mexico, South Carolina, and Tennessee. During the public comment period, DOE briefed the four Pueblo governments on the *Draft SPD Supplemental EIS*. DOE also maintains a working relationship with member tribes of the Eight Northern Indian Pueblos Council, the All Indian Pueblo Council, and others as relevant to the programs and activities at LANL. For further discussion, refer to Section 2.6, Topic A, of this CRD.

43-4 The alternatives analyzed in this *SPD Supplemental EIS* were developed recognizing that plutonium materials are currently stored at multiple DOE sites and individual sites have their own specific capabilities with respect to pit disassembly and conversion and plutonium disposition. LANL is included because of its unique capabilities with respect to pit disassembly and plutonium processing.

Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

Commentor No. 43 (cont'd): Beata Tsosie Peña

Transportation risks are analyzed for all alternatives proposed in this *SPD Supplemental EIS*, including the threat of theft and diversion of radioactive materials. Chapter 4, Section 4.15, presents projected impacts from transportation of nuclear materials and waste; additional information is provided in Appendix E. Under all alternatives, no LCFs are expected among the general public or transport crews due to incident-free transport of nuclear material and waste, and the risk of an LCF due to the accidental release of the radioactive cargo would be no more than about 1 chance in 10,000 for the duration of any alternative.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

43-5 As discussed in Chapter 1, Section 1.7, of this *SPD Supplemental EIS*, pits are currently stored at the Pantex Plant. In the *SPD EIS* (DOE 1999), DOE analyzed and dismissed locating pit disassembly and conversion activities at the Pantex Plant (see 65 FR 1608) because it possesses neither the experience nor the infrastructure needed to support plutonium processing. DOE is reconsidering options for pit disassembly and conversion capabilities only at locations with existing plutonium processing capabilities (i.e., LANL and SRS). This *SPD Supplemental EIS* does consider the environmental impacts of the alternatives that DOE has identified as reasonable for carrying out pit disassembly and conversion. Specifically, the discussion in Chapter 4, Section 4.1.2, and the summary in Chapter 2, Section 2.6, Table 2–3, set out the basis for DOE conclusions that risks to the public are expected to be minor from normal operations, potential accidents, and transportation under any proposed alternative.

43-6 In response to requests for extension of the public comment period and additional public hearings, DOE extended the end of the comment period from September 25 to October 10, 2012, and added a public hearing in Española, New Mexico on September 18, 2012.

Commentor No. 44: Anonymous

3 MINUTES 15 YRS TO SPEAK

YES, RUSSIA & U.S. AGREED TO DISPOSE OF 34 MT OF PU. THAT'S A GOOD THING,
BUT METHOD OF DISPOSAL TO BE CHOSEN
NOT REVISIT MOX DECISION 34 MT

- 1999 BOB DE GRASSE – RUSSIANS
- 2000 MOSCOW RUSSIAN NRC – AMERICANS
- MOX IS HOUSE OF CARDS BUILT ON CIRCULAR REASONING, A NUCLEAR BOONDOGGLE.
- IT IS IN FACT A PROLIFERATING PROGRAM, INSTEAD OF A NONPROLIFERATION PROGRAM
  - INTRODUCES PU TO GLOBAL COMMERCIAL MARKET
  - THREATENS OUR PRIMARY NATL. SECURITY OBJECTIVE OF LESSENING THE THREAT THAT EMANATES FROM RUSSIAN PU BECAUSE THEY PLAN TO USE MOX IN A BREEDER REACTOR 44-1
  - FINALLY, MOX CONSUMES ~40% OF NNSA'S NON PRO. PROGRAM BUDGET 44-2

COSTS ALONE NECESSITATE REVISITING THE MOX DECISION. MFFF HAS TRIPLED IN COSTS. CMRR, DARHT, NIF, UPF, WTP, DOE, YOU JUST HAVE NO CREDIBILITY RE: COSTS 44-3

[Margin note: NUCLEAR POWER IS GOOD, JUST NO [illegible]]

FUEL ASSEMBLY TESTS

- CATAWBA PRESSURIZED WATER REACTOR PULLED RODS AFTER 2 FUEL CYCLES, SUPPOSE TO BE 3. SWELLED & WARPED 44-4
- BOILING WATER REACTORS TESTS UNTIL 2025. 50% OF FUEL, NOT GOOD COST BENEFITS. 44-5
- EFFECTS OF UNIT 3 @ FUKUSHIMA STILL NOT KNOWN, BUT RISKS ARE HIGHER, 44-6

44-1 The use of MOX fuel is consistent with U.S. nonproliferation policy and international nonproliferation agreements. Use of MOX fuel in commercial nuclear power reactors would render surplus plutonium into a used fuel form that is not readily usable for nuclear weapons. For further discussion, refer to Section 2.4, Topic A, of this CRD.

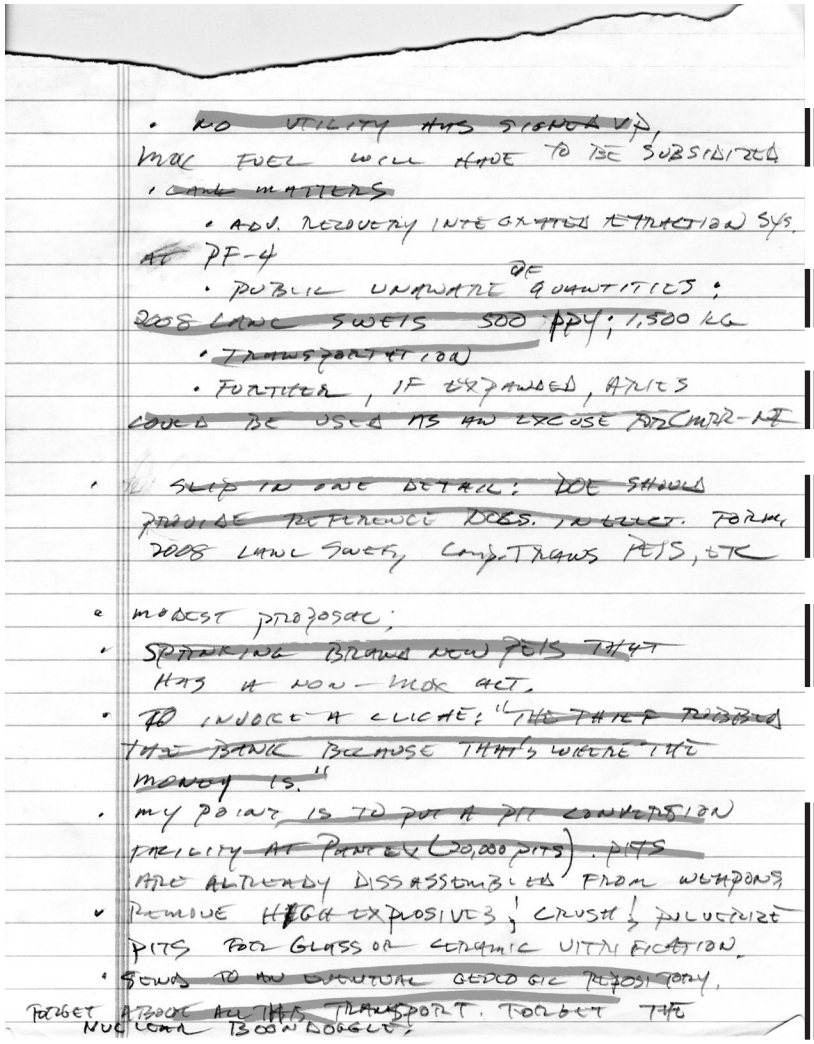
Under the PMDA (USA and Russia 2000), which entered into force in 2011, the United States and the Russian Federation agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. Russia plans to irradiate its MOX fuel in fast reactors (BN-600 and BN-800) under certain nonproliferation conditions. To that end, Russia has successfully irradiated 21 prototypic MOX fuel LTAs in its BN-600 fast reactor; completed over 50 percent construction of the BN-800 fast reactor; completed formal siting of its MOX fuel fabrication facility; established an integrating contracting office for implementation of PMDA activities; and actively participated with the United States and the IAEA in negotiating a verification agreement that will enable IAEA to independently verify that the objectives of the PMDA are met. More information on the PMDA is located on the U.S. State Department website at www.state.gov/r/pa/prs/ps/2010/04/140097.htm.

Under the PMDA, Russia must operate its fast reactors as plutonium burners, not breeders; cannot reprocess any of its used fuel during the life of the agreement; and, after the agreement expires, can only reprocess under an international monitoring regime and only for commercial purposes. Operations of the Russian fast reactors will be monitored and verified by IAEA.

44-2 Cost is among the factors that may be considered in reaching a decision on the Surplus Plutonium Disposition Program. This *SPD Supplemental EIS* evaluates the potential environmental impacts of alternatives for plutonium disposition to ensure environmental factors inform the decision on the program. Cost information on DOE programs is made publicly available as part of the President's annual budget submission to Congress. Surplus plutonium disposition activities are subject to the availability of funds appropriated by Congress. For further discussion, refer to Section 2.1, Topic B, of this CRD.

44-3 Cost, schedule, technical viability, worker and public safety, environmental impacts, security, and the ability to carry out international agreements are among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

Commentor No. 44 (cont'd): Anonymous



- NO UTILITY HAS SIGNED UP,
MOX FUEL WILL HAVE TO BE SUBSIDIZED
- CORE MATTERS
- ADV. RECOVERY INTEGRATED EXTRACTION SYS.
AT PF-4
- PUBLIC UNAWARE OF QUANTITIES:
2008 LANL SWEIS 500 ppy; 7,500 kg
- TRANSPORTATION
- FURTHER, IF EXPANDED, APITS
COULD BE USED AS AN EXCUSE FOR CMRR-NF
- SLIP TO ONE DETAIL: DOE SHOULD
PROVIDE REFERENCE DOCS. TO BACK. FORM,
2008 LANL SWEIS, Comp. TRANS, PEIS, ETC
- MODEST PROPOSAL;
- SPRINKLE BRAND NEW PITS THAT
HAS A NON-MOX ACT,
- TO INVOKE A CLICHE; "THE THIEF ROBBED
THE BANK BECAUSE THAT'S WHERE THE
MONEY IS."
- MY POINT IS TO PUT A PIT CONVERSION
FACILITY AT PANTEX (20,000 PITS). PITS
ARE ALREADY DISASSEMBLED FROM WEAPONS
- REMOVE HIGH EXPLOSIVES; CRUSH & PULVERIZE
PITS FOR GLASS OR CERAMIC VITRIFICATION.
- SEND TO AN UNDERGROUND GEOLOGIC REPOSITORY.

FORGET ABOUT ALL THIS TRANSPORT. FORGET THE
NUCLEAR BOONDOGGLE!

44-7

44-8

44-9

44-10

44-11

44-12

44-4 As summarized in Appendix J, Section J.2, of this *SPD Supplemental EIS*, use of MOX fuel in nuclear power reactors is widespread worldwide. Differences in the design and performance of MOX fuel compared to LEU fuel are understood. Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

44-5 As summarized in Chapter 5, Section 5.3.3, use of MOX fuel in TVA or other reactors would require a license amendment in accordance with 10 CFR Part 50. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process.

44-6 Accident analyses for U.S. nuclear power reactors already consider the radiological impacts of accidents like the Fukushima accident in that the safety evaluations include evaluation of beyond-design-basis accidents. As discussed in Appendix J, Section J.3, the analysis in this *SPD Supplemental EIS* compares the accident results for partial MOX fuel and full LEU fuel cores to determine whether the use of MOX fuel in these TVA reactors would make any substantive difference in the potential risks associated with the accidents analyzed. The beyond-design-basis accidents include severe accidents with a subsequent loss of containment similar to the accident at Fukushima. The results show that the consequences of such an accident, should it occur, would be comparable, regardless of whether the reactor was using a partial MOX fuel core or a full LEU core. DOE does not believe that the accident at the Fukushima Dai-ichi Nuclear Power Station changes this conclusion. At the time of that accident, the Fukushima Dai-ichi Nuclear Power Station's Unit 3 was operating using a partial MOX fuel core. However, at least one authority has determined that the accident involved failures unrelated to the use of MOX fuel, and there is no evidence to suggest that the presence of MOX fuel in Unit 3 increased the consequences of the accident (ONR 2011). As summarized in Chapter 4, Section 4.1.2, and described in detail in Appendices I and J of this *SPD Supplemental EIS*, the risks associated with both normal operations and accidents for a partial MOX fuel core and full LEU fuel core are expected to be comparable. The risks associated with the postulated accidents would be small. For further discussion, refer to Section 2.5, Topic B, of this CRD.

Commentor No. 44 (cont'd): Anonymous

44-7 Disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts per NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors (see Appendix I, Section I.2).

44-8 Transportation risks are analyzed for all alternatives proposed, as appropriate, in this *SPD Supplemental EIS*, including the threat of theft and diversion of radioactive materials. In developing the proposed action and reasonable options for pit disassembly and conversion and surplus plutonium disposition, DOE has determined that transportation of plutonium materials from the Pantex Plant to SRS or LANL cannot be avoided. The alternatives in this *SPD Supplemental EIS* were developed recognizing that plutonium materials are currently stored at multiple DOE sites and individual sites have their own specific capabilities with respect to pit disassembly and conversion and plutonium disposition. Packaging and transportation of radioactive materials would be conducted in compliance with NRC and U.S. Department of Transportation (DOT) regulations that are designed to ensure the safe transport of these materials on the Nation's highways, as described in Appendix E, Section E.3. Appendix E also includes tables showing the number of transports associated with each alternative and option (refer to Tables E–6 through E–10).

44-9 The Chemistry and Metallurgy Research Replacement Nuclear Facility (CMRR-NF) was not related to any particular program, but was designed to replace analytical chemistry and materials characterization capabilities that are or were supported in the Chemistry and Metallurgy Research Building. However, the CMRR-NF will not be constructed and NNSA plans on providing the necessary analytical chemistry and materials characterization capabilities using a combination of space already available at the Radiological Laboratory/Utility/Office Building (RLUOB) and space to be made available at PF-4 (DOE 2015).

44-10 The period for submitting comments on the *Draft SPD Supplemental EIS* closed on October 10, 2012. On the same day, DOE posted the references on the *SPD Supplemental EIS* website at http://nnsa.energy.gov/aboutus/ouroperations/generalcounsel/nepaoverview/nepa/spdsupplementaleis. Nonetheless, the *Draft SPD Supplemental EIS* and the cited resources on which DOE relied to support the analysis in the *Draft SPD Supplemental EIS* were available to the public for the duration of the comment period. Copies of the cited reference materials were sent along with copies of the document to all of the reading rooms and libraries listed in the Summary, Section S.13, of the *Draft SPD Supplemental EIS* prior to

Commentor No. 44 (cont'd): Anonymous

the beginning of the public comment period. However, there are certain types of sensitive information that cannot be posted at publicly accessible locations and may be exempt from public release, including Unclassified Controlled Nuclear Information (UCNI), Official Use Only (OUO), Personally Identifiable Information (PII), and proprietary information. This information was not posted on the project website or provided to the reading rooms and libraries. Despite the stated closing date of the comment period, DOE considered all comments received on the *Draft SPD Supplemental EIS*, including those received after the close of the comment period.

44-11 This *SPD Supplemental EIS* was prepared in accordance with applicable CEQ and DOE NEPA regulations. As described in Appendix A, Section A.1.1, of this *SPD Supplemental EIS*, in the 2002 amended ROD (67 FR 19432), DOE amended the *Storage and Disposition PEIS* and *SPD EIS* RODs (62 FR 3014 and 65 FR 1608), and cancelled the immobilization portion of the disposition strategy. It is not uncommon to have multiple RODs based on one NEPA document where the later ROD modifies the earlier decision. The *Storage and Disposition PEIS* (DOE 1996), *SPD EIS* (DOE 1999), supporting supplement analyses, and the decisions announced in the related RODs, remain valid and, in accordance with CEQ and DOE NEPA regulations, do not need to be updated before this *SPD Supplemental EIS* can be issued.

44-12 As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) evaluated numerous alternatives (technologies and locations) for pit disassembly and conversion and disposition of surplus plutonium; those alternatives included locating facilities at the Pantex Plant and immobilization and direct disposal of the entire surplus plutonium inventory as waste. DOE selected an approach for disposition of some of the plutonium declared surplus (68 FR 20134). As discussed in Section 2.2, Topic A, of this CRD, DOE's prior disposition decisions are not addressed in this *SPD Supplemental EIS.* DOE is, however, reconsidering the decision to construct and operate a stand-alone PDCF and is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium.

As discussed in Chapter 1, Section 1.7, of this *SPD Supplemental EIS*, pits are currently stored at the Pantex Plant. In the *SPD EIS* (DOE 1999), DOE analyzed and dismissed locating pit disassembly and conversion activities at the Pantex Plant (see 65 FR 1608) because it possesses neither the experience nor the infrastructure needed to support plutonium processing. DOE is reconsidering

Commentor No. 44 (cont'd): Anonymous

options for pit disassembly and conversion capabilities only at locations with existing plutonium processing capabilities (i.e., LANL and SRS).

With respect to the 13.1 metric tons (14.4) tons of surplus plutonium addressed in this *SPD Supplemental EIS*, DOE is considering alternatives for its disposition, including preparation into MOX fuel, immobilization, vitrification with HLW, and preparation for potential disposal at WIPP. DOE does not believe that an alternative involving crushing the plutonium pits and placing the result into containers for geologic disposal would be a reasonable alternative. Pit crushing would not change the chemical form of the plutonium metal and, therefore, would present a criticality risk and would not be as proliferation-resistant as the other alternatives considered in this *SPD Supplemental EIS*.

Commentor No. 45: Michael Mykris

From: Michael Mykris
Sent: Monday, October 01, 2012 1:40 PM
To: 'spdsupplementaleis@saic.com'
Subject: Support for Los Alamos National Laboratory

Good afternoon:

As a concerned citizen of northern New Mexico, I want to express my strong support for the National Nuclear Security Administration (NNSA) plan to convert excess plutonium used in nuclear weapons to non-weapons applications. I believe this is good for our national security and is a reasonable path toward the ultimate disposition of this material. *45-1*

I would like to communicate my strong support for efforts to allow Los Alamos National Laboratory (LANL) to render unused nuclear weapons plutonium into forms that would be easier to store and ultimately be reused for peaceful purposes. I also believe that LANL is best positioned to handle this activity since they have the expertise and facilities to securely and safely manage nuclear material.

As a member of the northern New Mexico business community, I want to state my strong support for the NNSA plan to allow LANL to process excess plutonium into a weapons form. I believe this activity will bring in additional revenue to New Mexico and will increase high paying jobs at the Laboratory.

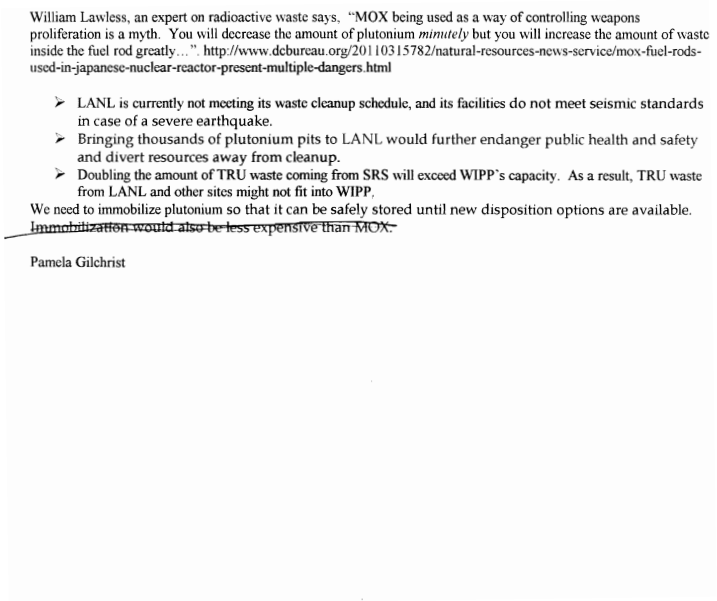
I would like to voice my support for the Department of Energy's efforts to turn excess Plutonium into sources for energy. This is a great example of the nonproliferation work that Los Alamos undertakes. I believe that this work will be beneficial to the Lab and the Nation.

Sincerely,

Michael Mykris, Director
Santa Fe Small Business Development Center
at Santa Fe Community College
6401 Richards Avenue
Santa Fe, NM 87508

45-1 DOE acknowledges the commentor's opinion.

Commentor No. 46: Pamela Gilchrist



William Lawless, an expert on radioactive waste says, "MOX being used as a way of controlling weapons proliferation is a myth. You will decrease the amount of plutonium *minutely* but you will increase the amount of waste inside the fuel rod greatly…". http://www.dcbureau.org/20110315782/natural-resources-news-service/mox-fuel-rods-used-in-japanese-nuclear-reactor-present-multiple-dangers.html

- LANL is currently not meeting its waste cleanup schedule, and its facilities do not meet seismic standards in case of a severe earthquake.
- Bringing thousands of plutonium pits to LANL would further endanger public health and safety and divert resources away from cleanup.
- Doubling the amount of TRU waste coming from SRS will exceed WIPP's capacity. As a result, TRU waste from LANL and other sites might not fit into WIPP.

We need to immobilize plutonium so that it can be safely stored until new disposition options are available. ~~Immobilization would also be less~~ expensive than MOX.

Pamela Gilchrist

46-1

46-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults. DOE and LANL are continuing to take appropriate actions to further improve the safety policies and controls in place at the laboratory and to implement facility modifications and upgrades as necessary to improve safety in the event of an earthquake.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9), including a beyond-design-basis earthquake with fire, and describes concerns identified by DNFSB. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 1, Section 1.4, under all alternatives, DOE would disposition as MOX fuel 34 metric tons (37.5 tons) of surplus plutonium in accordance with previous decisions. The pit disassembly and conversion options analyzed in this *SPD Supplemental EIS*, including the PDCF Option, apply to 27.5 metric tons (30.3 tons) of pit plutonium that DOE has decided to fabricate into MOX fuel (a portion of the 34 metric tons [37.5 tons]), as well as to the 7.1 metric tons (7.8 tons) of pit plutonium for which disposition is under consideration in this *SPD Supplemental EIS*, for a total of approximately 35 metric tons (38.6 tons). Appendix B, Table B–3, lists the annual and total plutonium throughput for the various pit disassembly and conversion options at SRS and LANL. For example, the maximum annual throughput for PF-4 at LANL is 2.5 metric tons (2.8 tons) per year, while the maximum amount of plutonium to be processed could be 35 metric tons (38.6 tons) over the life of facility operation. The amount of plutonium that would be allowed at LANL at any given time would be limited, and shipments of pits to be disassembled there would be timed to support pit disassembly and conversion activities such that the amount of plutonium at PF-4 did not exceed the established material safety limit.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As addressed in Chapter 4, Section 4.1.4, of this *SPD Supplemental EIS*, implementation of any of the alternatives evaluated would generate CH-TRU waste that would be sent to WIPP for disposal. As discussed in Chapter 4,

Commentor No. 46 (cont'd): Pamela Gilchrist

Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE considers immobilization a viable disposition pathway for at least some portion of the approximately 13.1 metric tons (14.4 tons) of surplus plutonium for which a disposition path is not assigned and has analyzed immobilization options it could potentially implement in this *SPD Supplemental EIS* (see Chapter 4). The analyses in this *SPD Supplemental EIS* indicate that none of the alternatives analyzed, including immobilization, involve any substantial risk to the safety of the public.

Commentor No. 47: Ronald Galbraith

Surplus Plutonium Disposition
Supplemental Environmental Impact Statement
(SPD Supplemental EIS)

Comment Form

Date: 8-28-12

Name RONALD GALBRAITH

Organization NONE

Address [redacted]

City, State, Zip Code [redacted]

E-mail

Your comments on the Draft SPD Supplemental EIS

See

ATTACHED

PLEASE RETURN THIS FORM TO THE REGISTRATION DESK OR SUBMIT BY SEPTEMBER 25, 2012 TO:
U.S. Mail: Sachiko McAlhany, NEPA Document Manager, U.S. Department of Energy, P.O. Box 2324, Germantown, MD 20874-2324
Toll-Free Fax: 1-877-865-0277
E-mail: **spdsupplementaleis@saic.com**

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Commentor No. 47 (cont'd): Ronald Galbraith

August 28, 2012 Carlsbad, NM

Introduction

I am Ronald Galbraith [redacted]

My employment is with a contractor whose work supports safe disposal of waste at Waste Isolation Pilot Plant (WIPP).

I am present and speaking to this issue today as a citizen not as an employee.

Background

I first become interested in waste storage as long ago as 1978 when in college for a sociology class when I critiqued Final Environmental Impact Statement for a pending issue then virtually unknown as WIPP. My critique probably was sub-novice. Subsequent years while Chief of Police for City of Carlsbad, I was one of hundreds commenters who trekked to Santa Fe or other locales to provide affirmative comments for support and approval of WIPP.

The important issue clearly was nuclear -- many were good uses or many not and then those who "fear nuclear".

Then as now the issue is to stop nuclear before anything else. "What to do about its waste?" Now as then since salt has not change in 34 years except by WIPP process making salt more useful relative to safe storage/disposal of waste. WIPP and "WIPP-like" storage/disposal are now more than ever a credible way of isolating waste from our day-to-day environment.

47-1

Salt and WIPP science and technology has provided alternatives and solutions,

The "Not In My Backyard" stakeholders and those simply opposed to anything nuclear have not changed either and probably never will.

Support

I support the Draft Supplemental Environmental Impact Study on Plutonium Disposition as analyzes the potential environmental impacts of alternatives for the disposition of 7.1 metric tons (MT) of additional weapons-usable plutonium from pits that were declared surplus to national defense needs in 2007 but were not included in DOE's prior decisions as well as 6 MT of surplus, weapons-usable non-pit plutonium. It is now and should be considered. Furthermore, an alternative I support is disposal of non-pit plutonium at the Waste Isolation Pilot Plant (WIPP) in New Mexico.

Additional analysis of the original EIS, now includes this supplemental Surplus Plutonium Disposition, is exactly what needed to be included and it should be done. It is not illegal as some might say – it extends concepts, technologies, and processes. Furthermore, this Draft SPD supplemental process allows input of citizens on local, state, and regional levels. This process allows for consent /approval or not – which is essential in today's scoping / siting / performing environment.

47-1 cont'd

Having and finding alternatives (Supplemental EIS's if you will) that leads technologies and processes to be applied to alternative concepts, ultimately to become usable processes. This is what makes US great innovators – we see *what ifs* and make them happen through the inclusiveness inherent with many having input.

47-1 DOE acknowledges the commentor's opinion.

Commentor No. 48: Christopher Chancellor

Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SPD Supplemental EIS)

Comment Form

Date: 08/28/2012

Name: Christopher Chancellor

Organization:

Address: [redacted]

City, State, Zip Code: [redacted]

E-mail: [redacted]

Your comments on the Draft SPD Supplemental EIS

Do It!

WIPP is ideal for this disposal project.

PLEASE RETURN THIS FORM TO THE REGISTRATION DESK OR SUBMIT BY SEPTEMBER 25, 2012 TO:

U.S. Mail: Sachiko McAlhany, NEPA Document Manager, U.S. Department of Energy, P.O. Box 2324, Germantown, MD 20874-2324

Toll-Free Fax: 1-877-865-0277

E-mail: **spdsupplementaleis@saic.com**

48-1

48-1 DOE acknowledges the commentor's opinion.

Commentor No. 49: Nancy Teague

From: Teague, Nancy L
Sent: Wednesday, October 03, 2012 6:10 PM
To: spdsupplementaleis@saic.com
Subject: Dept. of Energy's Preferred Option for PU

I agree with the Department of Energy's preferred option for the disposition of Pu. *49-1*

Nancy Teague, IRM-DCS
Document Control Team Lead
Los Alamos National Laboratory
ADEP ARD & PC

49-1 DOE acknowledges the commentor's opinion.

Commentor No. 50: John Heaton
City of Carlsbad, Mayor's Nuclear Opportunities Task Force

My name is John Heaton, I am a former 7 term state representative, and presently chairman of the Mayor's Nuclear Opportunities Task Force. A group of forty citizens dedicated to the future safe use of nuclear materials for the benefit of mankind as well as their safe storage and disposal.

I would like to devote my time to debunking the erroneous arguments of those that would irresponsibly leave nuclear waste where it is to seep into our water supplies, be subject to the ever increasing number of tumultuous weather events and be a target for weapons proliferation. But, most of all deferring the legacy problem to our children when we know that WIPP and salt are the solution.

1. **Would the plutonium fit into WIPP?**

A. WIPP's volume limit is 176,000 cubic meters (6.2 million cubic feet). The volume of all the waste currently emplaced and planned for disposal at WIPP is a little more than 144,000 cubic meters (5.1 million cubic feet). This is approximately 32,000 cubic meters (1,10,000 cubic feet) less than the TRU waste permitted capacity. The draft SEIS we are discussing today states that up to 17,000 cubic meters (600,000 cubic feet) of surplus plutonium could be sent to the facility – easily falling within WIPP's volume limit without interfering with any of the project's other plans.

2. **The attributes of Star Dust must be described in detail.**

A. The Stardust concept involves adding off-the-shelf chemical additives to by-products from plutonium operations to reduce the recoverability of plutonium and allow increased options for storage and disposition. There are various candidate Stardust compositions including dry mixtures of commercially available chemicals and reagents that promote cementing, gelling, thickening, and/or foaming in the unlikely event that recovery is attempted.

If any future candidate materials chosen for Stardust did include RCRA constituents, they would be listed as such as part of the normal RCRA permit requirements. While the fact that stardust is added is not classified, once a choice of a specific candidate is made, the specific constituent composition is classified.

3. **What changes in existing laws would be required? (Requirements prohibiting funds for disposal of WIPP "Of plutonium in excess of 20 percent by weight for the aggregate of any material category…")**

A. This was a requirement annually included by Senator Domenici in the appropriations act which is good only for a year at a time. It was intended to protect our plutonium stores, but now we recognize the need to dispose of it so it is no longer included in the appropriations act. No changes to existing laws are required.

4. **What additional NEPA analysis is necessary to support a decision to bring additional plutonium waste to WIPP?**

A. The direct disposal of 50 metric tons (55 tons) of surplus plutonium was eliminated from further analysis in the *Storage and Disposition PEIS* because it would exceed the capacity of WIPP when added to DOE's inventory of TRU waste (DOE 1996a;2-13). The disposal at

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Commentor No. 50 (cont'd): John Heaton
City of Carlsbad, Mayor's Nuclear Opportunities Task Force

WIPP of up to 6 metric tons (6.6 tons) of non-pit plutonium, which is approximately 12 percent of the amount considered in the *Storage and Disposition PEIS*, would not exceed WIPP's capacity and therefore was considered to be a reasonable alternative in this *SPD Supplemental EIS*.

5. **What are the impacts of the surplus plutonium on the WIPP performance assessment?**
   A. None that are known in that it fits the WAC
6. **What are the means of international inspections at WIPP?**
   B. IAEA will have the authority to inspect this waste if they chose to do so.

7. How does the waste coming to WIPP meet the Spent Fuel Standard?

A. I have already spoken about "stardust" and its ability to render the plutonium to this standard. And furthermore, DOE, as do I, believes the WIPP Alternative provides the best possible protection from theft, diversion, or future reuse in nuclear weapons.

8. In closing, burying this waste at WIPP safely isolates it from the environment forever, and ensures it is never available for proliferation.

Thank you for your time. I strongly support the WIPP alternative for the 6 MT of plutonium to be disposed at WIPP.

50-1

50-1 DOE acknowledges the commentor's opinion.

Commentor No. 51: Walter Dasheno, Sr., Governor Santa Clara Pueblo

SANTA CLARA
POST OFFICE BOX 580
(505) 753-7330
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INDIAN PUEBLO
ESPANOLA, NEW MEXICO
87532
OFFICE OF GOVERNOR

October 03, 2012

Via e-mail (spdsupplementaleis@saic.com) and first-class mail

Sachiko McAlhany
NEPA Document Manager, SPD Supplemental EIS
U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324

Re: **Santa Clara Pueblo's Comments on the Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (DOE/EIS-0283-S2)**

Dear Ms. McAlhany:

Santa Clara Pueblo submits the following comments on the Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement ("Draft SPD SEIS").

We trust these comments will be respected as part of our government-to-government relationship with the U.S. Department of Energy ("DOE"), which is formalized not only in DOE Order 144.1 (approved January 16, 2009) and the DOE American Indian and Alaska Native Tribal Government Policy ("DOE Indian Policy") but also more specifically through an Accord developed in 1992 directly between our Pueblo and the DOE which was restated and reaffirmed by both governments in 2006 ("2006 Accord"). While our comments here reference by name the DOE, they apply as well to the National Nuclear Safety Administration ("NNSA") since the NNSA is part of the DOE and since Los Alamos National Laboratory ("LANL") is considered to be a NNSA site.

We begin our comments with some background information regarding Santa Clara Pueblo to provide context for our comments and then follow with specific comments regarding why LANL should not be included as an option, let alone as part of the DOE's preferred alternative, for surplus plutonium disassembly and conversion. We understand that PF-4 at Technical Area ("T.A") 55 currently has an already approved but limited pit disassembly and conversion function for 2 metric tons (2.2 tons) of plutonium but that the pit disassembly and conversion function at PF-4 at LANL would increase as high as perhaps 35 metric tons (or more - *see* Draft SPD SEIS at 4-3) through DOE's preferred alternative in the Draft SPD SEIS. Our comments here are intended to address the proposal(s) to dramatically increase the pit disassembly and

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Commentor No. 51 (cont'd): Walter Dasheno, Sr., Governor Santa Clara Pueblo

conversion function at LANL. (As for the lack of certainty about the exact amount contemplated for LANL surplus plutonium pit disassembly, that issue is discussed further in section II(C) below.)

Although we submit these comments as part of the process for the National Environmental Policy Act ("NEPA"), please remember as you review these comments that this is no sterile regulatory matter for Santa Clara Pueblo. The Pajarito Plateau, where LANL is situated, contains many areas of traditional importance to the Santa Clara Tribal community. In accordance with our belief system and traditional practices, environmental degradation of this place, which is profoundly holy to the Santa Clara community, affects the cultural survival of Santa Clara Pueblo. As you review these comments, please bear in mind that these areas both at and near LANL are the equivalent of our Bethlehem, our Mecca, our Jerusalem, and that Santa Clara's connection to the Pajarito Plateau goes back to the beginning of time.

I. Overview regarding Santa Clara Pueblo

Santa Clara Pueblo is a federally-recognized Indian tribe located in northern New Mexico, approximately twenty-five (25) miles northwest of the City of Santa Fe. Much of the City of Española, approximately one (1) mile to the west of our Tribal government offices, actually is located within the exterior boundaries of Santa Clara lands. While our Tribal offices are approximately eighteen (18) miles away from LANL, our closest border is actually only about five (5) miles from the current-day boundaries of LANL. In fact, early maps reveal that LANL once shared a boundary with Santa Clara Pueblo and that the area now located between LANL and Santa Clara was once referred to as "Area E." Our traditional lands include lands taken for the Manhattan Project.

While we always will emphasize the need for DOE to respect its government-to-government relationship with the Pueblo, Santa Clara Pueblo is not only a government in some bureaucratic sense of the word. In the broader cultural sense, we are also an Indian community of people, a society unto ourselves numbering less than a few thousand, distinct from every other Indian community in our traditions. We have similarities with the other Pueblos in New Mexico, especially those who also speak our Tewa language, but we are a separate sovereign Indian nation, recognized as such over the past 400 years by three different sovereign governments - Spain, Mexico, and the United States of America. Tribal leaders at Santa Clara Pueblo still carry the canes presented to our ancestral leaders by the Spanish and Mexican governments, as well as a similar cane presented by President Abraham Lincoln after New Mexico was annexed by the United States. Tribal protection and management of our natural resources along our ancestral homelands in the Jemez Mountains, Pajarito Plateau, and Rio Grande Valley began many thousands of years ago, long before the Spanish, Mexican, or American periods of our history.

The modern-day boundaries of our Pueblo include over 53,000 acres of land. This acreage figure includes some of our traditional lands that we have fought to regain but does not encompass all of our aboriginal territory. Many of the various vegetative communities and the innumerable wildlife species they support have significant traditional and spiritual value to us as a people. The

Response side of this page intentionally left blank.

Commentor No. 51 (cont'd): Walter Dasheno, Sr., Governor Santa Clara Pueblo

Pajarito Plateau contains many areas of cultural importance to our people and our cultural practices connected to these areas continue to this day.

II. The Draft SPD SEIS does not meet the standards of NEPA

A. *It is improper to analyze the inclusion of LANL as an alternative site for pit disassembly and conversion of surplus plutonium through a supplemental environmental impact statement. To comply with NEPA, such a programmatic shift must be done through a new, revised programmatic environmental impact statement.*

As the Draft SPD SEIS describes, the issue of plutonium disposition was originally discussed in the mid-1990s in a programmatic environmental impact statement entitled *Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Environmental Impact Statement* ("Storage and Disposition Programmatic EIS"). A programmatic environmental impact statement is the correct mechanism to use when the proposed action constitutes a group of interrelated actions to implement a policy or plan. *See*, *e.g.*, 40 C.F.R. 1508.18(b)(3). However, the Storage and Disposition Programmatic EIS never even considered LANL as a pit disassembly or conversion location. To include LANL now in the range of alternatives for pit disassembly and conversion constitutes a shift in the overall programmatic plan and therefore cannot be achieved solely through a supplemental environmental impact statement. Instead, a new, revised programmatic environmental impact statement is needed to address what the DOE is posing now as new alternatives (involving LANL) to the Storage and Disposition Programmatic EIS which were not addressed in that document or any records of decision issued for that document. In fact, the Draft SPD SEIS clearly states that the DOE is "revisiting" what was an actual programmatic decision from a record of decision issued in 2000 stemming from the original decisions for the Storage and Disposition Programmatic EIS -- it is "revisiting" the previously made programmatic decision to construct and operate a pit disassembly and conversion facility at the Savannah River Site. *See* Draft SPD SEIS at 3 n.6 , 10, and 2-1. With respect to pit disassembly and conversion, the proposed action in the Draft SPD SEIS is not just about dispositioning an additional 13.1 metric tons of surplus plutonium for which it has not previously made a disposition decision. Instead, because the DOE is "revisiting" its previous programmatic decision regarding pit disassembly and conversion and "a total of 35 metric tons (38.6 tons) is analyzed for all pit disassembly and conversion options." *Compare* Draft SPD SEIS at 2 and at 10.

While the decision about whether to develop a programmatic environmental impact statement lies with the federal agency and there is deference afforded by courts to agency decisions, agency discretion is not unlimited because the decision cannot be arbitrary and capricious. The DOE's own regulations mandate that this new consideration of LANL for up to 35 metric tons (38.6 tons) of programmatic pit disassembly and conversion[1] must be done through a new

[1] The document actually is not clear if additional plutonium, up to 45 metric tons, is contemplated for pit disassembly and conversion. *See id.* at 4-3. And, as further discussed in section II (C), the document is not clear as

51-1

51-1 DOE believes that the decision to prepare this *SPD Supplemental EIS* complies with CEQ and DOE regulations and guidance. For further discussion, refer to Section 2.1, Topic A, of this CRD.

Commentor No. 51 (cont'd): Walter Dasheno, Sr., Governor Santa Clara Pueblo

programmatic environmental impact statement instead of merely back-dooring the inclusion of LANL through a supplemental environmental impact statement. *See*, *e.g.*, 10 C.F.R. §1021.330(a)("When required to support a DOE programmatic decision (40 CFR 1508.18(b)(3)), DOE *shall* prepare a programmatic EIS or EA (40 CFR 1502.4)")(emphasis added). To do otherwise would be arbitrary and capricious based upon the DOE's own mandates in its regulations.

51-1 cont'd

B. *DOE's preferred alternative in the Draft SPD SEIS does not meet the purpose and need for the proposed action and therefore does not comply with NEPA.*

An important requirement in any environmental impact statement is that the agency "briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action." 40 C.F.R. §1502.13. This requirement is closely related to the duty to discuss alternatives, because the purpose of an action determines the universe of alternatives an agency must consider.

The Draft SPD SEIS states that the purpose and need for the DOE's proposed action is "to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally sound manner, ensuring that it can never again be readily used in nuclear weapons." Draft SPD SEIS at 2. While Santa Clara Pueblo certainly supports the overall goal of reducing the threat of nuclear weapons proliferation, it does not appear to us that the DOE's preferred alternative, which includes the fabrication of surplus plutonium into mixed uranium-plutonium oxide ("MOX") fuel for irradiation in existing domestic commercial reactors, would actually meet the purpose and need stated in the Draft SPD SEIS.

MOX fuel made from weapons-grade plutonium, which has a higher content of plutonium-239 than reactor-grade plutonium, has never been used before on a commercial scale in the U.S., has not yet been fully tested in U.S. nuclear reactors, has not yet been licensed by Nuclear Regulatory Commission, and it is unclear that there are any U.S. reactors capable of using it and willing to use it. Moreover, it does not appear that MOX fuel use actually provides for true disposition of plutonium since it is our understanding some additional plutonium is produced when MOX fuel rods are irradiated in a nuclear reactor. It is unclear how the creation of additional spent nuclear fuel from the MOX process is environmentally sound since it is our understanding there is no known disposal facility for that spent fuel. Therefore it does not appear DOE can meet its express purpose of disposing of surplus plutonium in an environmentally sound manner or in a manner that ensures it cannot be used again in nuclear weapons.[2]

51-2

to how much of the surplus plutonium would come to LANL for pit disassembly and conversion as part of DOE's preferred alternative.

[2] Santa Clara Pueblo also questions why it would be cost-effective to have large quantities of pit disassembly and conversion at LANL to support commercial power plants located on the East Coast (closer to the Savannah River Site). The cumulative socioeconomic effects of such increased transportation on the surplus plutonium disposition program do not appear to be addressed in the Draft SPD SEIS.

51-2 Based on the analyses in this *SPD Supplemental EIS*, DOE believes all of the alternatives are environmentally sound. None of the plutonium disposition alternatives would produce more plutonium. MOX fuel is approximately 96 percent uranium-238 and 4 percent plutonium-239. While it is correct that some of the uranium-238 is converted to plutonium-239 during the irradiation of the MOX fuel, the initial plutonium is undergoing fission as well as transmutation, thereby reducing the total amount of plutonium at a rate faster than the conversion of uranium to plutonium. The net effect of irradiating MOX fuel is a reduction in the amount of plutonium present in the fuel. For example, a PWR MOX fuel assembly that begins with approximately 4 percent of plutonium would have around 2 percent plutonium at 50,000 megawatt-days per metric ton heavy metal of burnup, a level that is within the range of normal burnup rates for nuclear fuel in the United States. In addition, following irradiation, the remaining plutonium is rendered unattractive for weapons use due to the amount of plutonium-240 and plutonium-242 isotopes created during irradiation. Therefore, the use of MOX fuel in commercial nuclear power reactors would reduce the quantity of weapons-usable plutonium and support accomplishing DOE's nonproliferation goals.

As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel, by storing it in the reactor's used fuel storage pool or placing it in dry storage. The use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would displace LEU fuel that otherwise would have been used to power the nuclear power reactor. Use of MOX fuel could increase used nuclear fuel generation by 8 to 10 percent for TVA's Browns Ferry and Sequoyah Nuclear Plants, and from 2 to 16 percent for generic reactors during the period MOX fuel could be used at a reactor. It is expected that increases of this magnitude would be managed within the reactor's normal planning for storage of its used fuel.

DOE has terminated the program for a geologic repository for used nuclear fuel and HLW at Yucca Mountain, Nevada. Notwithstanding the decision to terminate the Yucca Mountain program, DOE remains committed to meeting its obligations to manage and ultimately dispose of used nuclear fuel and HLW. For further discussion, refer to Section 2.7, Topic A, of this CRD.

Commentor No. 51 (cont'd): Walter Dasheno, Sr., Governor Santa Clara Pueblo

Ms. McAlhany
Santa Clara Pueblo's Comments on the Draft SPD Supplemental EIS
October 03, 2012
Page 5

C. *The Draft SPD SEIS does not meet NEPA's standards for evaluating and clearly explaining all the impacts associated with having increased pit disassembly and conversion at LANL.*

NEPA regulations mandate that federal agencies shall, to the fullest extent possible, ensure that environmental impact statements are clear and concise in order to facilitate public involvement. *See* 40 C.F.R. §1500.2(b). NEPA regulations require a discussion of both direct and indirect effects of a proposed alternative. *See id.* at §1508.8. Unfortunately, the Draft SPD SEIS does not meet these standards with respect to discussing impacts related to pit disassembly and conversion at LANL.

While the Draft SPD SEIS states that "DOE has previously analyzed and made decisions on disposition paths for most of the plutonium the United States has declared surplus," Draft SPD SEIS at 1, the document also states that the DOE is completely rethinking where pit disassembly and conversion should occur for 35 metric tons (38.6 tons) of surplus plutonium. *See id.* at 10; *see also id.* at 19 n.10 ("[B]ecause DOE is revisiting its decision to construct and operate a PDCF at SRS, the pit disassembly and conversion options analyzed in this SPD Supplemental EIS will apply to the 27.5 metric tons (30.3 tons) of plutonium metal that DOE has decided to fabricate into MOX fuel, as well as the 7.1 metric tons (7.7 tons) of pit plutonium for which disposition is under consideration in this SPD Supplemental EIS"). The DOE has indicated that its "preferred option for pit disassembly and the conversion of surplus plutonium metal, regardless of its origins" is "to use *some combination* of facilities at Technical Area 55 at Los Alamos National Laboratory and K-Area, H-Canyon/HB-Line, and MFFF at [Savannah River Site], rather than to construct a new stand-alone facility." *Id.* at iv (emphasis added); *see also id.* at 2-2. However, nowhere in the Draft SPD SEIS does DOE clearly or concisely indicate how many plutonium pits would come to LANL for disassembly or how many metric tons of plutonium would come to LANL as a result of using "some combination" of LANL and Savannah River Site for pit disassembly or conversion.[3] *See, e.g., id.* at 2-6 and at figures 2-3, 2-4, and 2-5.

Because the document does not discuss in any clear or concise terms just how many pits or metric tons of plutonium would come to LANL for the DOE's preferred options for plutonium pit disassembly and conversion, there is not a meaningful discussion of the impacts associated with this unknown additional pit number at LANL for pit disassembly and conversion. These impacts are of great concern to us since we understand each pit to be converted contains 3-5 kg of plutonium and given LANL's less than stellar safety record.

51-3

[3] We note that to the extent such an analysis exists in the document that we could not readily ascertain, the document still fails to meet NEPA's requirements to be clear and readily understandable. After digging through the document, we were able to find a mention in an appendix that under some of the pit disassembly and conversion alternatives, the "LANL ARIES program would be expanded to produce 35 metric tons (38.6 tons) of plutonium oxide feed," Draft SPD SEIS at B-26, but there also is a reference table in chapter 4 that seems to indicate that up to 45.1 metric tons of plutonium might be coming to LANL under some of the alternatives discussed. *See id.* at 4-3. The document is, thus, not clear on this point in a way that is readily understandable to the public.

51-3 In selecting an alternative to pursue, the decisionmaker would consider the environmental impacts disclosed in this *SPD Supplemental EIS*, along with cost, schedule, technical viability, worker and public safety, security, and the ability to carry out international agreements to establish a precise division of responsibilities among these facilities. To ensure that DOE had fully analyzed the impacts associated with this pit disassembly and conversion option, DOE evaluated a range of plutonium operations at LANL to conservatively envelop the possible operational scenarios (see Appendix B, Tables B–2 and B–3, for a summary of the options).

Discussion of the number of pits to be disassembled and converted to oxide is not necessary to describe the level of operations and potential environmental impacts at any of the facilities proposed for the Surplus Plutonium Disposition Program. The potential environmental impacts are tied directly to the mass of plutonium that would be processed through a facility. As shown in Table B–3, a maximum of 35 metric tons (38.6 tons) of plutonium would be processed through PF-4 at LANL under the alternatives that include PF-4 pit disassembly and conversion options. Regardless of the pit disassembly and conversion option chosen by DOE, a minimum of 2 metric tons (2.2 tons) of plutonium would be processed through PF-4, as discussed in Appendix B. The transportation and operational impacts associated with processing these amounts of surplus plutonium at LANL are described in detail in the appendices and summarized in Chapter 4. The presentation of impacts included in this *SPD Supplemental EIS* represents the level of detail needed by the decisionmaker to understand the differences between the proposed pit disassembly and conversion activities at LANL and those at SRS and support the decisions that need to be made concerning these activities.

In the footnote associated with this comment, the commentor refers to a text box in Chapter 4, page 4-3, that shows that up to 45.1 metric tons (49.7 tons) of surplus plutonium could be made into MOX fuel and questions why this is different from the 35 metric tons (38.6 tons) that could be processed at LANL as shown in Appendix B. The higher amount of material that could be processed into MOX fuel includes non-pit plutonium and plutonium metal and oxides that are located at SRS and would be processed there in existing facilities, such as the K-Area Complex or H-Canyon/HB-Line, then potentially sent to MFFF for use in the fabrication of MOX fuel.

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To not provide such an explanation in a draft environmental impact statement in clear and concise terms that the public can easily understand renders the statement "so inadequate as to prevent meaningful analysis." 40 C.F.R. §1502.9(a) It also fails to meet the standards of NEPA to have federal agencies ensure, to the fullest extent possible, that environmental impact statements promote informed decision-making by public officials. *See id.* at § 1500.1(c).

51-3 cont'd

D. *DOE must fix the NEPA fatal flaws by issuing a new draft document for additional review.*

There are two possible solutions for the DOE to fix the NEPA flaws in its current Draft SPD SEIS. One solution is to issue a new, revised draft supplemental environmental impact statement. As the NEPA regulations instruct, if a draft statement is so inadequate as to preclude meaningful analysis, the agency shall prepare and circulate a revised draft of the appropriate portion. 40 C.F.R. §1502.9(a). Here, the Draft SPD SEIS discussion of LANL for pit disassembly and conversion meets that threshold of being so inadequate as to preclude meaningful analysis since Santa Clara Pueblo could not ascertain from the document just how many pits would come to LANL as a result of including LANL as an option.[4] The better solution, however, is for the DOE to actually issue a new programmatic environmental impact statement because the new inclusion of LANL as an option for pit disassembly and conversion is actually a change in a previous programmatic plan involving systematic and connected agency decisions and involves reallocating agency resources to implement a specific overall program covering many component parts of the DOE complex. *See id.* at §1508.18(b)(3); *see also* 10 C.F.R. §1021.330(a).

51-4

Moreover, the 2006 Accord requires that DOE consult with the Pueblo "to assure that tribal rights, responsibilities, and concerns are addressed *prior to* the DOE taking actions." 2006 Accord at 3 (emphasis added). In order to remedy the problems discussed above, at a minimum, the DOE must conduct government-to-government consultation with Santa Clara Pueblo on any proposed revisions to the fix these NEPA defects.

III. Increased pit disassembly and conversion at LANL should not remain as part of DOE's preferred alternative because continued and increasing information about additional seismic risks at LANL make LANL a clearly unsafe and unjustifiable choice.

LANL was built on the Pajarito Fault System along the Rio Grande Rift. The Pajarito Fault connects to a number of secondary faults -- the Santa Clara Canyon Fault, the Rendija Canyon Fault, the Guaje Mountain Fault, and the Sawyer Canyon Fault. *See* Draft SPD SEIS at 3-61. This fault system connects to Santa Clara Pueblo's landbase and, among other concerns, Santa Clara Pueblo remains deeply concerned that this fault system provides a means of transport for groundwater contamination to our lands.

51-5

[4] Santa Clara Pueblo also objects to the fact that the reference documents for the Draft SPD SEIS were not made available online for review during the comment period on the draft. This too prevented meaningful analysis.

51-4 As more comprehensively discussed in the responses to comments 51-1 and 51-3, both the *Draft* and *Final SPD Supplemental EIS* clearly disclose and discuss the full range of potential environmental impacts from potential pit disassembly and conversion options at LANL and SRS. Therefore, DOE believes issuance of this *SPD Supplemental EIS* is appropriate pursuant to CEQ and DOE NEPA regulations. For further discussion as to why the introduction of LANL in this *SPD Supplemental EIS* does not amount to a programmatic change, refer to Section 2.1, Topic A, of this CRD.

DOE has reached out to the Santa Clara Pueblo to accommodate their request for government-to-government consultation.

The period for submitting comments on the *Draft SPD Supplemental EIS* closed on October 10, 2012. On the same day, DOE posted the references on the *SPD Supplemental EIS* website at http://nnsa.energy.gov/aboutus/ouroperations/generalcounsel/nepaoverview/nepa/spdsupplementaleis. Nonetheless, the *Draft SPD Supplemental EIS* and the cited resources on which DOE relied to support the analysis in the *Draft SPD Supplemental EIS* were available to the public for the duration of the comment period. Copies of the cited reference materials were sent along with copies of the document to all of the reading rooms and libraries listed in the Summary, Section S.13, of the *Draft SPD Supplemental EIS* prior to the beginning of the public comment period.

51-5 Chapter 3, Section 3.2.2, of this *SPD Supplemental EIS* describes geology and soils conditions at PF-4 at LANL, including the location of faults (e.g., the Rendija Canyon, Guaje Mountain, and Sawyer Canyon faults) and seismic and volcanic hazards. As described in Chapter 3, Section 3.2.2.1, there appear to be no active surface-displacing faults at TA-55, where PF-4 is located. The closest mapped surface trace of faults associated with the Pajarito fault system lies about 1,000 meters (3,300 feet) to the east of TA-55. Chapter 3, Section 3.2.3.1, describes surface water and groundwater resources at and near LANL. As described in Chapter 4, Section 4.1.7.3, DOE does not expect that pit disassembly and conversion operations at PF-4 at LANL would impact the quality or quantity of surface water or groundwater resources under normal operating conditions.

Appendix F of this *SPD Supplemental EIS* includes analyses of the environmental impacts and human health risks of expanded pit disassembly and conversion processes in PF-4. Appendix D, Sections D.1.5.2.11 and D.2.9, provide more-detailed information on accidents at PF-4, including consideration of natural

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The Draft SPD SEIS does acknowledge the seismic faults at and around LANL and does incorporate information from the seismic hazard study for LANL conducted in 2009 that indicated "[e]xpected maximum magnitudes for the various rupture scenarios of the Pajarito fault system range from M [a magnitude of] 6.5 to 7.3." *Id.* at 3-63. The document also states that the Defense Nuclear Facilities Safety Board ("DNFSB") accepted the 2009 updated analysis. *Id.* However, what the Draft SPD SEIS fails to state is that the DNFSB actually has recently expressed significant concerns about the seismic integrity of the very facility, PF-4 at T.A.55 at LANL, where the DOE has stated in the Draft SPD SEIS that it prefers to have some potentially quite large but not clearly specified amount of plutonium pits disassembled and converted.

51-5 cont'd

In fact, as recently as July 18, 2012, the DNFSB stated in a letter to DOE[5]:

> The National Nuclear Security Administration's (NNSA) Plutonium Facility at Los Alamos National Laboratory will continue to play a vital role as a production facility for the foreseeable future. The Defense Nuclear Facilities Safety Board (Board) remains concerned by the seismic integrity of the Plutonium Facility. The timely identification and remediation of any structural vulnerabilities will have profound implications for ensuring public health and safety. The Board believes that NNSA's current approach for assessing the Plutonium Facility's seismic behavior is not adequately defined, and is technically inadequate in several aspects. Timely action must be taken to fully understand if additional building modifications are required to eliminate or mitigate any remaining structural vulnerabilities in the design.
>
> The 1970's-era design and construction of the Plutonium Facility lacks the structural ductility and redundancy that would be required by modern building codes in force today. This lack of ductility and redundancy makes the Plutonium Facility susceptible to catastrophic structural failure if subjected to the strong seismic ground motions identified in the most recent probabilistic seismic hazard analysis conducted by NNSA's contractor. The analysis identifies ground motions up to five times greater than the original design basis in the frequency band of interest for the Plutonium Facility.
>
> NNSA and its contractor are currently performing a static nonlinear analysis intended to definitively characterize the Plutonium Facility's structural response to large earthquake ground motions. The Board is concerned that the ongoing static nonlinear analysis is proceeding without adequate definition and technical justification.

[5] A copy of the letter is attached to these comments as Exhibit 1.

phenomena hazards, such as earthquakes and volcanic eruptions. Section D.1.5.2.11 describes the completed and planned seismic upgrades to PF-4.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9), including a beyond-design-basis earthquake with fire, and describes concerns identified by DNFSB. For further discussion, refer to Section 2.3, Topic B, of this CRD.

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It does not appear that the Draft SPD SPEIS (or past LANL probabilistic seismic hazard analyses referenced in the Draft SPD SEIS) adequately take into account the extent of known concealed active faults close to (and possibly below) PF- 4 such as the Rendija Canyon and Guaje Mountain faults or fully address the still as yet uncertain termination of the Sawyer Canyon Fault as an active concealed fault. As the DNFSB has pointed out, the DOE must address impacts associated with large ground motions and not only surface ruptures.

DOE therefore should not just brush aside seismic concerns by indicating that seismic risks will be mitigated through engineering design upgrades to PF-4 since, as the DNFSB letter makes clear, DOE's current approach for assessing seismic risks to PF-4 is "technically inadequate" and there is simply not yet sufficient knowledge of the full extent of the seismic hazard to ensure a safe design.

51-5 cont'd

Consequently, the DOE should eliminate LANL from any of its alternatives for pit disassembly and conversion for surplus plutonium and not include LANL within its preferred alternative. The location of LANL in a seismic fault zone between a known seismically active rift and a large super volcano (the Valles Caldera), coupled with the DNFSB's very specific and as yet unaddressed concerns about the seismic integrity of the PF-4 facility in T.A.55, make LANL a choice where there are clearly significant but not yet fully understood health and safety impacts on the human environment.

IV. The Draft SPD SEIS does not properly analyze environmental justice impacts to the Santa Clara Pueblo community related to new pit disassembly and conversion options involving LANL.

Santa Clara Pueblo recognizes and respects that many Tribes shy away from the term "environmental justice" because they believe the interpretation of Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, 59 Fed. Reg. 7629 (Feb. 11, 1994) (Executive Order 12898"), may relegate Tribes to being just another minority group. Minority group status alone, of course, fails to recognize Tribes' sovereign status, the government-to-government relationship, and the Federal trust responsibility to Tribes. However, at Santa Clara Pueblo, we believe environmental justice should not be the only avenue for discussion of impacts to Tribes but is still an important analysis for DOE to conduct properly with respect to Tribes. Unfortunately, the Draft SPD SEIS does not contain a meaningful environmental justice analysis related to Santa Clara Pueblo regarding the pit disassembly and conversion alternatives involving LANL.

51-6

As the Council on Environmental Quality ("CEQ") has made clear through explicit guidance about environmental justice issued in 1997, "[w]here environments of Indian tribes may be affected, agencies must consider pertinent treaty, statutory, or executive order rights and consult with tribal governments in a manner consistent with the government-to-government relationship." *See* CEQ, *Environmental Justice: Guidance Under the National Environmental Policy Act* (Dec. 10, 1997)("CEQ EJ Guidance") at 14. No such consultation occurred with

51-6 See the response to comment 51-4 regarding the Santa Clara request for government-to-government consultation.

Chapter 4, Section 4.1.6, of this *SPD Supplemental EIS* analyzes environmental justice impacts of the options for pit disassembly and conversion at LANL and concludes that Native Americans living near LANL are not exposed to elevated risks compared to nonminority populations living in the same area, and that the incremental risks associated with the activities proposed in this *SPD Supplemental EIS* are small. Section 4.5.3.8 describes cumulative environmental justice impacts and includes a summary of the impacts from consideration of a special pathways scenario. This analysis shows that a special pathways receptor would receive a higher dose than other receptors, but the dose is still low and would not be appreciably affected by the activities evaluated in this *SPD Supplemental EIS*. For further discussion, refer to Section 2.6, Topic A, of this CRD.

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Santa Clara Pueblo. We did receive a briefing about the document after it was drafted but that is not the same thing. Perhaps the lack of consultation is why the Draft SPD SEIS environmental justice analysis is flawed. *51-6 cont'd*

The best way to illustrate the flaws is to look to a situation discussed in the Draft SPD SEIS where a significant impact to the general population was acknowledged by DOE, although the DOE downplayed the situation. The DOE analyzed the "maximum evaluated beyond-design-basis accident" for LANL and indicated that, under all the alternatives, such a "maximum evaluated beyond-design-basis accident" would be an earthquake resulting in severe damage to the facilities. Draft SPD SEIS at 2-23. The Draft SPD SEIS indicates that such an accident is "extremely unlikely to beyond extremely unlikely." *Id.* As our discussion in section III above makes clear, the likelihood of an earthquake severely damaging PF-4 at LANL is still of grave concern to the DNFSB and the DNFSB believes the facility could be subject to catastrophic structural failure if subjected to the strong seismic ground motions identified in the most recent probabilistic seismic hazard analysis conducted by DOE. We also note that earthquakes do not seem so unlikely to us at Santa Clara Pueblo as they do to DOE. In fact, as recently as October of 2011, a 3.5 magnitude earthquake occurred in the Nambe/Chupadero area of northern New Mexico, approximately 30 miles away from LANL. Despite downplaying the situation, the DOE does admit in the Draft SPD SEIS that this type of accident would cause one (1) to two (2) latent cancer fatalities among the general population surrounding LANL "from radiation exposure and uptake of radionuclides." *Id.* What the Draft SPD SEIS fails to acknowledge is that Santa Clara Pueblo's closest border to LANL is actually only about five (5) miles away from the lab.[6] The Pueblo estimates that T.A.55 (where PF-4 is located) is 6.17 miles from the Pueblo's closest border to LANL and 9.22 miles from our main village/population center at the Pueblo. *51-7*

Even though the Draft SPD SEIS acknowledges there could be 2 latent cancer fatalities in the general population surrounding LANL resulting from an earthquake damaging PF-4, the document indicates there are no environmental justice impacts from the alternatives involving LANL because the impacts are "essentially the same or lower for minority and low-income populations" near LANL as they are for nonminority or non-low income populations. *Id.* at 2-26. However, it appears the environmental justice analysis was completed solely on a macro level, using a "block-group level of spatial resolution from the 2010 census" to address the overall distribution of all minority populations within a fifty (50)-mile radius of LANL and to estimate overall combined minority or low-income population numbers to the year 2020. *Id.* at 3-105 and 4-77. In other words, there was no analysis of the impacts of how 1 to 2 latent cancer fatalities would impact the sovereign nation of Santa Clara Pueblo, a separate Indian community (which happens to be a low-income, minority community too), unique unto ourselves and with only approximately 2,600 members.

[6] The only mention we found in the document of Santa Clara Pueblo's location is on page 3-56. There, the Draft SPD SEIS indicates that Santa Clara Pueblo is located approximately 20 miles to the northeast of LANL. Our main village/population center is located approximately 18 miles to the northeast of the lab, but our closest border with LANL is considerably closer than the Draft SPD SEIS explains.

51-7 DOE is aware of the earthquake risks associated with LANL. The nuclear facilities at LANL were designed to survive earthquakes, such as the earthquake mentioned by the commentor that occurred close to LANL in 2011, with no damage to PF-4. DOE continues to evaluate the performance of PF-4 in an earthquake and implement engineering and administrative measures to control risk. However, this *Final SPD Supplemental EIS* also analyzes the possibility that a beyond-design-basis earthquake could result in the collapse of PF-4, as well as the potential impacts of such a collapse. A revised accident analysis has been included in this *SPD Supplemental EIS* that reflects DOE's latest analysis of such an accident involving PF-4 (see Appendix D). As presented in the revised Chapter 2, Table 2–3, of this *SPD Supplemental EIS*, up to 3 LCFs would be associated with a beyond-design-basis accident under any of the proposed alternatives involving activities at PF-4 should such an accident occur. These activities include not only the proposed pit disassembly and conversion activities, but also pit production and heat-source plutonium activities unrelated to surplus plutonium disposition. The estimate of up to 3 LCFs is based on a dose of 3,800 to 4,300 person-rem to the population of approximately 448,000 people living within 50 miles (80 kilometers) of the accident. It is an incorrect interpretation or use of the results to assume that the LCFs would occur in a particular subset of the population such as the Santa Clara Pueblo.

Persons living nearest the site would be exposed to the greatest risk. Appendix D, Table D–18, of this *SPD Supplemental EIS* indicates that the increased probability of an fatal cancer to a MEI at the site boundary, about 0.75 miles (1.2 kilometers) from PF-4, if the beyond design-basis earthquake were to occur, would be about 1 chance in 100. When the likelihood of the accident occurring is taken into account, the increased risk to the MEI of developing a fatal cancer from such an accident would be, at most, approximately 1 chance in 10 million. The risk at the Santa Clara Pueblo's closest border, about 6.17 miles (9.93 kilometers) away, would be roughly an order of magnitude lower due to its greater distance from the site, making the increased risk to an individual on the Pueblo's border from such an accident on the order of 1 chance in 100 million. Risks to individuals at the main village or population center of the Pueblo would be even smaller due to the even greater distance from the site.

Regarding the environmental justice evaluation and distribution of Native Americans, as indicated in Chapter 3, Section 3.2.11, of this *Final SPD Supplemental EIS*, the finer resolution provided by evaluating the population at the block level as opposed to the block group level would not provide any benefit in distinguishing the potential for disproportionate impacts to minority or low income

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The CEQ EJ Guidance also instructs that "[a]gencies should recognize the interrelated cultural, social, occupational, historical, or economic factors that may amplify the natural and physical environmental effects of the proposed agency action" and that such factors "should include . . . the effect of any disruption on the community structure associated with the proposed action." CEQ EJ Guidance at 9. The Draft SPD SEIS does not include any such discussion with respect to Santa Clara Pueblo. Perhaps to compensate for the lack of consultation with Santa Clara Pueblo and the lack of actual analysis relating directly to the Pueblo as a unique Indian community, the Draft SPD SEIS relies, instead, upon an analysis of "special pathways receptors" from the LANL 2008 Site-wide Environmental Impact Statement ("LANL SWEIS") -- an analysis which Santa Clara Pueblo resoundingly and repeatedly criticized during the 2008 LANL SWEIS process.

Essentially, in the LANL SWEIS, a special pathway user was a Maximally-Exposed Individual ("MEI") who also is assumed to consume more elk and deer and surface water and drinks some Indian tea. *See*, *e.g.*, Draft SPD SEIS at 4-78. As the record for the LANL SWEIS process reflects, Santa Clara Pueblo objected strongly to the lack of government-to-government consultation with Santa Clara Pueblo regarding the assumptions used for the special pathways analysis and, as Santa Clara Pueblo stated throughout the LANL SWEIS process, Santa Clara Pueblo's interactions with the natural world are far greater than those assumed. Simply put, we have more direct and intimate contact with stream and surface clay deposits than are captured in the special pathways analysis. We also have dermal absorption of natural pigment paints placed on our bodies for long periods of time during which there is considerable physical activity opening the pores. We use many more plants and animals for food, medicinal, and other cultural purposes than the special pathways analysis assumes and we harvest and consume far more of the elk and deer than the special pathways analysis assumes. Thus, by relying upon the flawed and incomplete assumptions of the LANL SWEIS's special pathways analysis to address environmental justice, the Draft SPD SEIS misses the mark.

In short, the DOE's environmental justice analysis in the Draft SPD SEIS fails to take into account the true extent of Santa Clara Pueblo's heightened interactions with the environment and the increased exposures we would have if there were an earthquake-related accident at PF-4. In addition, the Draft SPD SEIS fails to analyze the effects of how 1 to 2 latent cancer fatalities at Santa Clara Pueblo resulting from an earthquake-related accident at PF-4 could affect the community structure of our Pueblo and therefore does not meet CEQ environmental justice standards.

V. Pit disassembly and conversion at LANL should not be part of the DOE's preferred alternative because of the significant cumulative impact it would have on the remediation and restoration processes underway at LANL.

NEPA regulations state that agencies, in assessing cumulative impacts in an environmental impact statement, have to address:

51-8

populations beyond the immediate vicinity of LANL. In response to this comment, DOE performed analyses using block level census data as opposed to block group level data. This analysis showed that, using block level data, the number of Native Americans within 0 to 10 miles and 20 to 30 miles decreased, while the number within 10 to 20 miles increased; the net result was 69 fewer Native Americans living within 30 miles of LANL, or a decrease of 0.4 percent compared to the estimates included in this *Final SPD Supplemental EIS*. Using the block level data, the Native American population within 50 miles was about 500 less than the estimate using block group level data, or a decrease of 1.9 percent compared to the estimates included in this *Final SPD Supplemental EIS*. An analysis of average doses shows small changes, some higher and some lower, but the overall relationship between the average dose to a Native American and a nonminority member of the total population remains the same and does not change the conclusion regarding environmental justice impacts. For further discussion, refer to Section 2.6, Topic A, of this CRD.

51-8 DOE, through the Los Alamos Area Office, has been working with the Santa Clara Pueblo since 2010 to develop a plan that would enable the Santa Clara Pueblo to collect data that would better represent the Pueblo's interaction with the natural world. Once data are obtained, they would be incorporated into future NEPA analyses for proposed actions that could potentially affect the Santa Clara Pueblo. This *SPD Supplemental EIS* includes an analysis for a special pathways receptor that was developed for the 2008 *LANL SWEIS* (DOE 2008) using the best information available to DOE to reflect exposures that could result from traditional living habits, including subsistence consumption of native vegetation (pinyon nuts and Indian Tea [Cota]), locally grown produce and farm products, groundwater, surface water, fish (game and nongame), game animals, other foodstuffs, and incidental consumption of soils and sediments (on produce, in surface water, and ingestion of inhaled dust); absorption of contaminants in sediments through the skin; and inhalation of plant materials. These pathways are in addition to the meat, milk, produce, water, and sediment consumption reflected in the "offsite resident" pathway assumption. The analysis concludes that persons living near LANL who practice traditional living habits would receive a higher dose than the rest of the populations living in the same area, but the risks associated with the exposures from LANL would be small (see Chapter 4, Section 4.5.3.8.2). For further discussion, refer to Section 2.6, Topic A, of this CRD.

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> the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

40 C.F.R. at §1508.7.

There are two reasonably foreseeable future actions that do not appear to have been analyzed in the Draft SPD SEIS , namely: the effect that significantly increasing or moving some unknown but potentially large amount of pit disassembly and conversion to LANL would have on: (1) DOE's remediation compliance schedule under the March 2005 Compliance Order on Consent between the New Mexico Environment Department and LANL ("Consent Order") ; and (2) the natural resources damage assessment and restoration ("NRDAR") work of the LANL Trustee Council, for which DOE serves a governmental Trustee.

The purposes of the Consent Order are: (1) to define the extent of releases of contaminants at LANL; (2) to evaluate corrective measures to clean up contaminants and prevent or mitigate the migration of contaminants; and (3) to implement such corrective measures. DOE has been chronically behind schedule in completing the Consent Order milestones and funding for completion of remedial activities seems to be a continuing struggle for LANL. Santa Clara Pueblo objects to DOE bringing additional plutonium to LANL in potentially large quantities when DOE still has not cleaned up the legacy waste at LANL. The cumulative effect on Consent Order compliance of adding another mission at LANL that would generate more waste to be cleaned up and that would divert increasingly limited resources away from clean-up needs to be addressed.

The NRDAR process overseen by the LANL Trustee Council is governed by the Comprehensive Environmental Response, Compensation, and Liability Act. The Trustees on the LANL Trustee Council include DOE, the Department of Interior, the United States Department of Agriculture, the State of New Mexico, Santa Clara Pueblo, San Ildefonso Pueblo, and Jemez Pueblo. The purpose of this NRDAR process at LANL is to assess the extent to which natural resources have been injured by the release of hazardous substances from LANL and the extent to which there has been lost use of those resources because of the injury. The ultimate goal of NRDAR is to restore the natural resources and the services they provide to the same condition they would have been in without the release of the contaminant substances or to provide some sort of equivalent replacement. Restoration processes under NRDAR can address conditions that are not fully addressed through the remediation process.

Just as a large pit disassembly and conversion mission at LANL could undermine the remediation process under the Consent Order, so too could it undermine the NRDAR process

51-9

51-9 Progress on implementing the Consent Order or engaging in the Natural Resources Damage Assessment and Remediation (NRDAR) process is not linked to decisions on pit disassembly and conversion activities. As described in Chapter 4, Section 4.5.2.1.2, of this *SPD Supplemental EIS*, cleanup and remediation activities at LANL were considered in the cumulative impacts assessment associated with LANL and included in the impacts analysis presented in Section 4.5.3. The proposed pit disassembly and conversion activities are not expected to interfere with these activities. Nor are they expected to interfere with the NRDAR process, and there are no potential impacts anticipated from this process that DOE could have analyzed in this *SPD Supplemental EIS*. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions.

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now finally underway. The DOE has to factor in these cumulative impacts, which underscore why LANL is a poor choice for new pit disassembly and conversion.

51-9 cont'd

VI. Next steps DOE must take in addressing these comments, which include government-to-government consultation with Santa Clara Pueblo.

As stated in section II(D) above, to fix the NEPA flaws in the Draft SPD SEIS, DOE needs to issue a new programmatic environmental impact statement regarding plutonium disposition or, at a minimum, issue a revised draft supplemental environmental impact statement. However, no further NEPA document on this subject which includes a discussion of LANL for pit disassembly and conversion should be issued by DOE without first consulting with Santa Clara Pueblo to ensure compliance with our 2006 Accord. *See* 2006 Accord at 3 ("DOE will consult with the Pueblo to assure that tribal rights, responsibilities, and concerns are addressed prior to the DOE taking action, making decisions, or implementing programs that may affect the Pueblo."). Such government-to-government consultation is also required to ensure DOE has lived up to its commitment to "protect and promote" Tribal Trust resources in order try to avoid impacts to those resources. *See* DOE Indian Policy at 3 (Section I).

51-10

For all the reasons we have stated above, we urge that LANL be excluded from the preferred alternative for pit disassembly and conversion as part of DOE's surplus plutonium disposition program. However, if LANL remains in the preferred alternative, then government-to-government consultation with Santa Clara Pueblo must first occur to ensure impacts are avoided or properly mitigated if impacts cannot be avoided. The DOE Indian Policy is clear that, when avoidance of impacts through "DOE trust protection measures" cannot be fully carried out, the DOE will work with the affected Tribe regarding corrective measures. *Id.* Consultation with any affected Tribe regarding mitigation strategies is also part of the DOE's environmental justice duties. *See* CEQ Environmental Justice Guidance at 10; *see also* Comprehensive Presidential Documents No. 279, Memorandum from the President to the Heads of Departments and Agencies, EPA-l 75-N-94-001 (Feb. I 1, 1994), http://www.epa.gov/fedfac/documents/executive_order_12898.htm#memo1.

VII. Conclusion

The CEQ,in its NEPA regulations, advises that:

> NEPA's purpose is not to generate paperwork-even excellent paperwork-but to foster excellent action. The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment.

40 C.F.R. §1500.l(c).

51-10 See the response to comment 51-1 regarding the commentor's opinion about the need for a new programmatic EIS on storage and disposition of surplus plutonium, 51-3 regarding pit disassembly and conversion, and 51-4 regarding government-to-government consultation.

Commentor No. 51 (cont'd): Walter Dasheno, Sr., Governor Santa Clara Pueblo

Ms. McAlhany
Santa Clara Pueblo's Comments on the Draft SPD Supplemental EIS
October 03, 2012
Page 13

It is with this spirit that Santa Clara Pueblo offers these comments, because the environment that we seek to have DOE protect, restore, and enhance is our aboriginal homeland and continued spiritual sanctuary.

For all the reasons discussed herein, Santa Clara Pueblo urges you in the strongest possible terms to ensure LANL no longer continue to be part of DOE's preferred alternative for new pit disassembly and conversion capabilities associated with the DOE's surplus plutonium disposition program.

Sincerely,

Walter Dasheno, Sr.
Governor

cc:

Members of the Santa Clara Tribal Council
DOE Secretary Steven Chu
NNSA Administrator Thomas D'Angostino
DOE Director of Tribal and Intergovernmental Affairs David Conrad
Senator Jeff Bingaman
Senator Tom Udall
Representative Ben Ray Lujan
Representative Martin Heinrich
Representative Steve Pearce
New Mexico Governor Susanna Martinez
New Mexico Environment Department Secretary F. David Martin
New Mexico Indian Affairs Department Secretary Arthur Allison
Santa Clara Pueblo Office of Environmental Affairs Director Joseph M. Chavarria
Jessica Aberly, Esq.

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Commentor No. 51 (cont'd): Walter Dasheno, Sr., Governor Santa Clara Pueblo

SANTA CLARA
POST OFFICE BOX 580
(505) 753-7330
(505) 753-5375 Fax

INDIAN PUEBLO
ESPANOLA, NEW MEXICO
87532
OFFICE OF GOVERNOR

RESOLUTION NO. 2012 - 23

APPROVING THE SUBMISSION OF COMMENTS FOR SANTA CLARA PUEBLO TO THE DEPARTMENT OF ENERGY REGARDING THE DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR SURPLUS PLUTONIUM DISPOSITION

WHEREAS, Santa Clara Pueblo (the "Pueblo") is a sovereign Indian tribe, recognized as such by the United States Government, with the Pueblo's Tribal Council as its governing body, whose authority is defined by the Pueblo's Constitution and Bylaws approved on December 20, 1935; and,

WHEREAS, the Pueblo has maintained a recognized and formalized government-to-government relationship with the Department of Energy (the "DOE") as set forth first in 1992 and then in 2006 in the *Restatement of Accord between the Pueblo of Santa Clara, a Federally-Recognized Indian Tribe and the United States Department of Energy* (October 31, 2006); and,

WHEREAS, the DOE has issued a draft Supplemental Environmental Impact Statement ("SEIS") regarding surplus disposition of plutonium; and

WHEREAS, the DOE's preferred alternative in the surplus plutonium disposition SEIS is: (1) to convert surplus plutonium pits into mixed uranium-plutonium oxide ("MOX") fuel for irradiation in U.S. commercial nuclear reactors; (2) to dispose of surplus non-pit plutonium not suitable for MOX fuel in the Waste Isolation Pilot Plant; and (3) to disassemble plutonium pits and to convert various forms of surplus plutonium for use in MOX fuel fabrication at "some combination" of facilities at Los Alamos National Laboratory ("LANL") and Savannah River Plant; and

WHEREAS, currently a relatively small quantity of surplus plutonium disassembly and conversion is already approved at LANL but a dramatic increase in plutonium (although the exact amount is not clearly stated in the SEIS) would come to LANL as part of DOE's preferred alternative; and

Response side of this page intentionally left blank.

Commentor No. 51 (cont'd): Walter Dasheno, Sr., Governor Santa Clara Pueblo

WHEREAS, after careful consideration, the Tribal Council is of the view that it is in the best interest of the Pueblo to submit the attached comments regarding the surplus plutonium disposition SEIS;

NOW THEREFORE BE IT RESOLVED the Tribal Council opposes increasing plutonium pit disassembly and conversion at LANL because: (1) the safety and structural integrity of the current plutonium facility at LANL cannot be ensured due to continued and increased uncertainty about additional seismic risks to the facility; (2) increasing plutonium at LANL would undermine remediation and restoration efforts already underway; and (3) environmental justice impacts to the Santa Clara Pueblo community that would result from increased pit disassembly and conversion at LANL have not been adequately addressed by DOE; and,that the Tribal Council hereby approves the attached comments regarding the surplus plutonium disposition SEIS.

BE IT FURTHER RESOLVED that the Tribal Council authorizes and directs the Governor to execute and submit the attached comments regarding the surplus plutonium disposition SEIS on behalf of the Pueblo.

CERTIFICATION

I, the undersigned, duly elected Governor of the Santa Clara Pueblo, do hereby certify that the Tribal Council, at a duly called meeting that was convened with proper notice and was held on the 3 day of October, 2012, at Santa Clara Pueblo, New Mexico, a quorum being present, approved the foregoing Resolution with 10 in favor, and 0 opposed, 0 abstaining, 2 being absent.

Governor Walter Dasheno, Sr.

ATTEST:

Secretary Francis Tafoya

Response side of this page intentionally left blank.

Commentor No. 52: Yolande McCurdy Gottfried

From: Gottfried, Yolande
Sent: Monday, October 08, 2012 7:09 PM
To: spdsupplementaleis@saic.com
Subject: SPD Supplemental EIS comment

Yolande McCurdy Gottfried

I am a resident in the area of influence of the Seqouyah and Brown's Ferry nuclear power plants where the use of MOX as fuel is being considered. I am opposed to the use of this fuel in these plants for the following reasons:

1. Browns Ferry and Sequoyah are the worst reactors for the MOX program. Browns Ferry "boiling water reactors" have the same GE Mark I design as the failed Fukushima reactors. Sequoyah's "pressurized water reactors" have been cited by the Nuclear Regulatory Commission as having newly discovered earthquake and flood risks. *52-1*

2. MOX made from weapons-grade plutonium has never been used on a commercial scale in any reactor worldwide and has never been tested at all in a boiling water reactor (BWR) like Browns Ferry. Likewise, a MOX test in Duke's Catawba pressurized water reactor (PWR) was halted prematurely and not taken to conclusion. *52-2*

3. The plutonium in fresh MOX fuel is vulnerable to theft and weaponization at every stage of the fuel's production. To make things worse, the NRC does not require the highest level of security in transport and storage at the reactor sites. At a meeting in Chattanooga, residents were told that at least 438 shipments of plutonium-enriched fuel could be shipped over the road from South Carolina to Soddy-Daisy, TN or to Athens, AL. I do not want this risk in my area. *52-3*

4. MOX is the most expensive option for handling plutonium. The Alliance for Nuclear Accountability estimates additional costs of the MOX program at around $17.5 billion versus less than $4 billion to manage plutonium as nuclear waste. DOE refuses to release life-cycle cost estimates while AREVA and contractors rake in profits off the program. *52-4*

5. MOX will not reduce the total amount of nuclear waste that we will need disposal. Not only does MOX eventually come out of reactors as spent nuclear fuel requiring indefinite storage, but spent MOX fuel still contains plutonium and is harder to manage as it's thermally hotter than traditional uranium fuel. *52-5*

6. While irradiation in a reactor gets the plutonium into a more protected form, the same thing can be accomplished better via immobilization. *52-6*

52-1 As analyzed in Appendix J, Section J.3, of this *SPD Supplemental EIS*, the risks to the MEI and the surrounding population of developing a fatal cancer as a result of one of the analyzed accidents are small, regardless of whether the reactors are using partial MOX or full LEU fuel cores. Both the Browns Ferry and Sequoyah Nuclear Plants would require an NRC amended license to use MOX fuel, as discussed in Chapter 5, Section 5.3.3, of this *SPD Supplemental EIS*. NRC would independently determine whether new public or industry information might warrant additional safety reviews.

The Sequoyah and Browns Ferry reactors and their safety equipment are seismically designed to withstand a much larger earthquake than planned in their original design. The Sequoyah reactors have equipment (e.g., submersible pumps and hoses) and procedures to keep the reactors safe in the event of flooding. For further discussion, refer to Section 2.5, Topic C, of this CRD.

52-2 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

It is important to note that, whether using reactor- or weapons-grade plutonium, the total quantity of fissile plutonium within a fuel element is adjusted so that it represents only a small fraction of the material within the fuel rod (currently planned to be approximately 4 to 5 percent fissile plutonium within each MOX fuel rod).

52-3 Details of the security measures in place for transporting plutonium and at facilities in which plutonium is stored or processed are classified. However, these facilities are located in highly secure areas within controlled-access, secure DOE sites. Transportation of surplus plutonium, including transportation of unirradiated MOX fuel assemblies to reactors, would be conducted using vehicles and procedures from NNSA's Office of Secure Transportation, Secure Transportation Asset Program. Appendix E of this *SPD Supplemental EIS* describes transportation between

Commentor No. 52 (cont'd): Yolande McCurdy Gottfried

The draft document is unrealistic and inadequate conceming MOX testing and use. No MOX plant operational schedule is presented, no plan or schedule for MOX testing in TVA or "generic" reactors is presented and no schedule for full-scale use of MOX is presented. Therefore, no Record of Decision (ROD) can be issued. *52-7*

DOE must cancel the costly MOX program, prepare a new PEIS on disposition of plutonium as waste, and focus in the short term on safe, secure storage of plutonium now stored at the Savannah River Site, Pantex and Los Alamos. A careful review of options to dispose of plutonium as an immobilized waste form will yield the best path forward, a path away from a proliferation-prone and risky attempt to commercialize the use of plutonium as a nuclear power fuel. *52-8*

Sincerely,

Yolande McCurdy Gottfried

facilities and the evaluation of human health effects from transportation. Although most of the details of transportation by Secure Transportation Asset are classified, key characteristics are described in Appendix E, Section E.2.4. As described in Section E.6.2, DOE and its predecessor agencies have a successful 50-year history of transporting radioactive materials with no fatalities related to transportation of hazardous or radioactive cargo.

Substantial security exists at commercial nuclear power reactors in accordance with NRC requirements, although details of these security measures are also not releasable to the public. Although unirradiated (fresh) MOX fuel may not be sufficiently radioactive to be self-protecting, fresh MOX fuel is not an attractive target because it is not readily usable for a nuclear device or dirty bomb. As indicated in footnote 3 in Chapter 2 of this *SPD Supplemental EIS*, plutonium-239 may make up only 4 percent of a fuel assembly. The plutonium in MOX fuel is blended with approximately 20 times as much depleted uranium as plutonium and is formed into ceramic pellets encased in metal cladding. Moreover, the MOX fuel is contained in large, heavy fuel assembly structures that would make theft extremely challenging. Use of MOX fuel in commercial nuclear power reactors would render surplus plutonium into a used fuel form that is not readily usable for nuclear weapons.

52-4 Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

52-5 As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel, by storing it in the reactor's used fuel storage pool or placing it in dry storage. The use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would displace LEU fuel that otherwise would have been used to power the nuclear power reactor. Use of MOX fuel could increase used nuclear fuel generation by 8 to 10 percent for TVA's Browns Ferry and Sequoyah Nuclear Plants, and from 2 to 16 percent for generic reactors during the period MOX fuel could be used at a reactor. It is expected that increases of this magnitude would be managed within the reactor's normal planning for storage of its used fuel.

MOX fuel produces more heat over the long term than the LEU fuel currently used at the Browns Ferry and Sequoyah Nuclear Plants. Although the amount of fissile material would be somewhat higher in used MOX fuel rods than in used LEU fuel rods, the fuel assembly number and spacing in the used fuel pools and dry storage

Commentor No. 52 (cont'd): Yolande McCurdy Gottfried

casks could be adjusted as necessary to maintain the necessary criticality and thermal safety margins. The heat from MOX fuel would not affect the ability of TVA to safely store this fuel on site and would not prevent the MOX fuel from ultimately being placed in a geologic repository or other long-term storage facility. For further discussion, refer to Section 2.5, Topic B, of this CRD.

Examining the long-term storage of used fuel is not within the scope of this *SPD Supplemental EIS*. DOE is evaluating various options for the long-term storage of used fuel; however, there would be no substantial increase in risk to the public if used MOX fuel were managed instead of used LEU fuel. For further discussion, refer to Section 2.7, Topic A, of this CRD.

52-6 DOE believes all the action alternatives addressed in this *SPD Supplemental EIS* would be resistant to proliferation. MOX fuel use, immobilization, and vitrification with HLW are all alternatives that would place the plutonium within a highly radioactive matrix. Because of this, and because used fuel assemblies and HLW canisters are heavy, the plutonium under all of these alternatives would be impossible to handle without highly specialized equipment. Using surplus plutonium as MOX fuel, however, would generate electricity, and the isotopic distribution of the residual plutonium in used MOX fuel would be changed so that it would be less suitable for use in nuclear weapons. For further discussion, refer to Section 2.4, Topic A, of this CRD. Disposal of surplus plutonium at WIPP would be proliferation-resistant because the plutonium would be disposed of deep in the earth, mixed with inert material, and co-mingled with thousands of other containers of TRU waste.

52-7 A detailed program schedule is not required to perform the environmental impacts analysis in this *SPD Supplemental EIS*. The actual production schedule for MFFF would depend on factors such as license conditions and the specific contracts received from customers to manufacture specific types of MOX fuel. As shown in Appendix B, Table B–2, MFFF is estimated to operate for 21 to 24 years, depending on the amount of surplus plutonium to be fabricated into MOX fuel.

52-8 DOE does not agree with the opinion of the commentor about the need for a programmatic re-evaluation of the disposition of surplus plutonium as waste. DOE evaluated disposition of plutonium as waste in the *SPD EIS* in addition to analyzing the disposition of some of the material as MOX fuel. DOE believes that the decision to prepare this *SPD Supplemental EIS* complies with CEQ and DOE regulations and guidance. For further discussion, refer to Section 2.1, Topic A, of this CRD.

Commentor No. 52 (cont'd): Yolande McCurdy Gottfried

As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS,* but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. The action alternatives evaluated for the 13.1 metric tons (14.4 tons) of surplus plutonium are the Immobilization to DWPF Alternative, MOX Fuel Alternative, H-Canyon/HB-Line to DWPF Alternative, and WIPP Alternative. DOE believes all the action alternatives addressed in this *SPD Supplemental EIS* would be resistant to proliferation. MOX fuel use, immobilization, and vitrification with HLW are all alternatives that would place the plutonium within a highly radioactive matrix. Because of this, and because used fuel assemblies and HLW canisters are heavy, the plutonium under all of these alternatives would be impossible to handle without highly specialized equipment.

Commentor No. 53: John A. Wojtowicz
Tennessee Department of Environment and Conservation

From: John Wojtowicz
Sent: Tuesday, October 09, 2012 9:38 AM
To: 'spdsupplementaleis@saic.com'
Cc: Bud Yard; David Thomasson; Dale Rector; Richard Cator; John Owsley; Chudi Nwangwa; David C. Foster; Phillip Roush
Subject: RE: Comments on Summary and Volume 1 of Draft Supplemental Plutonium EIS
Attachments: Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement_Summary_comments.doc; Draft Surplus Plutonium Disposition **Supplemental** Environmental Impact Statement_Vol1_comments.doc

Attn: Sachiko McAlhany

I am attaching comments I have generated on both the Summary and Volume 1 of the "Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SPD Supplemental EIS) (DOE/EIS-0283-S2)". Our office has made the decision to not provide official comments to the documents. These documents have, however, been reviewed and comments generated. As indicated on the attached material the comments are not intended as official State of Tennessee comments; however, it is believed that the included comments will contribute toward producing a better quality final document.

If you have any questions regarding the attached, please feel free to contact me by e-mail or by phone at xxx-xxx-xxxx.

Thank you.

John A. Wojtowicz
Tennessee Department of Environment and Conservation
Division of Remediation
DOE-Oversight Office

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Commentor No. 53 (cont'd): John A. Wojtowicz
Tennessee Department of Environment and Conservation

NOT INTENDED AS OFFICIAL COMMENTS FROM THE STATE OF TENNESSEE

Tennessee Department of Environment and Conservation
Remediation Division
DOE Oversight Office
Radiological Monitoring and Oversight Section
Document Review

Date of Review: September 28, 2012 By: *John Wojtowicz*

Document Title: **Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement *(SPD Supplemental EIS)***

Document Number: **(DOE/EIS-0283-S2) Summary July 2012**

Discussion: TDEC is pleased to have this opportunity to review the above cited document.

It would be extremely helpful to the reading public to have the mention of any laws, regulations, policies, Orders,, etc. to be expanded on to some extent. Although Table 5-1 of Volume 1 gives a synopsis of the laws, etc., no mention is made of the table unless you read Chapter 5 (in the same volume). Mentions of these laws, regulations, etc., could at least point the reader to this table. In the chapter on laws, regulations, etc. it might also be helpful to give the public guidance on how to locate a copy of the various regulations, etc. Not everyone is aware that many of these documents may be located on the internet. A document that is supposed to allow the public the opportunity to review DOE actions should be more useable by the public. *53-1*

Page S-1, Paragraph 2, Line 4:
Should SPD be included in the list of Acronyms and Abbreviations? *53-2*

Page S-1, Paragraph 2, Lines 7-8:
Should the 1999 ROD mentioned here be included in the References?

Page S-3, Paragraph 1, Line 1:
Should the 2000 and 2003 RODs be included in the References? *53-3*

Page S-10, Last Paragraph, Lines 11-13:
Should all the RODs mentioned here be included in the References?

53-1 Readers of this *SPD Supplemental EIS* are directed throughout the document to the information provided in Chapter 5 regarding relevant regulations, permits, and consultations. DOE considers this to be sufficient to inform readers of the location and content of these documents.

53-2 "SPD" is not used as an acronym in the Summary.

53-3 It is neither a NEPA requirement nor DOE policy to provide reference information in an EIS for all Federal documents that are easily found using their document number in publications that are available on the Internet (such as the *Federal Register* and the *United States Code of Federal Regulations*). The document number is considered sufficient for easy reference.

Commentor No. 53 (cont'd): John A. Wojtowicz
Tennessee Department of Environment and Conservation

Page S-11, Response 4, Lines 3-5:
Should the 10 CFR section mentioned here be included in the References and cited appropriately here?

Page S-17, Pit Disassembly and Conversion Options, Paragraph 1, Line 3:
Should the ROD mentioned here be included in the References?

Page S-18, Paragraph 2, Line 1:
See comment **Page S-3, Paragraph 1, Line 1:** above.

Page S-24, No Action Alternative, Paragraph 1, Line 1:
See comment **Page S-3, Paragraph 1, Line 1:** above.

Page S-24, No Action Alternative, Paragraph 3, Lines 4-5:
Should these RODS be included in the References and cited appropriately here?

Page S-29, Second-Last Paragraph:
Should the RODS mentioned here be included in the References and cited appropriately here?

53-3 cont'd

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Commentor No. 53 (cont'd): John A. Wojtowicz
Tennessee Department of Environment and Conservation

NOT INTENDED AS OFFICIAL COMMENTS FROM THE STATE OF TENNESSEE.

Tennessee Department of Environment and Conservation
Remediation Division
DOE Oversight Office
Radiological Monitoring and Oversight Section
Document Review

Date of Review: September 28, 2012 By: *John Wojtowicz*

Document Title: **Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement *(SPD Supplemental EIS)***

Document Number: **(DOE/EIS-0283-S2) Volume 1 July 2012**

Discussion: TDEC is pleased to have this opportunity to review the above cited document.

It would be extremely helpful to the reading public to have the mention of any laws, regulations, policies, Orders,, etc. to be expanded on to some extent. Although Table 5-1 gives a synopsis of the laws, etc., no mention is made of the table unless you read Chapter 5. Mentions of these laws, regulations, etc., could at least point the reader to this table. In the chapter on laws, regulations, etc. it might also be helpful to give the public guidance on how to locate a copy of the various regulations, etc. Not everyone is aware that many of these documents may be located on the internet. A document that is supposed to allow the public the opportunity to review DOE actions should be more useable by the public.

53-4

53-4 See the response to comment 53-1 regarding information provided in Chapter 5.

Page xxiii, Acronyms, Abbreviations, and Conversion Charts:
DBA (design-basis accident) and DMO are not used in volume 1.

Page xxv, Acronyms, Abbreviations, and Conversion Charts:
S&P is not used in this volume.

53-5

53-5 The unused acronyms have been removed from the list of acronyms and abbreviations.

Page 1-1:

Commentor No. 53 (cont'd): John A. Wojtowicz
Tennessee Department of Environment and Conservation

All of the pages in the first chapter of the downloadable version of Volume 1 are given straight page numbers and not 1-1, 1-2, etc.

53-6

53-6 The page numbers have been corrected in the downloadable version of Volume 1 of this *Final SPD Supplemental EIS*.

Page 1-1, Introduction, Paragraph 2, Lines 7-8:
Should the ROD mentioned here be included in the References and cited appropriately here?

Page 1-10, Paragraph 1, Line 1:
Should the two RODs mentioned here be included in the References and cited appropriately here?

53-7

53-7 See the response to comment 53-3 regarding reference information in an EIS.

Page 1-10, Footnote 9, Line 2:
DOE 2010b in the references is not this document.

53-8

53-8 The correct reference for this document has been added to Chapter 7, and the citation in Chapter 1 has been corrected.

Page 1-12, Response 1, Lines 11-13:
Should all the RODs mentioned here be included in the References and cited appropriately here?

53-9

53-9 See the response to comment 53-3 regarding reference information in an EIS.

Page 1-18, Comment Summary 1, Line 2:
Should "…numbers of scoping meeting,…" be 'numbers of scoping meetings,…'?

53-10

53-10 The text has been changed to "…number of scoping meetings."

Page 1-19, Footnote 10, Line 1:
See comment **Page 1-10, Paragraph 1, Line 1:** above.

Page 2-2, Paragraph 1, Line 1:
See comment **Page 1-10, Paragraph 1, Line 1:** above.

Page 2-7, MOX Fuel, Paragraph 2, Line 2:
Should this ROD be included in the References and cited appropriately here?

Page 2-9, No Action Alternative, Paragraph 3, Lines 4-5:
Should these RODS be included in the References and cited appropriately here?

53-11

53-11 See the response to comment 53-3 regarding reference information in an EIS.

Page 2-9, Paragraph 3, Lines 4-6:
Should the RODS mentioned here be included in the References and cited appropriately here?

Page 2-15, Alternatives Considered but Dismissed from Detailed Study Paragraph 3, Lines 3-4:
Should the RODS mentioned here be included in the References and cited appropriately here?

Page 2-15, Alternatives Considered but Dismissed from Detailed Study, Paragraph 4:
Should the RODS mentioned here be included in the References and cited appropriately here?

Commentor No. 53 (cont'd): John A. Wojtowicz
Tennessee Department of Environment and Conservation

Page 2-17, Paragraph 1 Line 7:
Should the ROD mentioned here be included in the References and cited appropriately here?

53-11 cont'd

Page 2-38, Last Paragraph, Lines 1-2:
Should "The cumulative maximum concentrations of nonradiological air pollutants at the site boundary from operation of all SRS facilities at the site boundary would meet regulatory standards." Be 'The cumulative maximum concentrations of nonradiological air pollutants at the site boundary from operation of all SRS facilities ~~at the site boundary~~ would meet regulatory standards.'?

53-12

Page 2-41, Paragraph 2, Line 2:
Should "…Nevada Nuclear Security Site…" be 'Nevada ~~Nuclear~~ National Security Site'?

Page 2-41, Paragraph 2, Lines 4-6:
Should the ROD mentioned here be included in the References and cited appropriately here?

53-13

Page 2-41, Paragraph 2, Lines 13-14:
Given the many other options for environmentally friendly use of a number of the wood "waste products", is the statement "Furthermore, the biomass fuels to be burned would otherwise require disposal space in landfills (DOE 2008e:36)." Necessarily true?

53-14

Page 2-42, Table 2-5, Column 1, Row 4, Line 3:
DOE EA 1736 is included in the references as DOE 2010e. Why not just reference here accordingly?

53-12 cont'd

Page 2-43, Paragraph 2, Line 3:
Table 2-6 in the pdf version of the document appears garbled.

53-15

Page 3-11, General Site Description, Paragraph 3, Line 2:
Should FW be added to the list of Acronyms, Abbreviations, and Conversion Charts?

53-16

Page 3-11, General Site Description, Paragraph 3, Line 11:
It is assumed that the sentence "The river intake is approximately 78.5 hours of river travel time from SRS." is referring to the BJWSA: however, the placement of the sentence appears to infer that it refers to the SRS water intake. Please clarify.

Page 3-16, Paragraph 2:
The discussion in this paragraph is confusing. First, the water withdrawal for an area in a 10-mile radius of SRS for 2007 is mentioned, then compared to SRS 2010 withdrawal rate. When page 3-25 of the WSRC 2007f reference was accessed, there was no mention of an estimated water use for a 10-mile radius. Also, wouldn't it be better to compare 2010 data to 2010 data?

53-12 cont'd

53-12 The text has been revised.

53-13 See the response to comment 53-3 regarding reference information in an EIS.

53-14 The text is correct as provided.

53-15 Table 2–6 did not appear garbled in the online PDF version of this *Draft SPD Supplemental EIS* when checked by DOE.

53-16 This is a designation of the South Carolina water resources classification system and does not need to be added to the acronyms and abbreviations.

Commentor No. 53 (cont'd): John A. Wojtowicz
Tennessee Department of Environment and Conservation

The next 7 lines of the paragraph talk about the Savannah River Basin (parts of 44 counties) as a whole indicating that 54.5% of water use is for hydroelectric and that 99.8% of use in surface water. This causes confusion as to the remaining two lines which address the water use (surface and groundwater) in the three county area of the SRS. None of this water in the three counties is used for hydroelectric. Only 29.2% of the water usage is surface water for the three counties.

53-12 cont'd

Page 3-20, General Site Description, Paragraph 1, Line 4:
Should GDNR be included in the list of Acronyms, Abbreviations, and Conversion Charts?

53-17

53-17 "GDNR" is part of a reference citation in this sentence and, thus, does not belong in the list of acronyms and abbreviations. It is spelled out in the reference citation.

Page 3-30, Paragraph 1, Line 3:
Should NESHAPs be included in the list of Acronyms, Abbreviations, and Conversion Charts?

Page 3-36, Socioeconomics, Paragraph 3, Line 2:
Should RIMS II be included in the list of Acronyms, Abbreviations, and Conversion Charts?

Page 3-40, Table 3-19, Note, Line 2:
Should PQCD be included in the list of Acronyms, Abbreviations, and Conversion Charts?

Page 3-45, Table 3-21, Legend, Line 1:
Should C&D be included in the list of Acronyms, Abbreviations, and Conversion Charts?

53-18

53-18 The list of acronyms and abbreviations has been updated.

Page 3-52, Environmental Justice, Paragraph 2, Line1:
Should CEQ be defined here? It is included with the Acronyms; however, this is its first use in the document.

53-19

53-19 The first use of "Council on Environmental Quality" appears in Chapter 3 on page 3-1, and the acronym has been defined at its first use in this *Final SPD Supplemental EIS*.

Page 3-64, Paragraph 5, Lines 3-4:
Should "…which primary produce sand and gravel." Read '…which primarily produce sand and gravel'.?

Page 3-64, Facility Location, Paragraph 1, Lines 2-3-:
Should "Tshirege Member bedrock subunits of the Bandelier Tuff exposed at TA-55 includes…" read 'Tshirege Member bedrock subunits of the Bandelier Tuff exposed at TA-55 include~~s~~…'?

Page 3-69, Paragraph 3, Lines 1-5-:
Don't the first two sentences of this paragraph "LANL streams all average less than 1 cubic foot per second of flow annually, with combined average daily flows of greater than 10 cubic feet (0.28 cubic meters) per second occurring infrequently." And " No LANL streams average over 1 cubic foot (0.03 cubic meters) per second of flow annually and combined mean daily flow is normally less than 10 cubic feet per second (0.28 cubic meters per second) (LANL 2011d:6-4)." Say essentially the same thing?

53-20

53-20 The text has been revised.

Commentor No. 53 (cont'd): John A. Wojtowicz
Tennessee Department of Environment and Conservation

Page 3-70, Paragraph 2, Line 2-:
Should MSGP-2008 be included in the list of Acronyms, Abbreviations, and Conversion Charts?

53-21

Page 3-71, Paragraph 2, Line4-:
Should NMAC be included in the list of Acronyms, Abbreviations, and Conversion Charts?

Page 3-72, Table 3-27, Legend Line 1; Footnote-a, Line 2:
Should HUC and TMDL be included in the list of Acronyms, Abbreviations, and Conversion Charts?

53-22

Page 3-73, Paragraph 1, Lines 5-6:
In the sentence "Saturated alluvial occurs in the lower portion of Pajarito Canyon.", should alluvial be modifying a noun such as zone, sediments, deposits ,etc.?

53-23

Page 3-73, Paragraph 2:
Although NMED sampling failed to replicate the Radioactivist Campaign's detection of Cs-137 at spring 4A, couldn't elevated levels of tritium, perchlorate, Pu-238, Pu-239, and Pu240 be indicative of contamination coming from LANL? Shouldn't this be discussed here?

53-24

Page 3-74, Paragraph 1, Line 2:
Should RDX be included in the list of Acronyms, Abbreviations, and Conversion Charts?

53-25

Page 3-84, Paragraph 1, Line 2:
On page 3-83 in the last paragraph, it is stated that wetlands are dominated by narrowleaf cattail (*Typha angustifolia*) among other flora. Here it is indicated that the wetland in area T-55 is dominated by broadleaf cattail (*Typha latifolia*). Is this the only wetland on LANL where broadleaf is dominant, or is the first paragraph incorrect?

53-26

Page 3-99, Paragraph 2, Line 5:
Should LACBPU be included in the list of Acronyms, Abbreviations, and Conversion Charts?

53-27

Page 3-103, Table 3-44, Footnote a, Line1:
Should WCCRF and WAC be included in the list of Acronyms, Abbreviations, and Conversion Charts?

53-28

Page 3-104, Paragraph 1, Line 7:
Should the ROD mentioned here be included in the References and cited appropriately here?

53-29

Page 3-104, Paragraph 1, Lines 1-2:

53-21 The list of acronyms and abbreviations has been updated.

53-22 HUC has been added to the list of acronyms and abbreviations. TMDL no longer appears as an acronym.

53-23 "Alluvial" was replaced with "alluvium."

53-24 No change is required. This paragraph presents data describing the existing environment.

53-25 The list of acronyms and abbreviations has been updated.

53-26 The text is correct as written. A citation has been added to the General Site Description paragraph.

53-27 This acronym is part of a reference citation in this sentence and does not belong in the list of acronyms and abbreviations. The full citation is defined in Chapter 7, "References."

53-28 WCCRF no longer appears as an acronym. WAC has been added to the list of acronyms and abbreviations.

53-29 See the response to comment 53-3 regarding reference information in an EIS.

Commentor No. 53 (cont'd): John A. Wojtowicz
Tennessee Department of Environment and Conservation

When comparing volumes as is done here, it might be easier for the reader if there is consistency in the measures of volumes. In the first sentence here the volume is given with liters first followed by gallons in parentheses. In the second sentence the opposite tact is used (i.e., gallons first followed by liters in parentheses.

53-30

53-30 The text has been revised.

Page 4-9, Footnote 4, Line 1:
Should WRI and WBCSD be included in the list of Acronyms, Abbreviations, and Conversion Charts?

53-31

53-31 The list of acronyms and abbreviations has been updated.

Page 4-24, Paragraph 6, Lines 7-8:
Would it be clearer here to phrase "1 × 10-4 to 2 × 10-4 (1 chance in 5,000 to 1 chance in 10,000)" as '~~1~~2 × 10-4 to ~~2~~1 × 10-4 (1 chance in 5,000 to 1 chance in 10,000)'?

Page 4-25, Paragraph 5, Line 6:
See comment **Page 4-24, Paragraph 6, Lines 7-8:** above.

Page 4-25, Paragraph 5, Line8:
Would it be clearer here to phrase "1 × 10-3 to 2 × 10-3 (1 chance in 500 to 1 chance in 1000)" as '~~1~~2 × 10-3 to ~~2~~1 × 10-3 (1 chance in 5000 to 1 chance in 1000)'?

53-32

53-32 The text was changed to insert the appropriate parenthetical statement directly following each statement of risk.

Page 4-26, Paragraph 6, Lines 6-7:
See comment **Page 4-24, Paragraph 6, Lines 7-8:** above.

Page 4-26, Paragraph 6, Line8:
See comment **Page 4-25, Paragraph 5, Line8:** above.

Page 4-26, Last Paragraph, Line5:
In the pdf version of Volume 1: "1 in 100 (≥ 1 × 10-2)" appears with the left parenthesis and ≥ superimposed.

53-33

53-33 The text has been corrected in the PDF version of this *Final SPD Supplemental EIS*.

Page 4-34, Paragraph 1, Lines 9-10:
Would it be clearer here to phrase "2 × 10-5 to 3 × 10-4 (about 1 chance in 3,300 to 50,000) for the MEI and 3 × 10-4 to 1 × 10-3 of (about 1 chance in 1,000 to 3,300) for the noninvolved worker" as '3 × 10-4 to 2 × 10-5 ~~to 3 × 10-4~~ (about 1 chance in 3,300 to 50,000) for the MEI and 1 × 10-3 to 3 × 10-4 ~~to 1 × 10-3~~ of (about 1 chance in 1,000 to 3,300) for the noninvolved worker.'?.

53-32 cont'd

Commentor No. 53 (cont'd): John A. Wojtowicz
Tennessee Department of Environment and Conservation

Page 4-35, Paragraph 1, Lines 3 & 5:
Would it be clearer here to phrase "2 × 10-4 to 4 × 10-4 (1 chance in 2,500 to 5,000)" and "9 × 10-4 to 1 × 10-3 (about 1 chance in 1,000 to 1,100)" as '4 × 10-4 to 2 × 10-4 ~~to 4 × 10-4~~ (1 chance in 2,500 to 5,000)" and "1 × 10-3 to 9 × 10-~~4 to 1 × 10-3~~ (about 1 chance in 1,000 to 1,100)"?

53-32 cont'd

Page 4-40, Regional Economic Characteristics, Paragraph 1, Line 5:
Should RIMS II be included in the list of Acronyms, Abbreviations, and Conversion Charts?

53-34

53-34 The list of acronyms and abbreviations has been updated.

Page 4-44, PF-4 and MFFF discussion, Paragraphs 4& 5:
Has discussion of the socioeconomic impacts at LANL be left out of this discussion under the MOX Fuel Alternative?

53-35

53-35 Socioeconomic impacts from PF-4 modifications are addressed in the last paragraph of the construction section.

Page 4-48, Second Last Paragraph:
Since the previous two paragraphs in this discussion relate to the socioeconomic impacts for SRS for the PF-4 and MFFF Option, should the paragraph "The socioeconomic impacts at SRS from construction under the PF-4 and MFFF Option would be the same as those for this option under the MOX Fuel Alternative (Section 4.1.3.1.3)." be for LANL instead?

Also, there is no discussion of this option for LANL under the MOX Fuel Alternative. See comment **Page 4-44, PF-4 and MFFF discussion, Paragraphs 4& 5:** above.

53-36

53-36 Revised the text to refer to LANL; also see the response to comment 53-35.

Page 4-49, Second Paragraph:
The statement "The socioeconomic impacts at LANL from construction under the PF-4, H-Canyon/HB-Line, and MFFF Option would be the same as those for this option under the MOX Fuel Alternative (Section 4.1.3.1.3)." may be true; however, the MOX Fuel Alternative discussion only refers you back to the Immobilization to DWPF Alternative, where the real discussion occurs.

53-37

53-37 The text has been revised.

Page 4-49, Second Last Paragraph:
Since the previous three paragraphs in this discussion relate to the socioeconomic impacts for SRS for the PF-4 and MFFF Option, should the paragraph "The socioeconomic impacts at SRS from construction under the PF-4 and MFFF Option would be the same as those for this option under the MOX Fuel Alternative (Section 4.1.3.1.3)." be for LANL instead?

Also, there is no discussion of this option for LANL under the MOX Fuel Alternative. See comment **Page 4-44, PF-4 and MFFF discussion, Paragraphs 4& 5:** above.

53-36 cont'd

Page 4-50, Paragraph 3:

Commentor No. 53 (cont'd): John A. Wojtowicz
Tennessee Department of Environment and Conservation

Although the statement "The socioeconomic impacts at LANL from construction under the PF-4, H-Canyon/HB-Line, and MFFF Option would be the same as those for this option under the MOX Fuel Alternative (Section 4.1.3.1.3)." may technically be true, see comment **Page 4-49, Second Paragraph:** above.

53-38

53-38 The text has been revised.

Page 4-62, Paragraph 1, Line 2:
The hyphen in (DOT-) is unnecessary.

53-39

53-39 The text has been changed to "…U.S. Department of Transportation (DOT)-approved…"

Page 4-66, Paragraph 1, Line 4:
Should FGE be included in the list of Acronyms, Abbreviations, and Conversion Charts?

Page 4-69, Paragraph 2, Line 8; Paragraph 5; Line 5; Last Paragraph, Line 3:
Should RADTRAN, RISKIND, and TRAGIS be included in the list of Acronyms, Abbreviations, and Conversion Charts?

53-40

53-40 The list of acronyms and abbreviations has been updated.

Page 4-110, Savannah River Site, Paragraph 2, Lines 8-9:
Should the " DOE Record of Decision (ROD) for the *Salt Processing EIS"* and "revised ROD " be included in the References?

Page 4-110, Savannah River Site, Paragraph 3, Line 13:
Should the "ROD issued on August 19, 2002 (67 FR 53784)" be included in the References?

Page 4-111, Paragraph 3:
Should all the documents mentioned in this paragraph be included in the References? Only a couple of them are.

Page 4-111, Paragraph 5, Last Line13:
Should the ROD mentioned here be included in the References?

53-41

53-41 See the response to comment 53-3 regarding reference information in an EIS.

Page 4-112, Paragraph 2, Line 4:
DOD is not included in the list of Acronyms, Abbreviations, and Conversion Charts.

53-40 cont'd

Page 4-112, Paragraph 3, Lines 1-2:
Should the Memoranda of Understanding mentioned here be included in the References?

53-42

53-42 The cited Memoranda of Understanding are business proprietary documents.

Page 4-112, Los Alamos National Lab, Paragraph 1, Line 4:
Should the ROD mentioned here be included in the References?

53-40 cont'd

Page 4-112, Last Paragraph, Lines5-6 & 12:

Commentor No. 53 (cont'd): John A. Wojtowicz
Tennessee Department of Environment and Conservation

Should the RODS mentioned here be included in the References?

Page 4-113, Paragraph 1, Line 3:
Should the RO""D mentioned here be included in the References?

53-41 cont'd

Page 4-113, 1st Bullet:
Should SOC be included in the list of Acronyms, Abbreviations, and Conversion Charts?

53-43

53-43 SOC is not an acronym; it is the name of the security contractor at LANL.

Page 4-114, Paragraph 1, Line 7:
COLs is not included in the list of Acronyms, Abbreviations, and Conversion Charts.

53-44

53-44 The term "COLs" is part of the title of a document; as such, it does not belong in the list of acronyms and abbreviations.

Page 4-125, Second Last Paragraph, Lines 1-2:
Should the ROD mentioned here be included in the References?

53-45

53-45 See the response to comment 53-3 regarding reference information in an EIS.

Page 4-125, Last Paragraph, Lines 5-6:
See comment **Page 2-41, Paragraph 2, Lines 13-14:** above.

53-46

53-46 The text is correct as provided.

Page 4-130, Table 4-48, Footnote d:
Should the ROD mentioned here be included in the References?

53-45 cont'd

Page 4-132, Global Climate Change, Paragraph 2, Line 1:
IPCC is not included in the list of Acronyms, Abbreviations, and Conversion Charts.

53-47

53-47 The list of acronyms and abbreviations has been updated.

Page 5-1, Second Last Paragraph, Lines 4-5:
This plan is included in the References as DOE 2007c and should be cited as such here.

53-48

53-48 The text has been revised.

Page 5-12, Second Row, Second Column, Line 4:
TSS is not included in the list of Acronyms, Abbreviations, and Conversion Charts.

Page 5-1, Row 4, Column 2, Line 4:
Should SARA be included in the list of Acronyms, Abbreviations and Conversion Charts?

53-49

53-49 Not needed in the list of acronyms and abbreviations because it is only used once.

Page 5-13, Table Legend, Line 3:
NMAC is not included in the list of Acronyms, Abbreviations , and Conversion Charts.

53-47 cont'd

Page 5-13, Pit Disassembly and Conversion, and Plutonium Dispoistion Capabilities, Paragraph 1, Line 5:
DOE Order 6430.1A has not been included in Table 5-1 with the remaining regulations.

53-50

53-50 This DOE Order is not an environmental order and, therefore, was not included in Table 5–1.

Page 5-14, Pit MOX Fuel Fabrication Facility, Paragraph 1, Lines 2-3:

Commentor No. 53 (cont'd): John A. Wojtowicz
Tennessee Department of Environment and Conservation

Should the ROD mentioned here be included in the References and cited appropriately here?

53-51

53-51 See the response to comment 53-3 regarding reference information in an EIS.

Page 5-16, Paragraph 1, Lines 1-3:
Should the report mentioned here and its subsequent revision be included in the References and cited appropriately here?

Page 5-16, Paragraph 2, Last Line:
See comment **Page 5-16, Paragraph 1, Lines 1-3:** above.

53-52

53-52 The reference citation was added.

Page 2, References,Reference 8:
Cantey 2008 is not cited in this volume.

53-53

53-53 "Cantey 2008" was removed from Chapter 7, "References."

Page 7, References,Reference 11:
DOE 2008l is not cited in this volume.

53-54

53-54 The reference "DOE 2008l" appears in Chapter 3.

Page 12, References,Reference 8:
Kleinfelder 2010 is not cited in this volume.

53-55

53-55 The reference "Kleinfelder 2010" appears in Chapter 3.

Page 17, References,Reference 12:
Page 2010b is not cited in this volume.

53-56

53-56 The reference "Page 2010b" appears in Chapter 4.

Page 19, References,Reference 11:
SNOC 2007 is not cited in this volume.

53-57

53-57 The reference "SNOC 2007" appears in Chapter 3, Figure 3–3.

Commentor No. 54: Cathrynn Brown, State Representative
State of New Mexico House of Representatives

From: Kyle Marksteiner
Sent: Friday, August 31, 2012 3:52 PM
To: spdsupplementaleis@saic.com
Subject: submission
Attachments: Rep. Brown statement re DOE SEIS__28Aug2012.pdf

Good afternoon. I'm submitting this at the request of Representative Brown, who was not able to attend your Carlsbad hearing.

Response side of this page intentionally left blank.

Commentor No. 54 (cont'd): Cathrynn Brown, State Representative State of New Mexico House of Representatives

State of New Mexico
House of Representatives
Santa Fé

CATHRYNN BROWN
R - Eddy
District 55

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COMMITTEES:
Chair: Enrolling & Engrossing - B
Agriculture & Natural Resources
Judiciary

PUBLIC COMMENTS OF STATE REPRESENTATIVE CATHRYNN BROWN

RE: DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT PERTAINING TO DISPOSAL OF SURPLUS PLUTONIUM AT THE WASTE ISOLATION PILOT PLANT

28 August 2012

Cathryn Marie Brown

Ladies and Gentlemen:

I am attending a conference in Las Cruces about water issues facing New Mexico and therefore cannot be with you in person today. I have asked that this letter be read into the record.

It is my privilege to serve the citizens of eastern Eddy County in the New Mexico House of Representatives. The cities and towns in my district are Carlsbad, Loving, Malaga, Otis, and now, after recent redistricting, Loco Hills and south Artesia. Each of these communities is situated within 26 to 70 miles of the Waste Isolation Pilot Plant (WIPP), with Carlsbad being the most proximate.

The 29,000 residents of my district—overwhelmingly—are pro-energy, pro-nuclear, and pro-WIPP. Frank and thorough discussions about nuclear waste issues have been common fare in the district for more than thirty years, and citizens are clearly satisfied that operations at WIPP are designed to be, are being, and will continue to be conducted safely and fastidiously in pursuance of an important national interest, and that is to make America safer by isolating nuclear waste from the biosphere.

The disposal alternative for which the Department of Energy has expressed preference, i.e., burial of six metric tons of surplus plutonium at the WIPP deep-geologic salt repository, is consistent with the mission and parameters of WIPP. These shipments truly are welcomed for permanent disposal at the repository.

On behalf of the citizens of New Mexico House District 55, I strongly endorse the Department of Energy's preferred alternative specified in the Draft Surplus Plutonium Disposition Supplemental EIS. In a nutshell, we consent.

# # #

54-1

54-1 DOE acknowledges the commentor's opinion.

Commentor No. 55: Franz Freibert

From: Franz Freibert
Sent: Saturday, September 01, 2012 11:32 AM
To: spdsupplementaleis@saic.com
Subject: Support for SPD Supplemental EIS

I support the SPD Supplemental EIS. *55-1*

****

F. Freibert

55-1 DOE acknowledges the commentor's opinion.

Commentor No. 56: Pam Gilchrist

From: Pam Gilchrist
Sent: Sunday, September 02, 2012 4:16 PM
To: spdsupplementaleis@saic.com
Subject: DOE Comment - Attn: Sachiko McAlhany
Attachments: 2012-08-23doeCOMMENTS.doc

Dear Sachiko,

While you were here in this polluted land of enchantment, I do hope you had some fun. Did you get to see the Japanese Garden in Albuquerque or Carlsbad Cavern bats?

It was good to meet you. Please see my comments of the spdsupplementaleis attached.

Thanks for the work you do.

Pam Gilchrist

Response side of this page intentionally left blank.

Commentor No. 56 (cont'd): Pam Gilchrist

Sachiko McAlhany, NEPA Document Manager
SPD Supplemental EIS
US Dept. O Energy
P.O. Box 2324
Germantown, MD 20874-2324

My comments:

The scheme of making MOX with surplus plutonium is not viable. August 8th of this year, the NRC determined the process would require years of testing; it's too expensive a process, (private corporations benefit grossly); reactors would need expensive retrofit, (again another financial gift to private corporations); the process is fraught with lethal hazards; and there's still huge amounts of hot waste to deal with. The cost of converting plutonium into MOX fuel is estimated at nearly $19 BILLION today, while immobilizing the material would cost much less – less than $4 Billion. The dangers are real: one has only to look at the situation at the number 3 reactor at Fukashima. MOX is far more dangerous than enriched uranium: one milligram (mg) of MOX is as deadly as 2,000,000 mg of normal enriched uranium. ***56-1***

Only a very small percent of MOX fuel is used up in the fuel cycle, BUT it will generate high level contamination throughout the fuel rods.

At Tuesday's hearing we heard from a LANL chemist speaking for himself. He said, "the mission [of disassembly of the pits and mixing the plutonium into MOX for nuclear reactor fuel] is to ensure that the plutonium can never be used again." What he didn't tell us was that 90+% of the plutonium is NOT burned in the reactors fuel rods and so we are still left with this TRILLION POUND ELEPHANT for secure disposition. ***56-2***

Russia now plans to use their MOX fuel in breeder reactors which actually generates more plutonium. This, along with encouraging commercial markets for MOX as reactor fuel, is NOT a nonproliferation advance. ***56-3***

William Lawless, an expert on radioactive waste says, "MOX being used as a way of controlling weapons proliferation is a myth. You will decrease the amount of plutonium minutely but you will increase the amount of waste inside the fuel rod greatly…". http://www.dcbureau.org/20110315782/natural-resources-news-service/mox-fuel-rods-used-in-japanese-nuclear-reactor-present-multiple-dangers.html

- LANL is currently not meeting its waste cleanup schedule
- LANL's facilities do not meet seismic standards in case of a severe earthquake.
- Bringing thousands of plutonium pits to LANL would further endanger public health and safety and divert resources away from cleanup.
- Doubling the amount of TRU waste coming from SRS will exceed WIPP's capacity. As a result, TRU waste from LANL and other sites might not fit into WIPP. ***56-4***

We need to immobilize plutonium so that it can be safely stored until new disposition options are available.

DOE needs to rid our nation of all nuclear weapons and all nuclear power plants – there is no other safe environmental or moral alternative. DOE has the obligation to look after and safely steward all radioactive waste for as long as it takes – a Herculean task. ***56-5***

Pamela Gilchrist
[redacted]

56-1 The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

The analysis in Appendix I of this *SPD Supplemental EIS* indicates that only minor modifications would be needed at existing commercial nuclear reactors to use MOX fuel. As summarized in Chapter 4, Section 4.1.2, under normal operating as well as postulated accident conditions, the impacts of operating reactors using partial MOX fuel cores are not expected to change meaningfully from those associated with use of full LEU fuel cores. Additional information is presented in Appendices I and J. As addressed in Appendix J, the impacts that could result from an accident depend on the complete quantities of actinides, fission products, and activation products involved in the accident, not just plutonium or LEU.

Cost, schedule, technical viability, worker and public safety, environmental impacts, security, and the ability to carry out international agreements are among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

56-2 Use of MOX fuel in domestic commercial nuclear power reactors would render surplus plutonium into a used fuel form that is not readily usable for nuclear weapons. The use of MOX fuel in commercial nuclear power reactors would reduce the quantity of weapons-usable plutonium and support accomplishment of DOE's nonproliferation goals. Footnote 3 in Chapter 2 of this *SPD Supplemental EIS* describes a 60 percent reduction in plutonium-239 after irradiation for two cycles in a domestic commercial nuclear power reactor.

As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel, by storing it in the reactor's used fuel storage pool or placing it in dry storage. The use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would displace LEU fuel that otherwise would have been used to power the nuclear power reactor. Use of MOX fuel could increase used nuclear fuel generation by 8 to 10 percent for TVA's Browns Ferry and Sequoyah Nuclear Plants, and from 2 to 16 percent for generic reactors during the period MOX fuel could be used at a reactor. DOE expects that increases of this magnitude would be managed within the reactor's normal planning for storage of its used fuel. The use of MOX fuel in domestic commercial nuclear

power reactors is consistent with U.S. nonproliferation policy and international nonproliferation agreements. For further discussion, refer to Section 2.4, Topic A, of this CRD.

56-3 Under the PMDA (USA and Russia 2000), which entered into force in 2011, the United States and the Russian Federation agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. Russia plans to irradiate its MOX fuel in fast reactors (BN-600 and BN-800) under certain nonproliferation conditions. To that end, Russia has successfully irradiated 21 prototypic MOX fuel LTAs in its BN-600 fast reactor; completed over 50 percent construction of the BN-800 fast reactor; completed formal siting of its MOX fuel fabrication facility; established an integrating contracting office for implementation of PMDA activities; and actively participated with the United States and the IAEA in negotiating a verification agreement that will enable IAEA to independently verify that the objectives of the PMDA are met. More information on the PMDA is located on the U.S. State Department website at www.state.gov/r/pa/prs/ps/2010/04/140097.htm. Use of MOX fuel in commercial nuclear power reactors would render surplus plutonium into a used fuel form that is not readily usable for nuclear weapons.

Under the PMDA, Russia must operate its fast reactors as plutonium burners, not breeders; cannot reprocess any of its used fuel during the life of the agreement; and, after the agreement expires, can only reprocess under an international monitoring regime and only for commercial purposes. Operations of the Russian fast reactors will be monitored and verified by IAEA.

56-4 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults. DOE and LANL are continuing to take appropriate actions to further improve the safety policies and controls in place at the laboratory and implement facility modifications and upgrades as necessary to improve safety in the event of an earthquake.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9), including a beyond-design-basis earthquake with fire, and describes concerns identified by DNFSB. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 1, Section 1.4, under all alternatives, DOE would disposition as MOX fuel 34 metric tons (37.5 tons) of surplus plutonium in

accordance with previous decisions. The pit disassembly and conversion options analyzed in this *SPD Supplemental EIS*, including the PDCF Option, apply to 27.5 metric tons (30.3 tons) of pit plutonium that DOE has decided to fabricate into MOX fuel (a portion of the 34 metric tons [37.5 tons]), as well as to the 7.1 metric tons (7.8 tons) of pit plutonium for which disposition is under consideration in this *SPD Supplemental EIS*, for a total of approximately 35 metric tons (38.6 tons). Appendix B, Table B–3, lists the annual and total plutonium throughput for the various pit disassembly and conversion options at SRS and LANL. For example, the maximum annual throughput for PF-4 at LANL is 2.5 metric tons (2.8 tons) per year, while the maximum amount of plutonium to be processed could be 35 metric tons (38.6 tons) over the life of facility operation. The amount of plutonium that would be allowed at LANL at any given time would be limited, and shipments of pits to be disassembled there would be timed to support pit disassembly and conversion activities such that the amount of plutonium at PF-4 did not exceed the established material safety limit.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As addressed in Chapter 4, Section 4.1.4, of this *SPD Supplemental EIS*, implementation of any of the alternatives evaluated would generate CH-TRU waste that would be sent to WIPP for disposal. As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

Commentor No. 56 (cont'd): Pam Gilchrist

DOE considers immobilization a viable disposition pathway for at least some portion of the approximately 13.1 metric tons (14.4 tons) of surplus plutonium for which a disposition path is not assigned and has analyzed immobilization options it could potentially implement in this *SPD Supplemental EIS* (see Chapter 4). The analyses in this *SPD Supplemental EIS* indicate that none of the alternatives analyzed, including immobilization, involve any substantial risk to the safety of the public.

56-5 The United States' nuclear weapons and energy policies are not within the scope of this *SPD Supplemental EIS*.

Commentor No. 57: Mona Ruark

From: Mona Ruark
Sent: Sunday, September 02, 2012 6:36 PM
To: spdsupplementaleis@saic.com
Subject: public comment - DOE's Draft Surplus Plutonium Disposition SEIS

September 2, 2012

Sachiko McAlhany
SPD Supplemental EIS Document Manager
P.O. Box 2324
Germantown, MD 20874-2324

Dear Ms. McAlhany:

I am very concerned about Department of Energy plans for surplus plutonium. No additional plutonium should be brought to Los Alamos National Laboratory (LANL). LANL is not meeting its waste cleanup schedule and its facilities do not meet seismic standards in case of a severe earthquake. Bringing thousands of plutonium pits to LANL would further endanger public health and safety and divert resources away from cleanup. *57-1*

The Waste Isolation Pilot Plant (WIPP) has a limited mission and does not have the capacity for all surplus plutonium. Stop the Mixed Oxide (MOX) Plutonium Fuel Program and immobilize and safely store plutonium until technically sound, suitable disposition facilities are available.

Sincerely,

Mona Ruark

57-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

DOE expects the proposed activities at LANL would not negatively impact the site's environmental restoration program. As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

Commentor No. 58: Chris Evans

From: Chris Evans
Sent: Sunday, September 02, 2012 10:10 PM
To: spdsupplementaleis@saic.com
Subject: Nuclear is not the answer.

Nations throughout the globe have learned the hard lesson of nuclear energy. Please do not bring plutonium or any other nuclear material to our state. Ever. I will vote green from now on. Thank you for helping me get off the republican's and democrat's merry-go-round. *58-1*

Chris Evans M.Ed.
Special Education Teacher

58-1 The United States' policy on the continued use of nuclear energy is not within the scope of this *SPD Supplemental EIS*.

Commentor No. 59: Jacqueline Wasilewski, Ph.D.

August 25, 2012

Sachiko McAlhany
NEPA Document Manager
SPD Supplemental EIS
U.S. Department o Energy
P.O. Box 2324
Germantown, Maryland
20874-2324

Dear Ms. McAlhany:

I am very concerned about Department of Energy plans for surplus plutonium.

No additional plutonium should be brought to Los Alamos National Lab (LANL), which already has an unfinished cleanup mission to accomplish and cannot meet seismic standards in the case of a severe earthquake.

WIPP has a limited mission and does not have the capacity for all surplus plutonium. In addition, it was only designed to store materials that had come in contact with hot materials, not the hot waste itself. *59-1*

Therefore, stop MOX and immobilize the plutonium for disposal as a waste and safely store plutonium until technically sound, suitable disposition facilities are available.

In fact, all nuclear energy activity should cease until we figure out what to do with the waste. We are killing ourselves. *59-2*

Sincerely,

Jacqueline Wasilewski

Jacqueline Wasilewski, Ph.D.
[redacted]

59-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

59-2 The United States' policy on the continued use of nuclear energy and the construction and operation of a repository for HLW and used nuclear fuel are not within the scope of this *SPD Supplemental EIS*.

Commentor No. 60: Jeanne Green

Sachiko McAlhany
NEPA Document Manager
SPD Supplemental EIS
U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324

Dear Sachicko McAlhany:

I am very concerned about Department of Energy plans for surplus plutonium. No additional plutonium should be brought to Los Alamos National Lab (LANL), which has a cleanup mission and cannot meet seismic standards in the case of a severe earthquake. WIPP has a limited mission and does not have the capacity for all surplus plutonium. Stop MOX and immobilize and safely store plutonium until technically sound, suitable disposition facilities are available.

My concerns about DOE's plan?

- LANL is not meeting its waste cleanup schedule, and its facilities do not meet seismic standards in case of a severe earthquake. Bringing thousands of plutonium pits to LANL would further endanger public health and safety and divert resources away from cleanup. ***60-1***
- Doubling the amount of TRU waste coming from SRS will likely exceed WIPP's capacity. As a result, TRU waste from LANL and other sites might not fit into WIPP.
- Plutonium should be immobilized so that it can be safety stored until new disposition options are available. Immobilization would also be less expensive than MOX.
- MOX is not viable as there are no utilities that want to use MOX fuel in existing power plants because of its costs, dangers, and the need to make changes to the reactors. ***60-2***

Please reconsider the options and eliminate this faulty plan.
Sincerely,

Jeanne Green
[redacted]

60-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults. DOE and LANL are continuing to take appropriate actions to further improve the safety policies and controls in place at the laboratory and implement facility modifications and upgrades as necessary to improve safety in the event of an earthquake.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9), including a beyond-design-basis earthquake with fire, and describes concerns identified by DNFSB. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 1, Section 1.4, under all alternatives, DOE would disposition as MOX fuel 34 metric tons (37.5 tons) of surplus plutonium in accordance with previous decisions. The pit disassembly and conversion options analyzed in this *SPD Supplemental EIS*, including the PDCF Option, apply to 27.5 metric tons (30.3 tons) of pit plutonium that DOE has decided to fabricate into MOX fuel (a portion of the 34 metric tons [37.5 tons]), as well as to the 7.1 metric tons (7.8 tons) of pit plutonium for which disposition is under consideration in this *SPD Supplemental EIS*, for a total of approximately 35 metric tons (38.6 tons). Appendix B, Table B–3, lists the annual and total plutonium throughput for the various pit disassembly and conversion options at SRS and LANL. For example, the maximum annual throughput for PF-4 at LANL is 2.5 metric tons (2.8 tons) per year while the maximum amount of plutonium to be processed could be 35 metric tons (38.6 tons) over the life of facility operation. The amount of plutonium that would be allowed at LANL at any given time would be limited, and shipments of pits to be disassembled there would be timed to support pit disassembly and conversion activities such that the amount of plutonium at PF-4 did not exceed the established material safety limit.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As addressed in Chapter 4, Section 4.1.4, of this *SPD Supplemental EIS*, implementation of any of the alternatives evaluated would generate CH-TRU waste that would be sent to WIPP for disposal. As discussed in Section 4.5.3.6.3,

CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE considers immobilization a viable disposition pathway for at least some portion of the approximately 13.1 metric tons (14.4 tons) of surplus plutonium for which a disposition path is not assigned and has analyzed immobilization options it could potentially implement in this *SPD Supplemental EIS* (see Chapter 4). The analyses in this *SPD Supplemental EIS* indicate that none of the alternatives analyzed, including immobilization, involve any substantial risk to the safety of the public. The decisionmaker may consider cost, among other factors, when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

60-2 Disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts per NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors (see Appendix I, Section I.2).

The environmental, human health, and socioeconomic impacts of using MOX fuel in a nuclear reactor are described in Appendix I, Section I.2, and summarized in Chapter 2, Section 2.6, of this *SPD Supplemental EIS*. The impacts of the use of a partial MOX fuel core are not expected to be meaningfully different from the impacts of reactor operation using a conventional full LEU fuel core. As described in Appendix B, Section B.4, and Appendix I, only minor changes would be needed to commercial nuclear power reactors to use a partial MOX fuel core.

Commentor No. 61: Christopher J. Chancellor, Chair American Nuclear Society

From: Christopher Chancellor
Sent: Tuesday, September 04, 2012 7:51 PM
To: spdsupplementaleis@saic.com
Subject: Surplus Plutonium Disposition

I would like to take a moment to voice my complete support for the Surplus Plutonium Disposition EIS. Specifically, I feel that Carlsbad, New Mexico's WIPP Site is an ideal avenue for disposal for unwanted transuranic materials. WIPP has for over a decade demonstrated its commitment to getting the job done and maintaining the public trust. This is my opinion, that of my family, and that of the local chapter of the American Nuclear Society (of which I am the Chair).

Best Regards,

Christopher J. Chancellor

61-1

61-1 DOE acknowledges the commentor's opinion.

Commentor No. 62: Cassandra Fralix

From: Cassandra Fralix
Sent: Tuesday, September 04, 2012 10:08 PM
To: spdsupplementaleis@saic.com
Subject: Draft SPD Supplemental EIS

I was unable to attend the Department of Energy's hearing on disposal of plutonium in Augusta, Georgia. I appreciate the opportunity to express my opposition to the MOX option, and I support the immobilization of nuclear waste. I live about 45 minutes from Savannah River Site. I have been very concerned about the plutonium waste that was generated at Savannah River Site and certainly do not want any additional experimental programs--"non pit metal and oxide" to be disposed of at this site. *62-1*

Of course, I am grateful that the United States is working to dispose of surplus military plutonium, but the US must work to rapidly complete nuclear disarmament. The cost and technical problems related to MOX, I believe,makes it a poor choice for solving the nuclear waste issue. The production of MOX and its use in reactors compounds plutonium risks. The plutonium in MOX fuel won't make the plutonium unusable. With the concern that our country has about terrorism, we should not be putting our citizens at any risk of terrorism. The transportation of plutonium is a security risk. Immobilization makes more sense and is safer for the country. *62-2* *62-3*

More importantly, as a concerned resident of South Carolina, the event at Fukushima is a wake up call. The Savannah River Site is on a fault line. MOX is much harder to control. It can cause more cancer deaths in a severe accident and poses severe storage problems. We can not experiment with this deadly material. We must chose the better alternative, immobilization and put the citizens of Georgia and South Carolina at a higher level of value than collateral damage—often mentioned in regard to accidents. The land, my family, friends, and all those that live in this area deserve the highest care and priority. We live in fear that something will leak, someone will not be able to maintain the storage, that there will be a natural catastrophe, which we know is a very real possibility. *62-4*

I implore you as NEPA seeks to provide an environmental analyses and hear the voices of the public that you will very carefully consider your decision and the environmental consequences that MOX fuel presents. *62-5*

Sincerely,

Cassandra Fralix

62-1 DOE acknowledges the commentor's support of immobilization of surplus plutonium. As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) evaluated numerous alternatives for disposition of surplus plutonium, including immobilization. DOE selected a disposition approach for some of the material declared surplus (68 FR 20134). As discussed in Section 2.2, Topic A, of this CRD, DOE's prior disposition decisions are not addressed in this *SPD Supplemental EIS,* but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium.

62-2 Cost, schedule, technical viability, worker and public safety, environmental impacts, security, and the ability to carry out international agreements are among the factors that the decisionmaker may consider when selecting an alternative for implementation.

The purpose of the Surplus Plutonium Disposition Program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally sound manner to ensure that it can never again be readily used in nuclear weapons. Central to the purpose of the Surplus Plutonium Disposition Program is protecting plutonium from terrorists, so appropriate safeguards and security measures are taken at all involved facilities and during transportation to protect against unauthorized access to materials. Although unirradiated (fresh) MOX fuel may not be sufficiently radioactive to be self-protecting, fresh MOX fuel is not an attractive target for terrorist attack because it is not readily usable for a nuclear device or dirty bomb. The plutonium in MOX fuel is blended with approximately 20 times as much depleted uranium as plutonium and is formed into ceramic pellets encased in metal cladding. Moreover, the MOX fuel is contained in large, heavy fuel assembly structures that would make theft extremely challenging. Without substantial physical dismantling and chemical separation, the plutonium in the MOX fuel cannot be used in a nuclear bomb. Once the fuel has been irradiated in a reactor, it would be highly radioactive, and recovering the plutonium would be impossible without highly specialized equipment. DOE would transport plutonium between DOE sites, as well as MOX fuel from SRS to domestic commercial nuclear power reactors, using the NNSA Secure Transportation Asset Program, as described in Appendix E. Under this program, security measures specific to the materials being transported would be implemented to protect against diversion. Chapter 2, Section 2.1, was revised to clearly indicate that transportation of materials such as plutonium oxide and pits would be conducted under the NNSA Secure Transportation Asset Program.

Commentor No. 62 (cont'd): Cassandra Fralix

Only low-level radioactive waste generated as a result of proposed activities at SRS would be buried on site. All other radioactive wastes would be disposed of at offsite authorized or licensed facilities.

62-3 See the response to comment 62-1 regarding the decision on MFFF and alternatives.

62-4 Activities and facilities proposed for SRS involve preparation of surplus plutonium for fabrication into MOX fuel or disposal by other methods. These activities are not the same as those at the Fukushima Dai-ichi Nuclear Power Station, a nuclear power reactor, and the potential consequences of an accident caused by an earthquake or other natural phenomenon at SRS would not be the same. There is currently no operating nuclear reactor at SRS, nor would there be under any of the proposed alternatives. The potential radiological impacts of an earthquake occurring in the vicinity are evaluated in Chapter 4, Section 4.1.2.2, and Appendix D, Section D.2, of this *SPD Supplemental EIS*. In addition to evaluating a design-basis accident based on the current understanding and interpretation of the seismic risk, radiological impacts of a beyond-design-basis earthquake are evaluated. The accident analysis concludes that releases of plutonium following a beyond-design-basis earthquake, should one occur, could result in up to 16 latent cancer fatalities in the surrounding population from the radiation.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

62-5 Analyses in this *SPD Supplemental EIS*, including analyses for cumulative impacts, were performed for all potentially affected environmental, human health, and social resource areas, consistent with applicable CEQ and DOE NEPA regulations. Cost, schedule, technical viability, worker and public safety, environmental impacts, security, and the ability to carry out international agreements are among the factors that the decisionmaker may consider when selecting an alternative for implementation. This *SPD Supplemental EIS* provides the decisionmaker with information on the environmental impacts of each alternative.

Commentor No. 63: Lee Poe

From: Lee Poe
Sent: Wednesday, September 05, 2012 2:21 PM
To: Sachiko Mc Alhany
Subject: Comments on Draft Surplus Plutonium Disposition SEIS **(DOE/EIS-** 0283-S2)
Attachments: EIS Comments 0283-S2.doc

Attached are my comments on PU Disposition SEIS. I enjoyed the meeting in NA last evening.

Response side of this page intentionally left blank.

Commentor No. 63 (cont'd): Lee Poe

September 5, 2012
[redacted]

Ms. Sachiko McAlhany, NEPA Document Manager
SPD Supplemental EIS
US Department of Energy
PO Box 2324
Germantown, MD 20874-2324

Dear Ms. Mc Alhany

Public Comment on
Draft Surplus Plutonium Disposition
Supplemental Environmental
Impact Statement
DOE/EIS-0283-S2

I attended the North Augusta Public Hearing last evening. Attendance at the meeting was like old home week. During the open house portion of the meeting, I had the opportunity to talk with a number of spectators about how the Russians were proceeding with their part of the treaty. DOE has been totally silent on Russia's portion of the treaty agreements and the expects the public buy in on our very expensive stabilization of weapon usable plutonium.

As one of your slides shown the US and Russia agreement started this whole mess in 9/1/2000. The entire EIS process began at that time. I had the opinion from reading newspapers that Russia is not meeting their commitment. I took the opportunity to talk with some of the people attending the "open house" portion of the meeting about this subject. They gave me a very good feeling that Russia was acting on this commitment. I find very little information on this subject in the referenced Summary of the EIS. *63-1*

After looking at the summary, I found the US-Russia program mentioned at several locations but it gave me no comfort about how they are progressing. That treaty is a fundamental part of the justification for this action and the program should be treated clearly in the EIS. It, in my opinion it is one of the major drivers for these actions. It should be clearly treated in the EID; do not rely on the public to grasp the implications of this major action.

In general the document is too complex and needs to be fixed so the public will understand what is proposed. I urge DOE to stop changing the alternatives each time something new comes up. *63-2*

I am convinced that the general public does not understand this EIS nor will they read such a complex EIS.

63-1 Under the PMDA (USA and Russia 2000), which entered into force in 2011, the United States and the Russian Federation agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. Russia plans to irradiate its MOX fuel in fast reactors (BN-600 and BN-800) under certain nonproliferation conditions. To that end, Russia has successfully irradiated 21 prototypic MOX fuel LTAs in its BN-600 fast reactor; completed over 50 percent construction of the BN-800 fast reactor; completed formal siting of its MOX fuel fabrication facility; established an integrating contracting office for implementation of PMDA activities; and actively participated with the United States and the IAEA in negotiating a verification agreement that will enable IAEA to independently verify that the objectives of the PMDA are met. More information on the PMDA is located on the U.S. State Department website at www.state.gov/r/pa/prs/ps/2010/04/140097.htm.

63-2 DOE acknowledges the complexity of this *SPD Supplemental EIS*, which is attributable to the complexity of the Surplus Plutonium Disposition Program. A Summary is available for those who prefer not to review the detailed document.

Commentor No. 63 (cont'd): Lee Poe

As I sat there and listened to the public comments last night, I had heard most of them before last night in other EISs. This indicates to me DOE process for responding to public comments is broken. Most of the comments seemed to be sincere. *63-3*

Minor Comments:

1) What is the problem between the DOE program and the TVA Program? This has never been explained. *63-4*

2) The comment response section helped but it is probably too terse to handle most of the comments received. *63-5*

3) Worker health effects (page S5-35) are very confusing.

4) Use of terms like worker latent fatal cancers (MEI would be about 1 chance in 2,500 (page S-37). Explain. *63-6*

5) Comparison of individual health to public health at the Los Alamos seems unreasonable. Typically workers are more healthy than the general public. Most medical statistics show this to be true.

6) On page S-39, the report talks about extending the completion time for the No Action Alternative from 2036 to 2038. What are the basis for the 2036 and the two year extension? *63-7*

63-3 During the public comment period, the public was encouraged to submit comments on the *Draft SPD Supplemental EIS*. Despite the stated closing date of the comment period, DOE considered all comments received on the *Draft SPD Supplemental EIS*, including those received after the close of the comment period. This CRD provides responses to those comments.

63-4 DOE and TVA have entered into an interagency agreement to evaluate the use of MOX fuel in five reactors at the Browns Ferry and Sequoyah Nuclear Plants. Activities are continuing in accordance with this agreement. For further discussion, refer to Section 2.4, Topic A, of this CRD.

63-5 See the response to comment 63-3.

63-6 An LCF is a death of an individual due to cancer resulting from—and occurring some time after—exposure to ionizing radiation. An estimate of the number of LCFs in a population group or the risk of an LCF for an individual is determined by multiplying the estimated radiation dose (measured in units of person-rem for a population and rem for an individual) by the risk estimator or risk factor of 0.0006 LCFs per person-rem or rem. The Summary of the *Draft SPD Supplemental EIS* included a footnote explaining the use of the risk estimator; that footnote remains in this *Final SPD Supplemental EIS*, and another footnote has been added explaining the term "latent cancer fatality" at its first use.

The health impacts analysis in this *SPD Supplemental EIS* examines the additional health effects that may result from both normal operations and postulated accidents related to the alternatives and options described in Chapter 2. The risk estimator was developed considering a wide range of data and is appropriate for estimating risks among the general public or workers. The risk of 1 chance in 2,500 to an MEI to which the commentor refers is associated with a postulated design-basis earthquake with fire at SRS. This means that, if the accident occurred (which is considered unlikely to beyond extremely unlikely), there would be 1 chance in 2,500 that the MEI would develop a fatal cancer at some time in his or her life. A new Section C.1 was added to Appendix C to include a more detailed discussion of human health impact measures and assessment methods. Additional information was provided regarding the basis for the risk factor of 0.0006 LCFs per person-rem (for the population) or rem (for an individual) and the scientific basis of its use.

63-7 These dates are based on the information presented in Appendix B, Table B–2, of this *SPD Supplemental EIS*. It should also be noted that for purpose of analyses in this *SPD Supplemental EIS*, it was assumed that surplus plutonium disposition activities under the No Action Alternative would extend to 2036 and to 2038 under the action alternatives. The action alternatives extend to 2038 because they include the disposition of an additional 13.1 metric tons (14.4 tons) of plutonium, which would remain in storage under the No Action Alternative.

Commentor No. 64: Peggy L. Gonzales

From: peggon
Sent: Wednesday, September 05, 2012 11:03 PM
To: spdsupplementaleis@saic.com
Subject: Support for NNSA Disposition of Excess Plutonium at LANL

To Whom It May Concern:

As an employee of the Los Alamos National Laboratory (LANL) and concerned citizen of northern New Mexico, I want to express my strong support for the National Nuclear Security Administration's (NNSA) plan to convert excess plutonium used in nuclear weapons to resources for non-weapons applications. I believe this is good for our national security, keeps it out of the hands of terrorists, and is the best path toward the final disposition of this material. I also believe that LANL is best positioned to handle this activity since they have the unique expertise and facilities to securely and safely manage nuclear material. *64-1*

Thank you for allowing me to share my opinion. I hope that right decisions are made in the handling and disposition of these used nuclear materials.

Sincerely,

Peggy L. Gonzales

64-1 DOE acknowledges the commentor's opinion.

Commentor No. 65: Dennis F. Nester

From: Dennis
Sent: Thursday, September 06, 2012 4:40 PM
To: spdsupplementaleis
Cc: Dennis
Subject: Re: UPDATE: Additional Hearing on the Draft Surplus Plutonium
Disposition Supplemental EIS and Comment Period Extension

From:

Dennis F. Nester

To: Federal Registry

There is already plutonium 239 in everyone's DNA from 1945. And now from Fukushima, Japan, deadly spent fuel. We can minimize exposure to radioactive fallout by backwards engineering isotopes to zero at each nuclear power plant where the spent fuel is stored in cooling ponds. In addition, electricity can be made from the decay heat which turns the existing steam electric generators. *65-1*

The Roy Process should be tested and installed worldwide.

NEW film edit - Please share widely

No Time To Waste: The Roy Process for Neutralizing Nuclear Waste

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#51 Nuclear Hot Seat - Radio Show: The Roy Process

http://itunes.apple.com/us/podcast/nuclear-hotseat-hosted-by/id458213762

www.NuclearHotseat.com

On Sep 6, 2012, at 12:00 PM, spdsupplementaleis wrote:

Additional Hearing and Notice of Comment Period Extension for the Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SPD Supplemental EIS)

65-1 Examining the management of radioactive waste other than that resulting from surplus plutonium disposition is not within the scope of this *SPD Supplemental EIS*.

Commentor No. 65 (cont'd): Dennis F. Nester

In response to the public comments and requests, the U.S. Department of Energy has added an additional hearing that will be held on September 18, 2012, in Española, New Mexico and the public comment period for the Draft SPD Supplemental EIS has been extended through October 10, 2012.

All comments received on or before October 10, 2012, will be considered during the preparation of the Draft Final SPDisposition Supplemental EIS. Comments received after the close of the comment period will be considered to the extent practicable.

Draft SPD Supplemental EIS Public Hearing Schedule

August 21, 2012	August 23, 2012	August 28, 2012
Holiday Inn Express 60 Entrada Drive Los Alamos, NM 87544	Courtyard by Marriott Santa Fe 3347 Cerrillos Road Santa Fe, NM 87507	Pecos River Village Conference Center 711 Muscatel Avenue Carlsbad, NM 88220

Additional Hearing
September 18, 2012
Northern New Mexico College
Española Campus
Center for Fine Arts Building
921 N. Paseo de Oñate
Española, NM 87532

September 4, 2012	September 11, 2012	September 13, 2012
North Augusta Municipal Center 100 Georgia Avenue North Augusta, SC 29841 (video webcast)	Chattanooga Convention Center 1150 Carter Street Chattanooga, TN 37402	Calhoun Community College - Decatur Campus Aerospace Building - Lecture Hall 6250 Highway 31 North Tanner, AL 35671

5:30 p.m. – Open House
6:30 p.m. – Presentation, followed by public comment session
8:00 p.m. – Hearing adjourns

If you require assistance to participate in a hearing, please call the toll-free voicemail at 1-877-344-0513 and leave a message, or send an email to spdsupplementaleis@saic.com, identifying the assistance you need at least 72 hours before the hearing. Please include your contact information so that we may call you regarding your request. A Spanish interpreter will be present to assist at the hearing in Española.

Response side of this page intentionally left blank.

Commentor No. 65 (cont'd): Dennis F. Nester

The Federal Register NOA, the Draft SEIS, and additional project information are available at http://nnsa.energy.gov/nepa/spdsupplementaleis.

OPPORTUNITIES TO COMMENT:

The comment period will end on October 10, 2012. Written comments may also be submitted at the hearings or by U.S. Mail: Sachiko McAlhany, SPD Supplemental EIS Document Manager, P.O. Box 2324, Germantown, MD 20874-2324

Toll-free Fax: 877-865-0277; Email: spdsupplementaleis@saic.com

Response side of this page intentionally left blank.

Commentor No. 66: The Fisher Family

From: Greg Fisher
Sent: Thursday, September 06, 2012 5:29 PM
To: spdsupplementaleis@saic.com
Subject: Please Support Nuclear Material Disposal and Don't Listen to Uninformed naysayers

Fisher Family

Dear DOE,

We live in White Rock and work in Los Alamos but do not work for the lab or DOE or any federal agency. Special interests in Santa Fe, most not originally from New Mexico, always seem to think they know what is best for the economy and environment of New Mexico and the USA– but they do not- you the policy leaders and environmental scientists do.

Special interest visitors and mostly new residents or uninformed residents of Santa Fe think our water is contaminated with radiation when it is cleaner than water downstream from the auto junkyards that litter a part of Santa Fe where few of these people live. These uniformed but well-intentioned people would try to kill the jobs and opportunities that the national lab brings to Northern New Mexico. And, amazingly they would slow down the removal of old waste and destruction of weapons that is an essential part of what LANL does for the START Treaty.

You as professionals know better. Please do not bend to the irrational, well-meaning but uninformed Santa Fe visitors and mostly new residents who think they know what is best for the people and communities of Northern New Mexico that work hard for the federal government and know the lan is a first-class operation that will take pride and care in the disposal process.

Please allow the radioactive material to go to WIPP where it belongs, and continue to let us in Los Alamos do our job to help our government and trhe world. There is no other better place to do the disposal and conversion work and everyone outside of a few naysayers in santa fe depends on the lab and DOE and has and will continue to give our best to our government. Please allow LANL to keep turning Russian weapons into safe fuel, using common sense and guided by science and safety, not out-of-town politics. We all support you up here, and we can do the best job there is to do, right here in Northern New Mexico. Los Alamos is a great place and the right place for DOE and NSAA to invest. ***66-1***

Thanks,

The Fisher Family

66-1 DOE acknowledges the commentor's opinion.

Commentor No. 67: Scott Shuker

From: Scott S.
Sent: Thursday, September 06, 2012 5:43 PM
To: spdsupplementaleis@saic.com
Subject: Public comment

As always, I must protest, in the strongest possible terms, the proposed Plutonium Disposition proposal at LANL. The generation of plutonium pits has no rational purpose but to keep money flowing into the lab for a questionable justification while endangering all living things which surround it. Our money is very much needed elsewhere. *67-1*

I look forward to the day when LANL's best and brightest can be put to work for peaceful,sustainable purposes. Future generations will be appalled that such nonsensical activities ever occurred there.

Thank you for your consideration.

Scott Shuker

67-1 The Surplus Plutonium Disposition Program is not related to the production of pits at LANL. Examining issues related to pit production is not within the scope of this *SPD Supplemental EIS*. The Surplus Plutonium Disposition Program is a nonproliferation program in which plutonium would be removed from pits and made inaccessible and unattractive for weapons use. All of the action alternatives evaluated in this *SPD Supplemental EIS* are considered to render surplus plutonium into a proliferation-resistant form or result in proliferation-resistant disposal.

Commentor No. 68: Sharon Stover, Chair
Los Alamos County Council

LOS ALAMOS COUNTY
133 Central Park Square - Los Alamos, NM 87544
Phone (505) 663-1750 Fax (505) 662-8079
Website: www.losalamosnm.us

September 5, 2012

Sent via fax & USPS: (877)865-0277

Sachiko McAlhany, NEPA Document Manager
SPD Supplemental EIS
U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324

Dear Ms. McAlhany,

The County Council of Los Alamos would like to extend our strongest support for the Department of Energy's (DOE's) Draft Supplemental Environmental Impact Statement for increased plutonium disposition work at Los Alamos National Laboratory (LANL). We believe that it is a sound national security decision to decommission unused plutonium pits into configurations that cannot easily be reused in a nuclear weapon. The ARIES program at LANL has eliminated roughly 240 kilograms of plutonium pits over the last year and converted them into a plutonium oxide.

68-1 Because of the initial success of ARIES, we believe that increased operations at the Laboratory for this program will have minimal health or safety impacts on our community. In addition, LANL has the existing personnel and facilities capable of safely and securely handling this additional scope of work.

We are also pleased to learn that approximately $70 million in new funding has the potential to create an additional 300 permanent jobs associated with increasing the scope of this program. The Los Alamos County Council believes it is imperative that LANL acquire additional mission scope in both their weapons and non-weapons portfolios to ensure long-term stability.

Thank you for including our comments as part of the official record on this matter.

Sincerely,

Sharon Stover, Chair
Los Alamos County Council

SS:ms

cc: Los Alamos County Council
Harry Burgess, County Administrator
Charlie McMillan, Los Alamos National Laboratory

68-1 DOE acknowledges the commentor's opinion.

Commentor No. 69: Victoria More

From: Corelight
Sent: Friday, September 07, 2012 2:23 PM
To: spdsupplementaleis@saic.com
Subject: Please no more surplus plutonium in New Mexico!
Importance: High

Dear Ms. McAlhany,

I am very concerned about Department of Energy's plan for surplus plutonium as outlined in its Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement. No additional plutonium should be brought to Los Alamos National Laboratory (LANL). LANL is not meeting its waste cleanup schedule and its facilities do not meet seismic standards in case of a severe earthquake. Bringing thousands of plutonium pits to LANL would further endanger public health and safety and divert resources away from cleanup. *69-1*

The Waste Isolation Pilot Plant (WIPP) has a limited mission and does not have the capacity for all surplus plutonium. Stop the Mixed Oxide (MOX) Plutonium Fuel Program and immobilize and safely store plutonium until technically sound, suitable disposition facilities are available.

Sincerely,

Your name Victoria More

Your address

69-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

Commentor No. 70: Linda Garcia

From: Linda Garcia
Sent: Friday, September 07, 2012 2:55 PM
To: spdsupplementaleis@saic.com
Subject: DOE Proposal

I oppose the current DOE proposal where plutonium triggers or pits will be shipped to Los Alamos National Labs in New Mexico. LANL is not meeting its waste cleanup schedule as it is without this additional burden. Its facilities do not meet seismic standards in case of a severe earthquake. Bringing thousands of plutonium pits to LANL would further endanger public health and safety and divert resources away from cleanup, which LANL still needs to do. *70-1*

Do not make a bad situation worse. LANL is not ready for this.

Sincerely,

Linda Garcia

70-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. Potential consequences of postulated accidents can be found in Tables 4–6 through 4–8; however, the chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

Commentor No. 71: Jonathan Crews

From: Jonathan Crews
Sent: Saturday, September 08, 2012 11:04 AM
To: spdsupplementaleis@saic.com
Subject: Plutonium shipment

Dear Ms. McAlhany,

I am very concerned about Department of Energy's plan for surplus plutonium as outlined in its Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement. No additional plutonium should be brought to Los Alamos National Laboratory (LANL). LANL is not meeting its waste cleanup schedule and its facilities do not meet seismic standards in case of a severe earthquake. Bringing thousands of plutonium pits to LANL would further endanger public health and safety and divert resources away from cleanup. *71-1*

The Waste Isolation Pilot Plant (WIPP) has a limited mission and does not have the capacity for all surplus plutonium. Stop the Mixed Oxide(MOX) Plutonium Fuel Program and immobilize and safely store plutonium until technically sound, suitable disposition facilities are available.

Sincerely,

Jonathan Crews

71-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

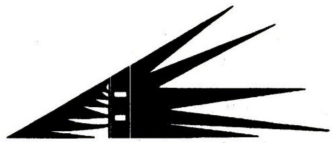
This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

Commentor No. 72: Don Hancock
Southwest Research and Information Center



SOUTHWEST RESEARCH AND INFORMATION CENTER

October 10, 2012

Sachiko McAlhany
NEPA Document Manager
SPD Supplemental EIS
U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324 VIA: spdsupplementaleis@saic.com

RE: Comments on the Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SEIS)

Dear Sachicko McAlhany:

Southwest Research and Information Center (SRIC) is a nonprofit organization established in 1971 to promote the health of people and communities, protect natural resources, ensure citizen participation, and secure environmental and social justice now and for future generations. SRIC has been actively involved with issues related to surplus plutonium management for more than two decades and to issues related to the Waste Isolation Pilot Plant (WIPP) for more than 35 years. Over the past several years, SRIC also has been involved with various activities related to Los Alamos National Lab (LANL). SRIC supports the goals of safely storing surplus plutonium, making weapons-grade plutonium unavailable for future weapons use, and safely disposing of plutonium waste. However, the existing the Department of Energy (DOE) National Nuclear Security Administration (NNSA) program is not achieving, and will not achieve, those goals.

The following comments are in addition to those made orally by Don Hancock at the August 26, 2010 Santa Fe scoping meeting; the written scoping comments submitted on September 17, 2010; the written scoping comments submitted on March 12, 2012; and the oral comments made by Don Hancock at the August 23, 2012 hearing in Santa Fe. Those comments also must be fully considered and addressed. Of course, the DOE NNSA must fully consider and address all comments received regarding the Draft SEIS. *72-1*

For the many reasons that follow, DOE/NNSA cannot proceed with a *Final Surplus Plutonium Disposition Supplemental Environmental Impact Statement* (SPD Supplemental EIS). DOE must first issue a new or revised *Storage and Disposition of Weapons-Usable Fissile Materials Programmatic EIS* (Storage and Disposition PEIS or PEIS). Moreover, the Draft SEIS is grossly inadequate and cannot serve as the basis for an adequate FEIS. *72-2*

72-1 All comments received during the scoping process were considered by DOE in developing the scope of this *SPD Supplemental EIS.* During the public comment period, the public was encouraged to submit comments on the *Draft SPD Supplemental EIS*. Despite the stated closing date of the comment period, DOE considered all comments received on the *Draft SPD Supplemental EIS*, including those received after the close of the comment period. This CRD provides responses to those comments. As discussed in Chapter 1, Section 1.6, all comments received during the scoping periods were considered in establishing the scope of this document.

72-2 The decision to prepare this *SPD Supplemental EIS* was made in accordance with CEQ and DOE NEPA regulations. This *SPD Supplemental EIS* supplements the *SPD EIS* (DOE 1999), which in turn is tiered from the *Storage and Disposition PEIS* (DOE 1996). DOE's need to store and disposition surplus plutonium in accordance with U.S. nonproliferation and export control policies in a safe, reliable, cost-effective and timely manner, has not changed since the *Storage and Disposition PEIS* was prepared. DOE has, however, become aware of new circumstances and information relevant to the *SPD EIS* that warrant re-examination of some of the analyses provided in that NEPA document. Pursuant to CEQ and DOE NEPA regulations and guidance, this can appropriately be done in a supplement to the *SPD EIS*, which is the path DOE has elected to take with this *SPD Supplemental EIS*. For further discussion, also refer to Section 2.1, Topic A, of this CRD.

Commentor No. 72 (cont'd): Don Hancock
Southwest Research and Information Center

1. NEPA requires halting the Supplemental EIS (SEIS) and instead issuing a Programmatic EIS. DOE/NNSA is not in compliance with the National Environmental Policy Act (NEPA) and should not proceed with a SPD Supplemental EIS (DOE/EIS-0283-S2). The SPD Supplemental EIS to support decisions about surplus plutonium disposition is tiered from the December 1996 Storage and Disposition PEIS (DOE/EIS-0229). However, the surplus plutonium disposition program of the SPD Supplemental EIS is fundamentally changed from the program and alternatives discussed in the Storage and Disposition PEIS. Therefore, DOE/NNSA must issue for public comment a new Draft Storage and Disposition PEIS or a Draft Supplemental PEIS describing the surplus plutonium disposition program and its alternatives before it can proceed with an SPD Supplemental EIS. A new or supplemental Final PEIS and a revised ROD are required before the SEIS could be issued.

The SPD Supplemental EIS program is greatly changed from the Storage and Disposition PEIS in several ways. First, the PEIS considered and eliminated the alternative of disposing of surplus plutonium at the Waste Isolation Pilot Plant (WIPP) (pages 2-10 to 2-15). Nonetheless, the Draft SPD Supplemental EIS (DSEIS) includes WIPP as the preferred alternative for disposition of surplus plutonium that is not suitable for MOX fuel fabrication. Second, the PEIS did not include Los Alamos National Lab (LANL) as a pit disassembly or conversion location (pages 2-89 to 2-95). Nonetheless, the DSEIS includes LANL as a pit disassembly and conversion action alternative. Third, the PEIS stated that disposition would "meet the Spent Fuel Standard, thereby providing evidence of irreversible disarmament and setting a model for proliferation resistance." at 1-6. Nonetheless, the DSEIS has abandoned the Spent Fuel Standard and provided no technical analysis that describes why the standard is no longer valid. Fourth, the PEIS included sites for up to 50 years of long-term storage (pages 2-2 to 2-7). However, storage at SRS and Pantex or reactor sites could be necessary for more than 50 years, given that the disposition program as described in the PEIS has not been implemented. Thus, at least four important elements of the current program were not considered in the PEIS, leading to the unavoidable conclusion that the program has dramatically changed, and a new PEIS or Supplemental PEIS is required before the SEIS can proceed.

SRIC has reiterated its position regarding the need for a PEIS to comply with NEPA repeatedly. The only response is on page 1-11 of the DSEIS:

> *Comment Summary*: Commentors were concerned that related environmental impact statements (EISs) need to be updated before this *SPD Supplemental EIS* is issued and a decision made.
> *Response*: This *SPD Supplemental EIS* is being prepared in accordance with applicable Council on Environmental Quality and DOE NEPA regulations. This *SPD Supplemental EIS* addresses all of the relevant issues and analysis covered in the other documents and updates the analyses where necessary. The other related EISs and supplement analyses, and the decisions announced in the RODs for these documents, remain valid and, and in accordance with Council on Environmental Quality and DOE NEPA regulations, do not need to be updated before this *SPD Supplemental EIS* can be issued.

2

72-2 cont'd

The direct disposal of 50 metric tons (55 tons) of surplus plutonium was eliminated from further analysis in the *Storage and Disposition PEIS* (DOE 1996:2-13) because it would exceed the capacity of WIPP when added to DOE's inventory of TRU waste. In response to comments on the *Draft SPD Supplemental EIS*, DOE expanded the WIPP Alternative to include potential disposal of all 13.1 metric tons (14.4 tons) of the surplus plutonium for which a disposition path is not assigned. The disposal at WIPP of 13.1 metric tons (14.4 tons) of surplus plutonium, which is approximately 26 percent of the amount considered in the *Storage and Disposition PEIS*, could potentially be accomplished within WIPP's capacity and, therefore, is considered to be a reasonable alternative in this *Final SPD Supplemental EIS* (see Chapter 4, Section 4.5.3.6.3). A description of WIPP's capacity and the process that would be used to dispose of surplus plutonium as CH-TRU waste at WIPP, as analyzed in this *Final SPD Supplemental EIS*, is contained in Appendix B, Sections B.1.3 and B.3.

Pit disassembly and conversion at the Hanford Site, Idaho National Laboratory, and the Pantex Plant were evaluated in the *SPD EIS* (DOE 1999). Pit disassembly and conversion at these sites was not selected in the ROD for the *SPD EIS* (65 FR 1608) and, therefore, is not evaluated in this *SPD Supplemental EIS*.

The use of LANL to support pit disassembly and conversion has been ongoing. In 1998, DOE completed an environmental assessment of a proposed pit disassembly and conversion demonstration project at LANL (DOE 1998a). The *SPD EIS* (DOE 1999) acknowledged these activities, and the *LANL SWEIS* (DOE 2008) included the impacts associated with these ongoing activities. In this *SPD Supplemental EIS,* DOE is now considering an expansion of these activities and has included an evaluation of all of the environmental impacts associated with this proposal (see Appendix F and the various sections in Chapter 4 that include impacts analyses related to LANL).

DOE believes that the alternatives, including the WIPP Alternative, analyzed in this *SPD Supplemental EIS* meet the goals of the Spent Fuel Standard. The Spent Fuel Standard is a term, coined by the National Academy of Sciences and modified by DOE, denoting the main objective of alternatives for the disposition of surplus weapons-usable plutonium: that such surplus plutonium would be made roughly as inaccessible and unattractive for weapons use as the much larger and growing stock of plutonium in civilian spent (used) nuclear fuel.

As described in Appendix B, Table B–2, of this *SPD Supplemental EIS*, 40 years of storage of surplus non-pit plutonium is analyzed in the proposed No Action Alternative. Storage for fewer years is analyzed under the action alternatives. DOE's

Commentor No. 72 (cont'd): Don Hancock
Southwest Research and Information Center

That response is not adequate for several reasons. First, asserting that the PEIS "remain[s] valid" is clearly contradicted by looking at the portions of its Chapter 2 cited above. If the PEIS remains valid, WIPP must be excluded from consideration as a disposition alternative; LANL must be excluded from consideration as a pit disassembly or conversion location; and Hanford, Idaho National Lab, and Pantex must be included as alternative pit disassembly or conversion locations. But the DSEIS provides no analysis of Hanford or INL for pit disassembly or conversion and rejects Pantex for that activity.

> Pit disassembly and conversion at Pantex was evaluated in the *SPD EIS* (DOE 1999b), and DOE selected PDCF at SRS for reasons set forth in the *SPD EIS* ROD (65 FR 1608). Although DOE is reconsidering the decision to build a PDCF at SRS and is looking at other options including using PF-4 at LANL, DOE is not reconsidering pit disassembly and conversion at Pantex for the reasons set forth in the *SPD EIS* ROD. at 2-15.

That Record of Decision (ROD) of 2000 describes the attributes of SRS, but provides no analysis of why Pantex is not a reasonable alternative. Thus, the DSEIS does not adequately consider alternative pit disassembly and conversion locations included in the PEIS.

72-2 cont'd

Second, the DSEIS provides no adequate analysis of the reasons to reconsider the SRS pit disassembly and conversion facility. Page 2-1 states that DOE/NNSA commissioned a study and developed options for disassembly and conversion based on the study. However, the study document (MPR 2011) is not available for public review. As of October 10, 2012, the SPD website continues to state that reference documents are "Coming Soon." However, Council on Environmental Quality (CEQ) regulations provide:

> No material may be incorporated by reference unless it is reasonably available for inspection by potentially interested persons with the time allowed for comment. 40 CFR §1502.21.

CEQ further explained that requirement:

> Care must be taken in all cases to ensure that material incorporated by reference, and the occasional appendix that does not accompany the EIS, are in fact available for the full minimum public comment period. 46 FR 18034. Emphasis added.

72-3

The study cannot be the basis for the alternative locations considered nor for excluding other sites because it is not "reasonably available for inspection." The EIS process is ongoing for more than 18 years (since the 1994 public meetings on surplus plutonium disposition), so there is no justification for references not being available in a timely manner to fully comply with CEQ regulations.

Third, if the PEIS remains valid, all the disposition alternatives would meet the Spent Fuel Standard. But they do not. That Standard is abandoned, with the mere assertion that:

72-4

alternatives for surplus plutonium disposition would complete these activities within the 50-year storage period previously analyzed.

72-3 The period for submitting comments on the *Draft SPD Supplemental EIS* closed on October 10, 2012. On the same day, DOE posted the references on the *SPD Supplemental EIS* website at http://nnsa.energy.gov/aboutus/ouroperations/generalcounsel/nepaoverview/nepa/spdsupplementaleis. Nonetheless, the *Draft SPD Supplemental EIS* and the cited resources on which DOE relied to support the analysis in the *Draft SPD Supplemental EIS* were available to the public for the duration of the comment period. Copies of the cited reference materials were sent along with copies of the document to all of the reading rooms and libraries listed in the Summary, Section S.13, of the *Draft SPD Supplemental EIS* prior to the beginning of the public comment period. However, there are certain types of information that are exempt from public release; in the *Draft SPD Supplemental EIS*, the reference "MPR 2012" contained such protected information. In response to requests for this document, DOE prepared a redacted version, which is now available for public release. Despite the stated closing date of the comment period, DOE considered all comments received on the *Draft SPD Supplemental EIS*, including those received after the close of the comment period.

72-4 As discussed in the response to comment 72-2, DOE believes that all of the alternatives, including the WIPP Alternative, analyzed in this *SPD Supplemental EIS* meet the goals of the Spent Fuel Standard. The approximately 2 metric tons (2.2 tons) of surplus plutonium that would be disposed of at WIPP under the MOX Fuel Alternative is impure plutonium that could not be readily used in a nuclear weapon. This impure plutonium would be blended with large quantities of inert material that would make recovery, purification, and reuse in a nuclear weapon even more challenging, and the material would be disposed of 2,000 feet (610 meters) underground. Under the WIPP Alternative, 13.1 metric tons (14.4 tons) of surplus plutonium would be disposed of at WIPP (see Chapter 2, Section 2.3.5). As with the MOX Fuel Alternative, this surplus plutonium would be blended with large quantities of inert material, making it challenging to recover, purify, and reuse. For further discussion, refer to Section 2.2, Topic B, of this CRD.

Commentor No. 72 (cont'd): Don Hancock
Southwest Research and Information Center

> DOE believes that the alternatives, including the WIPP Alternative, analyzed in this *SPD Supplemental EIS* provide protection from theft, diversion, or future reuse in nuclear weapons akin to that afforded by the Spent Fuel Standard. at 2–12.

That assertion in no way serves as a rigorous technical basis for changing a fundamental requirement of the PEIS disposition program. Nor does sending surplus plutonium to WIPP provide "evidence of irreversible disarmament and setting a model for proliferation resistance" as required by the Spent Fuel Standard. Indeed, part of the WIPP alternative is processing plutonium in H Canyon, which is an actual and symbolic proliferation facility and could result in plutonium being more weapons usable than in its current state, certainly does not demonstrate either "irreversible disarmament" or "proliferation resistance." If the Spent Fuel Standard is to be abandoned, a new or supplemental PEIS that discusses why the Spent Fuel Standard is not viable and the alternatives to that standard must be issued for public comment.

72-4 cont'd

Fourth, DOE/NNSA have provided no documentation of any analysis of the PEIS and whether updating is needed. CEQ has stated:

> As a rule of thumb, if the proposal has not yet been implemented, or if the EIS concerns an ongoing program, EISs that are more than 5 years old should be carefully reexamined to determine if the criteria in Section 1502.9 compel preparation of an EIS supplement. 46 FR 18036.

Thus, a 16-year old PEIS should logically be supplemented. DOE/NNSA have produced no document of a careful reexamination of the PEIS and the need to update it, and the cursory assertion in no way can serve as such a reexamination. Therefore, for those many reasons, before a SEIS can be issued, a new or supplemented PEIS must be issued for public comment, and a final PEIS and revised ROD must be issued.

72-5

2. The DSEIS misstates previous decisions and misrepresents the history of the plutonium disposition program, so much so that the SEIS is legally inadequate.

According to the DSEIS, the Proposed Action is:

> DOE proposes to disposition an additional 13.1 metric tons (14.4 tons) of surplus plutonium for which it has not previously made a disposition decision; to provide the appropriate capability to disassemble surplus pits and convert surplus plutonium to a form suitable for disposition; and to provide for the use of MOX fuel in TVA and other domestic commercial nuclear power reactors. at 1-2.

It is a gross falsehood that DOE "has not previously made a disposition decision" regarding the 13.1 metric tons of surplus plutonium. The fact is that DOE previously determined that surplus plutonium would be immobilized and dispositioned to meet the Spent Fuel Standard. In its 1997 ROD, DOE determined that all surplus plutonium, including the 13.1 metric tons, would be dispositioned by either immobilization or MOX:

72-6

72-5 DOE believes that it is neither necessary nor desirable to supplement the *Storage and Disposition PEIS* (DOE 1996). For further discussion, refer to Section 2.1, Topic A, of this CRD.

72-6 Chapter 1, Section 1.3, of this *Final SPD Supplemental EIS* was revised to clarify that the scope of this *Final SPD Supplemental EIS* is the disposition of 13.1 metric tons (14.4 tons) of surplus plutonium for which DOE does not have a disposition path assigned; to provide the appropriate capability to disassemble surplus pits and convert surplus plutonium to a form suitable for disposition; and to provide for the use of MOX fuel in TVA's and other domestic commercial nuclear power reactors. As described in Chapter 1, Section 1.1, and Appendix A, Section A.1, the March 28, 2007, NOI (72 FR 14543) recognized that a portion of the 13.1 metric tons (14.4 tons) of surplus plutonium was originally planned for immobilization in the *SPD EIS* ROD (65 FR 1608). As further described in Chapter 1 (see Figure 1–7) and Appendix A, the 2002 amended ROD cancelling the Immobilization Facility (67 FR 19432), as well as subsequent actions, left 5.1 metric tons (5.6 tons) of non-pit surplus plutonium originally planned for immobilization to be considered for disposition in this *SPD Supplemental EIS;* this was rounded up to the 6 metric tons (6.6 tons) analyzed in this *SPD Supplemental EIS*. As described in Section 1.5, the 7.1 metric tons (7.8 tons) of pit plutonium included in the 13.1 metric tons (14.4 tons) is from a 2007 Excess Plutonium Declaration and, therefore, was not included in the immobilization decision announced in the *SPD EIS* ROD (65 FR 1608).

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> DOE will provide for disposition of surplus plutonium by pursuing a strategy that allows: (1) Immobilization of surplus plutonium for disposal in a repository pursuant to the Nuclear Waste Policy Act, and (2) fabrication of surplus plutonium into MOX fuel, for use in existing domestic commercial reactors (and potentially CANDU reactors, depending on future agreements with Russia and Canada). 62 FR 3029.

The 2000 ROD explicitly re-affirmed that 1997 decision:

> Consistent with the January 1997 decision on the Storage and Disposition PEIS, the Department of Energy is affirming its decision to use a hybrid approach for the safe and secure disposition of up to 50 metric tons of surplus plutonium using both immobilization and mixed oxide fuel technologies and to construct and operate three new facilities at its Savannah River Site. The hybrid approach allows for the immobilization of approximately 17 metric tons of surplus plutonium and the use of up to 33 metric tons as mixed oxide fuel which would be irradiated in commercial reactors. 65 FR 1619.

72-6 cont'd

Both NEPA and good government policy require DOE to base its proposals and actions on factual bases. CEQ regulations state:

> NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA. 40 CFR §1500.1(b).

DOE could state that it is changing its decisions – if it complies with NEPA and other federal laws – but the DSEIS is based on a fundamental falsehood that DOE "has not previously made a disposition decision." That the DSEIS is fundamentally erroneous requires that it be stopped and that a Final SEIS not be issued.

The DSEIS also fails to recognize that the entire plutonium disposition program of the PEIS ROD has failed. Immobilization has not occurred, neither have the reactor disposition alternatives. The PEIS ROD stated:

> The time to attain production scale operation in existing LWRs and CANDU reactors could be about 8–12 years, depending on the need for and source of test assemblies that might be required. The time to complete the disposition mission is a function of the number of reactors committed to the mission, among other factors. For the variants considered, the time to complete varies from about 24 to 31 years. 62 FR 3022.

72-7

While it is more than 15 years since the PEIS ROD was issued, no successful lead assembly tests have occurred, and no production scale reactor operation has occurred at all, let alone in the

72-7 See the response to comment 72-2 regarding the need to update or redo the *Storage and Disposition PEIS* (DOE 1996). Whether actions being implemented based on previous decisions made by DOE are progressing as originally planned does not change or affect this analysis, and such actions are outside the scope of this *SPD Supplemental EIS*.

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designated time period. In fact, there are no production scale LWRs that have agreed to use the Mixed Oxide (MOX) fuel, and no such MOX fuel has been produced. Nor will the production of MOX fuel occur in the next few years, if ever. The completion of the disposition mission in reactors by 2028 is clearly not feasible. Thus, the reactor disposition mission has failed, and a new or supplemented PEIS is needed to discuss the reasonable alternatives.

In the April 19, 2002 Amended ROD on Surplus Plutonium Disposition that changed previous decisions, DOE announced: "Cancellation of the immobilization portion of the disposition strategies announced in those RODs due to budgetary constraints." 67 FR 19432. No comprehensive analysis has been provided that adequately supported that decision. Since that Amended ROD, there has effectively been no immobilization disposition program. Thus, the disposition immobilization program of the PEIS ROD also has failed, and a new PEIS is needed to discuss the reasonable alternatives.

72-7 cont'd

Under DOE regulations,

> When required to support a DOE programmatic decision (40 CFR 1508.18(b)(3)), DOE shall prepare a programmatic EIS or EA (40 CFR 1502.4). DOE may also prepare a programmatic EIS or EA at any time to further the purposes of NEPA. 10 CFR § 1021.330(a).

DOE has provided no NEPA or legal basis that describes and analyzes why a new PEIS should not be completed. Once a new PEIS is completed, additional NEPA analyses also may be necessary for the specific surplus plutonium programs discussed in the NOIs.

3. Since DOE is re-considering the PEIS disposition program, the Preferred Alternative should be immobilization.

Like many other groups, SRIC has long supported immobilization of surplus plutonium and continues to believe that option should be implemented. Thus, in the new NEPA analysis, SRIC urges that the preferred alternative be some form(s) of immobilization for all of the surplus plutonium. The NEPA analysis must discuss immobilization to meet the Spent Fuel Standard as well as any reasonable alternatives to do not meet that standard, if DOE persists on abandoning that requirement. If DOE is proceeding with "stardust" or "inert material" for some plutonium oxide "to reduce the plutonium content to less than 10 percent by weight and inhibit plutonium material recovery" (at 2-8), it must describe the process, whether it could be applied to more than 6 metric tons of surplus plutonium, and whether it is a reasonable alternative for up to 50 metric tons of surplus plutonium. The NEPA analysis must discuss how all of surplus pit plutonium could be immobilized or otherwise "inhibited from plutonium material recovery" and stored at SRS in addition to the detailed analysis of how the 6 metric tons of non-pit plutonium could be immobilized. The NEPA analysis must also discuss how the Mixed Oxide Fuel Fabrication Facility (MFFF) could be modified to be part of the immobilization program, as well as discussing how it could be modified for pit disassembly and conversion activities.

72-8

Given the need for a new PEIS for surplus plutonium disposition and the need for an immobilization program, SRIC strongly objects to the statements in the DSEIS that DOE will not reconsider decisions already made to disposition surplus plutonium. At least one immobilization

72-8 For the reasons provided in the response to comment 72-2, DOE does not believe a new *Storage and Disposition PEIS* is necessary. As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS.* The commentor's objections to this position are noted.

DOE proposes to disposition 13.1 metric tons (14.4 tons) of surplus plutonium for which a disposition path is not assigned; to provide the appropriate capability to disassemble surplus pits and convert surplus plutonium to a form suitable for disposition; and to provide for the use of MOX fuel in TVA's and other domestic commercial nuclear power reactors. The action alternatives include immobilization and vitrification with HLW at DWPF, as well as fabrication of the surplus plutonium into MOX fuel and preparation for potential disposal at WIPP. See the response to comment 72-2 regarding the ability of the alternatives to meet the goals of the Spent Fuel Standard.

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facility must be considered a reasonable alternative and examined in detail. In addition, how at least some of the surplus plutonium could be vitrified in the Defense Waste Processing Facility must be considered a reasonable alternative and examined in detail. Such an analysis must also compare other immobilization methods with using H-Canyon for costs, environmental impacts, and proliferation risks.

4. Since DOE is reconsidering previous decisions, it must consider that the MOX preferred alternative should be cancelled, or its status revised and updated.

Revisiting the MOX preferred alternative is required for policy, NEPA, and legal reasons. First, if "budgetary constraints" caused the cancellation of the immobilization program in 2002, the current more extreme federal budgetary constraints and the much greater costs of MOX than previously estimated should result in canceling the MFFF. Any NEPA analysis must fully discuss why the cancellation should not occur, if DOE plans to continue the MFFF. Second, the DSEIS discusses LANL activities solely as supporting the MFFF. A reasonable alternative is to not use LANL for the MOX programs (as has been the long-standing policy). If not using LANL would mean that MFFF would not operate or would have less feedstock than its proposed 34 metric-ton capacity, then not proceeding with the MFFF is a reasonable alternative. Third, no U.S. light-water reactor (LWR) reactor company (including the Tennessee Valley Authority) has agreed to use MOX fuel, so it is incumbent upon DOE to develop alternatives to address the fact that much or all of the proposed 34 metric tons of surplus plutonium designated for the MFFF would not be used so that disposition program could not be implemented. Fourth, the more than $4 billion already spent on MFFF and PDCF does not mean that either or both facilities will operate as previously designed. Another reasonable alternative would be to modify the MFFF so that it could carry out the disassembly and/or conversion activities, instead of using LANL. Fifth, MOX used in commercial reactors is not "dispositioned." After being in the reactor, the MOX fuel will be spent nuclear fuel and either has to be stored for decades at the reactor site or some other storage site, since there is no disposal facility being developed under the Nuclear Waste Policy Act (NWPA). The NEPA analysis must also include the environmental impacts of long-term storage of the irradiated MOX fuel at any reactor that uses such fuel. Even if there were a geologic repository being developed under the NWPA, it is not likely to have the capacity for MOX reactor spent fuel because the current legal capacity of 70,000 metric tons could be fully used by existing commercial reactor spent nuclear fuel and defense high-level waste and spent fuel from MOX fuel is years away and therefore would likely be far down the queue of waste in a first repository. The Nuclear Waste Technical Review Board also has pointed out that MOX fuel creates numerous storage and security problems that are greater than for low-enriched uranium fuel. The DOE analysis must fully discuss and respond to those issues identified in the Board's December 30, 2011 letter to Peter Lyons of DOE. (http://www.nwtrb.gov/corr/bjg162.pdf).

DOE NNSA should recognize that the surplus plutonium cannot be made into an "asset" by being converted to MOX. Rather, that plutonium should be considered and handled carefully as a waste, immobilized (or otherwise placed in a proliferation-resistant form), and stored at SRS or some other site. Spending billions of dollars more to try to make the surplus plutonium usable as MOX only serves to increase the costs of managing the plutonium, while also risking proliferation. The new NEPA analysis should discuss the alternative that the

72-8 cont'd

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72-14

72-9 In April 2014, DOE's Plutonium Disposition Working Group issued its report, *Analysis of Surplus Weapon-Grade Plutonium Disposition Options* (DOE 2014), which assesses options that could potentially provide a more cost-effective approach for disposition of surplus U.S. weapons-grade plutonium and provides the foundation for further analysis and independent validation.

As discussed in Section 2.1, Topic A, of this CRD, the Storage and Disposition PEIS (DOE 1996) and the SPD EIS (DOE 1999) evaluated numerous alternatives for disposition of surplus plutonium, including immobilization. DOE selected an approach for disposition of some of the plutonium declared surplus (68 FR 20134). As discussed in Section 2.2, Topic A, of this CRD, DOE's prior disposition decisions are not addressed in this SPD Supplemental EIS.

72-10 As discussed in the response to comment 72-2, LANL has been actively involved in surplus plutonium disposition activities since the start of the program in the late 1990s. Pit disassembly and conversion options that do not involve an expanded role for LANL are considered in this *SPD Supplemental EIS* (see Sections 2.1.1 and 2.1.2). Under either of these options, sufficient feedstock would be available to support MFFF.

72-11 As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS,* but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. The action alternatives evaluated for the 13.1 metric tons (14.4 tons) of surplus plutonium are the Immobilization to DWPF Alternative, MOX Fuel Alternative, H-Canyon/HB-Line to DWPF Alternative, and WIPP Alternative.

72-12 DOE considered incorporating pit disassembly and conversion into the MFFF design, but did not pursue full incorporation of this capability due to the classification concerns associated with some pit disassembly and conversion operations. This *SPD Supplemental EIS* does include analysis of the environmental impacts associated with the addition of oxidation furnaces and the conversion of plutonium metal to a plutonium oxide in MFFF (see Appendix B, Section B.1.1.2).

72-13 Chapter 4, Section 4.4, of this *SPD Supplemental EIS* describes the avoided environmental impacts associated with using MOX fuel in commercial nuclear power reactors versus using LEU fuel.

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MFFF will fail or that there will not be sufficient commercial reactors to use the MOX fuel. The new NEPA analysis must discuss the alternatives in such circumstances.

The new NEPA analysis should describe in detail the environmental impacts and revised costs of the MFFF, use of MOX fuel in reactors, storage and disposal of all wastes from MOX reactors so that there is current analysis of the environmental impacts and costs of both the MOX and immobilization alternatives, as well as any other alternatives that are being considered.

72-14 cont'd

SRIC opposes MOX, which is a proliferation risk, creates many public health and safety dangers, has enormous economic costs, and there are no U.S. reactors capable and willing of using it. Regardless of policy preferences, a new or supplemental PEIS fully discussing and analyzing surplus plutonium disposition options is required as a matter of law.

72-15

5. WIPP as an disposition disposal alternative is not adequately analyzed because the actual capacity does not accommodate 6 metric tons of surplus plutonium.

In its previous comments SRIC identified numerous problems regarding use of WIPP and stated that a comprehensive technical analysis was necessary to show that WIPP is a reasonable alternative. The DSEIS fundamentally fails to include such an adequate analysis, as required by NEPA.

The DSEIS states:

> Since the TRU waste projections from baseline activities at SRS and LANL are already included in subscribed estimates for these sites, implementation of surplus plutonium disposition would leave approximately 2,700 cubic meters (95,000 cubic feet) to 13,700 cubic meters (480,000 cubic feet) of unsubscribed capacity at WIPP to support other activities. at 2-43.
>
> The total WIPP capacity for TRU waste disposal is set at 175,600 cubic meters (6.2 million cubic feet) pursuant to the Waste Isolation Pilot Plant Land Withdrawal Act, or 168,485 cubic meters (5.95 million cubic feet) of contact-handled TRU waste (DOE 2008k:16). Estimates in the *Annual Transuranic Waste Inventory Report – 2011* indicate that approximately 148,800 cubic meters (5.25 million cubic feet) of contact-handled TRU waste would be disposed of at WIPP (emplaced volume plus anticipated volume) (DOE 2011k: Table C–1), approximately 19,700 cubic meters (696,000 cubic feet) less than the contact-handled TRU waste permitted capacity. Therefore, approximately 19,700 cubic meters (696,000 cubic feet) of unsubscribed contact-handled TRU waste capacity could support the waste generated by other missions, such as the actions analyzed in this *SPD Supplemental EIS*. at 4-54.

72-16

There are numerous inadequacies in those statements. First, the WIPP Land Withdrawal Act (LWA) does not require that the entire capacity of 175,564 cubic meters be used, nor that the entire 168,485 cubic meters of contact-handled (CH) capacity be used.

8

As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel, by storing it in the reactor's used fuel storage pool or placing it in dry storage. The use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would displace LEU fuel that otherwise would have been used to power the nuclear power reactor. Use of MOX fuel could increase used nuclear fuel generation by 8 to 10 percent for TVA's Browns Ferry and Sequoyah Nuclear Plants, and from 2 to 16 percent for generic reactors during the period MOX fuel could be used at a reactor. DOE expects that increases of this magnitude would be managed within the reactor's normal planning for storage of its used fuel. The increases would represent a much smaller increase in the total amount of used nuclear fuel associated with domestic commercial nuclear reactors. Assuming the increase was at the high end of the range discussed above (16 percent), the increase in the total amount of used fuel in the United States as a result of using MOX fuel to disposition surplus plutonium would be approximately 0.2 percent.

Examining construction and operation of a geologic repository for used nuclear fuel and HLW is not within the scope of this *SPD Supplemental EIS*. As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel. In addition, as discussed in this *SPD Supplemental EIS*, DWPF canisters containing vitrified plutonium with HLW would be managed in the same manner as other DWPF canisters containing HLW.

DOE has terminated the program for a geologic repository for used nuclear fuel and HLW at Yucca Mountain, Nevada. Notwithstanding the decision to terminate the Yucca Mountain program, DOE remains committed to meeting its obligations to manage and ultimately dispose of used nuclear fuel and HLW. For further discussion, refer to Section 2.7, Topic A, of this CRD.

72-14 See the response to comment 72-2 regarding the need to update or redo the *Storage and Disposition PEIS* (DOE 1996).

72-15 DOE notes the commentor's objection to MOX fuel. The environmental impacts (including human health risks) of the alternatives for surplus plutonium disposition would be similar. Environmental impacts are expected to be minor, and there would be little offsite impact on the public from normal operations of surplus plutonium disposition facilities. Operation of surplus plutonium disposition facilities under the alternatives evaluated in this *SPD Supplemental EIS* would contribute little

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Second, the actual capacity of WIPP is less than 175,564 cubic meters because of the way the facility has been managed since it received its first waste shipment in March 1999. As the Attachment shows, Panels 1-5, which are closed, contain 75,770.85 of CH waste. If the remaining five panels dispose of the same amount of CH waste, the projected WIPP disposal capacity would be 151,542 cubic meters, or 2,742 cubic meters more than the estimated amount of CH waste in the 2011 Inventory. That "unsubscribed" amount is far less than the amounts of CH-TRU waste included in the DSEIS. Furthermore, just as the Attachment shows that the actual capacity of remote-handled (RH) waste is no more than 3,545 cubic meters (or about half of the legal limit), the table also shows that the legal CH capacity is unlikely to be available. The CH capacity of each panel is 18,750 cubic meters. But panel 6, which is currently being filled, will almost certainly have less than that amount of waste, thereby reducing the actual remaining capacity to less than 168,485 cubic meters.

72-17

Third, the DSEIS does not discuss the DOE decision that using some of the CH capacity for RH waste in shielded containers is a higher priority than surplus plutonium disposition. In response to DOE's request, on August 8, 2011, the Environmental Protection Agency (EPA) approved use of RH waste in shielded containers. http://www.epa.gov/radiation/docs/wipp/shielded_container/shieldedcontainers_final_080811.pdf In its pending permit modification request to allow RH waste in shielded containers to the New Mexico Environment Department, DOE states that up to 6 percent of the floor space in panels 7-10 could be taken by RH waste in shielded containers. Since the total CH capacity of those four panels is 75,000 cubic meters (18,750x4), 6 percent is 4,500 cubic meters. Using actual practice for the first five panels, that amount of RH waste in shielded containers added to the projected 148,800 cubic meters totals 153,300 cubic meters or more than 1,750 cubic meters more than the projected disposal capacity. In that case, there would be no space for any of the surplus plutonium included in the DSEIS. Furthermore, the actual amount of space used by RH waste in shielded containers could be much more than the estimate in the permit modification request. That estimate is based on full three-packs of RH waste in shielded containers, but with dunnage drums, the space required for RH waste in shielded containers could be up to three times as much as projected. The use of dunnage drums in waste shipments and disposal is one reason that so much of WIPP's disposal capacity has been unused.

72-18

Fourth, it is not correct that the "baseline activities at SRS and LANL are already included in subscribed estimates for these sites." The 2011 WIPP Inventory does not include waste stream SR-221H-PuOx, which is the "pilot" program of pipe overpack containers with "inert material." The decision to use LANL for some pit disassembly has not been made and the TRU waste from those activities are not included in the 2011 Inventory. In addition, there are substantial amounts of TRU waste below ground at Area G at LANL that are not included in the 2011 Inventory because a decision has not yet been made about those wastes. The possibility that some below ground waste at LANL, in addition to the amounts included in the 2011 Inventory, would go to WIPP must be considered. Such additional waste would further reduce "unsubscribed" capacity at WIPP. Rather than asserting that "baseline activities" are included, DOE must provide an analysis that confirms that assertion, must analyze the possibility that additional amounts of TRU waste would go to WIPP, and fully discuss the actual capacity limits of WIPP. An adequate analysis must include not just the legal capacity of WIPP, but also the actual capacity. Such an analysis must address the capacity shortfall. Such an analysis must address other wastes being considered for disposal at WIPP, including RH waste in shielded containers.

72-19

to cumulative effects, including health effects among the offsite population. The risks associated with using a partial MOX fuel core versus a full LEU fuel core in commercial nuclear power reactors are expected to be comparable. The risks associated with postulated accidents would be small. For further discussion, refer to Section 2.2, Topic A, of this CRD.

See the response to comment 72-2 regarding the need to update or redo the *Storage and Disposition PEIS* (DOE 1996) and the response to comment 72-8 regarding DOE's previous decision concerning the fabrication of 34 metric tons (37.5 tons) of surplus plutonium into MOX fuel.

72-16 DOE acknowledges the TRU waste disposal limitations for WIPP that are specified in the WIPP Land Withdrawal Act and in the Agreement for Consultation and Cooperation between the Department of Energy and the State of New Mexico for the Waste Isolation Pilot Plant and will continue to manage operations at WIPP within the limits prescribed by law. Chapter 4, Section 4.5.3.6.3, of this *SPD Supplemental EIS* discusses the amount of TRU waste that is projected for disposal at WIPP, as published in the *Annual Transuranic Waste Inventory Report – 2012* (DOE 2012a), as well as the amount of unsubscribed CH-TRU waste disposal capacity that would be necessary to support the alternatives analyzed in this *SPD Supplemental EIS*. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. As discussed in Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

72-17 DOE does not agree with the commentor that the actual capacity of WIPP would be less than the 168,485 cubic meters (5.95 million cubic feet) of CH-TRU waste allowed under the WIPP Land Withdrawal Act and the Consultation and Cooperation Agreement between DOE and the State of New Mexico. The first five panels at WIPP were closed with 75,771 cubic meters (2.68 million cubic feet) of contact-handled waste, thereby leaving a total of 89,714 cubic meters (3.17 million cubic feet) of unsubscribed capacity. DOE would seek permit modifications to allow

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In addition to the technical need for such capacity analysis, NEPA legal requirements necessitate such a cumulative analysis. CEQ regulations state that an EIS must consider cumulative impacts:

> *Cumulative impact* is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. 40 CFR §1508.7

Regarding WIPP, the various proposed actions are significant.

> Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts. 40 CFR §1508.27(b)(7).

72-20

The various proposals that cumulatively affect the ability of WIPP to meet its longstanding mission to dispose of legacy TRU waste, the possibility that surplus plutonium would displace waste that is in the WIPP Inventory, that such additional waste may exceed the actual, not just the legal, capacity must be comprehensively analyzed, which has not been done in either a programmatic or WIPP-specific EIS.

6. The impacts of bringing the 6 metric tons of surplus plutonium to WIPP have not been adequately analyzed.

Although SRIC's scoping comments pointed out numerous issues that had to be included in an adequate NEPA analysis, the DSEIS does not provide that analysis. Regarding transportation, the DSEIS concludes:

> The highest risk to the public due to incident-free transportation would be under the WIPP Alternative, where up to 9,800 truck shipments of radioactive materials, wastes, and unirradiated MOX fuel would be transported to and/or from SRS (see Table E–10). at E-47.

72-21

However, that analysis understates the transportation impacts. The analysis assumes full loads of surplus plutonium in TRUPACT-IIs or HalfPACTs. However, actual WIPP experience shows that a significant number of dunnage drums are included in shipments, thereby increasing the number of shipments. DOE must analyze the number of shipments to WIPP based on the historic number of dunnage drums. Such an analysis will increase the number of shipments, and therefore the risks to crews and the public from such shipments. That analysis is not covered by the uncertainties described in Appendix E.

The DSEIS also states:

72-22

enough mined volume to safely emplace contact-handled waste up to this total, as future inventory warrants. As indicated in the WIPP Hazardous Waste Permit (NMED 2012), disposal limits for Panels 9 and 10 will be the subject of a future permit modification. Assuming Panels 6 through 8 are filled to their permitted capacity (18,750 cubic meters [662,000 cubic feet]), Panels 9 and 10 would each need to be permitted to allow for the disposal of approximately 18,230 cubic meters (644,000 cubic feet) to reach the maximum limit of 168,485 cubic meters (5.95 million cubic feet) of CH-TRU waste, a number lower than currently permitted for Panels 3 through 8 (NMED 2012).

72-18 All of the waste associated with the proposed disposition of surplus plutonium at WIPP would be CH-TRU waste. As shown in the modification of the WIPP Hazardous Waste Permit (NMED 2012), which approved the use of shielded containers for the disposal of remote-handled TRU waste on the floors at WIPP, no change has been made in the amount of CH-TRU waste that could also be emplaced in Panels 7 and 8. As discussed in the permit, the limits for Panels 9 and 10 will be the subject of a new permit.

72-19 The CH-TRU waste estimates associated with the other CH-TRU waste planned for disposal at WIPP have been updated in this *Final SPD Supplemental EIS* (see Chapter 4, Section 4.5.3.6.3), based on estimates included in DOE's *Annual Transuranic Waste Inventory Report – 2012* (DOE 2012a). The 2012 report includes estimates of CH-TRU waste from LANL and SRS (including waste stream SR-221H-PuOx). The commentor is correct that the revised estimates associated with the proposed surplus plutonium disposition activities at these sites were not included in the inventory, but they have been included as part of the analysis presented in this *Final SPD Supplemental EIS*. Regarding TRU waste inventories, baseline activities in this *Final SPD Supplemental EIS* are those activities itemized and discussed in the *Annual Transuranic Waste Inventory Report – 2012*.

See the response to comment 72-17 regarding the capacity of WIPP to handle the waste from the proposed surplus plutonium disposition activities.

72-20 Chapter 4, Section 4.5.3.6.3, of this *Final SPD Supplemental EIS* discusses the amount of CH-TRU waste that is projected for disposal at WIPP, as published in the *Annual Transuranic Waste Inventory Report – 2012* (DOE 2012a), as well as the amount of unsubscribed CH-TRU waste disposal capacity that would be necessary to support the alternatives analyzed in this *SPD Supplemental EIS*. As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action

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It is assumed for analysis purposes in this *SPD Supplemental EIS* that WIPP would be available for the duration of the surplus plutonium activities under each alternative. at 4-54.

That assumption is not reasonable. The WIPP Hazardous Waste Permit describes WIPP's operational period as 25 years (see Attachments B, G, and H1), thus it is reasonable to assume that the last shipments to WIPP could be in 2023. In that eventuality, much of the surplus plutonium would not be shipped to WIPP. An adequate NEPA document would analyze the alternative that some or all of the 6 metric tons would not come to WIPP and would analyze all of the impacts and costs of extending the WIPP operations beyond 2023.

72-22 cont'd

The DSEIS states:

> The loaded POCs would be transferred to E-Area, where WIPP waste characterization activities would be performed: nondestructive assay, digital radiography, and headspace gas sampling. Once the POCs have successfully passed the characterization process and meet WIPP waste acceptance criteria, they would be shipped to WIPP in Transuranic Package Transporter Model 2 (TRUPACT-II) or HalfPACT shipping containers. at 2-8.

72-23

The DSEIS includes no analysis of how much of the waste might not meet WIPP waste acceptance criteria, whether any of those criteria might have to be changed to accommodate the surplus plutonium, whether other requirements of the WIPP Hazardous Waste Permit could be met or whether they would need to be modified, and whether additional shipping containers (numbers of TRUPACT-IIs or HalfPACTs or new NRC-certified shipping containers) would be required.

The DSEIS includes no analysis of how surplus plutonium would be emplaced at WIPP, including whether additional panels would be needed, whether different emplacement procedures would be needed, and whether the surplus plutonium would take space such that some waste in the WIPP Inventory could not be accommodated or its shipment to WIPP would be delayed while surplus plutonium was shipped first, and the impacts of longer term storage at sites with "displaced" waste. There is no analysis of the costs of extending the WIPP operational lifetime beyond 25 years, nor what changes in the facility – additional mining, upgrading of underground drifts or waste hoist, maintenance and improvements of the Waste Handling Building – and additional transportation containers could be required.

72-24

The DSEIS does not include or reference a new performance assessment that shows that the surplus plutonium would meet the WIPP certification requirements of 40 CFR §191 and §194.

The DSEIS does not analyze the impacts on WIPP operations of international inspections of disposition facilities, which are part of the PEIS ROD.

> In addition, all disposition facilities will be designed or modified, as needed, to accommodate international inspection requirements consistent with the President's Nonproliferation and Export Control Policy. 62 FR 3028.

72-25

Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. DOE acknowledges that some activities currently under consideration by DOE could compete for unsubscribed capacity at WIPP; however, no decisions have been made by DOE to use available WIPP capacity outside of those reported in DOE's *Annual Transuranic Waste Inventory Report – 2012* (DOE 2012a). DOE will make decisions regarding TRU waste disposal within the constraints of the WIPP Land Withdrawal Act and associated agreements and permits. Any TRU disposal that would exceed the capacity at WIPP as allowed by law would require additional legislation and appropriate NEPA documentation. For further discussion, refer to Section 2.2, Topic B, of this CRD.

72-21 Transportation risks are analyzed for all alternatives proposed in this *SPD Supplemental EIS*. Surplus plutonium, like all CH-TRU waste destined for disposal at WIPP, would be packaged and transported in accordance with all applicable regulations. Design and regulatory limits would determine the amount of CH-TRU waste that can be shipped under the regulatory criteria. Dunnage is only used to complete a payload assembly (e.g., 7-pack of 55 gallon [208 liter] drums, a second standard waste box) when a limit is reached (e.g., fissile gram equivalent, weight, wattage). There is no "typical" dunnage usage for shipments to WIPP, even within a single waste stream. In the case of shipments containing POCs, the only limitation that would restrict the number of POCs on a shipment is weight, and that weight limitation would be reached at 35 POCs per shipment. Thus, for the type of waste considered in this *SPD Supplemental EIS* for shipment to WIPP, the use of dunnage for shipments of POCs is not needed or anticipated, and the assumption that the shipments would consist of a full load of 35 containers is reasonable. For incidental CH-TRU waste generated by operations analyzed in this *SPD Supplemental EIS*, the number of shipments was based on 42 containers per shipment. Historical data regarding TRU waste shipments from SRS shows that, on average (regardless of the waste stream or transport package type), about 5 percent of the transported volume is comprised of dunnage; therefore, a corresponding percentage increase in the number of shipments would not substantially increase risks to the public. Transportation risks for transport of surplus plutonium and incidental CH-TRU waste to WIPP are delineated in Appendix E, Tables E–6 to E–10, of this *SPD Supplemental EIS*.

SRIC's scoping comments pointing out the analysis by the *Global Fissile Materials Report 2011* (http://fissilematerials.org/library/gfmr11.pdf):

> "U.S. and Russian disposition of plutonium in MOX is to be monitored by the IAEA but the several tons of plutonium in plutonium-contaminated waste that is being disposed of in the WIPP facility is not. This will create a large uncertainty for any future international attempt to verify U.S. plutonium production and disposition." at 18.

72-25 cont'd

Nonetheless, the DSEIS includes no discussion of the impacts of the existing uncertainty from disposal at WIPP over the past decade, nor about the increasing uncertainly and impact if up to 6 metric tons of additional surplus plutonium is disposed at WIPP.

72-26

Therefore, for all of those reasons, the DSEIS analysis of the impacts of using WIPP is inadequate. Such an inadequate analysis does not provide the technical or legal basis for considering WIPP to be a reasonable alternative, nor does it provide a basis to include WIPP in a final SEIS.

7. LANL should not be considered a reasonable alternative location.
As noted in #1, LANL was not included as a reasonable alternative location for pit disassembly and conversion activities, so it cannot be considered until a new or supplemented PEIS is issued for public comment, and a final PEIS and a revised ROD are issued.

The analysis in the DSEIS is grossly inadequate. DOE/NNSA appears to have no specific proposal as to the amount of surplus plutonium that could come to LANL, despite SRIC's scoping comments specifically stating that such information is required. Without such information, DOE cannot provide an adequate NEPA analysis, nor can the public understand the proposal and effectively participate, as required by NEPA. Figure 1-7 (and Figure 2-3) indicate that 41.1 metric tons of surplus plutonium would require pit disassembly and conversion. The DSEIS also states:

72-27

> Regardless of the disposition alternative selected, pit disassembly and conversion would be necessary for 35 metric tons (38.6 tons) of surplus plutonium. at 1-10 (and at 2-2).

The table on page 4-3 of the DSEIS shows MOX fuel being 34 metric tons, 41.1 metric tons, or 45.1 metric tons, so pit disassembly and conversion could potentially be up to 45.1 metric tons. Table B-3 indicates that LANL could be used for from 2 metric tons to 35 metric tons, but that table does not indicate why LANL could not be used for up to 45.1 metric tons of MOX fuel. Clearly, DOE has not identified how much plutonium would come to LANL and under what conditions specific amounts of plutonium would or would not come to LANL. The wide disparity of the amount of plutonium that could be at LANL makes an adequate NEPA analysis very difficult and confusing, at best, and impossible at worst.

Section E.14.2 was revised to include dunnage as a contributor to uncertainty when determining the number of shipments of wastes.

72-22 The WIPP Alternative (see Chapter 2, Section 2.3.5) could result in the disposition of 13.1 metric tons (14.4 tons) of surplus plutonium at WIPP, and the MOX Alternative (see Section 2.3.3) could result in the disposition of 2 metric tons (2.2 tons) of surplus plutonium at WIPP. The other alternatives considered in this *SPD Supplemental EIS* would not disposition surplus plutonium at WIPP, although all alternatives would send other incidental CH-TRU waste to WIPP. Disposal of CH-TRU waste under all alternatives evaluated in this *Final SPD Supplemental EIS* would be in accordance with the WIPP waste acceptance criteria and, with the exception of a scenario that would use only POCs for disposal of 13.1 metric tons (14.4 tons) of surplus plutonium under the WIPP Alternative, would remain within WIPP's disposal capacity (see Chapter 2, Section 2.6.2; Chapter 4, Section 4.5.3.6.3; and Appendix B, Sections B.1.3 and B.3) as mandated under the WIPP Land Withdrawal Act and the Consultation and Cooperation Agreement between DOE and the State of New Mexico. The operational period of WIPP is not limited to 25 years, as suggested by the commentor, but is assumed to last 25 years for disposal operations in parts of the permit. As discussed in Attachment G of the WIPP Hazardous Waste Permit, "This operating period may be extended or shortened depending on a number of factors, including the rate of waste approved for shipment to the WIPP facility and the schedules of TRU mixed waste generator sites, and future decommissioning activities," (NMED 2012).

DOE would request permit modifications to extend operations, as necessary. Should such permit modifications not be extended, other alternatives analyzed in this *SPD Supplemental EIS* could be implemented to address any material that DOE decided to disposition at WIPP, but was unable to do so. For further discussion, refer to Section 2.2, Topic B, of this CRD.

72-23 Appendix E of this *SPD Supplemental EIS* contains analyses of transportation options associated with transport of the plutonium materials to WIPP in POCs and criticality control overpacks within TRUPACT II and HalfPACT transportation packages.

As identified in Appendix E, Section E.4.2, plutonium materials could be placed in criticality control overpacks at higher concentrations than in POCs, thus reducing the total number of shipments and the amount of waste associated with disposition of this surplus plutonium. Criticality control overpacks have been approved for

Commentor No. 72 (cont'd): Don Hancock
Southwest Research and Information Center

That problem of insufficient information about the amount and forms of plutonium is not clearly addressed in Appendix F, which never indicates that maximum amount of plutonium at LANL and over what timeframe the impacts are calculated. Moreover, despite SRIC scoping comments, the DSEIS does not fully analyze the potential for criticality accidents; does not fully analyze the storage requirements of surplus plutonium awaiting processing and plutonium that has been processed; does not include the history of surplus plutonium shipments to and from LANL as part of the basis for the impacts of transportation analysis; and does not include the history of worker doses from routine operations and from accidents as part of the worker impact analysis. *72-27 cont'd* *72-28*

Despite SRIC's scoping comments that stated that a full analysis was required, the DSEIS does not fully discuss the current missions of LANL and how a large expansion of pit disassembly and conversion would impact its other existing missions. The DSEIS does not analyze the overall impacts of the large expansion of pit disassembly and conversion on compliance with the Consent Order of 2005. To SRIC, it appears that such an expansion is directly contradictory to the requirements for cleanup and closure of Area G at LANL, because no additional waste from new surplus plutonium missions should be stored or disposed at Area G or other locations at LANL. The DSEIS does not discuss the existing financial shortfalls in the annual budgets for LANL cleanup and how an expansion of pit disassembly and conversion would impact the LANL budget, including cleanup funding. *72-29*

Despite scoping comments from SRIC and others, the DSEIS analysis of seismic risks is grossly inadequate, and thus the environmental impacts of pit disassembly and conversion activities are seriously underestimated. An adequate NEPA analysis would include current seismic risk analysis, inadequacies of existing analysis, and more conservative analysis. *72-30*

Despite the scoping comments of SRIC and others, the DSEIS analysis of environmental justice is grossly inadequate. Those comments noted that a discussion was required of whether the nearby pueblos have affirmatively supported that new mission, but the DSEIS has no such information. If the pueblos have not given such support, as SRIC believes is the reality, the analysis must include the basis for considering such an alternative, which the DSEIS does not do. The DSEIS also does not include any discussion of the government-to-government consultation that is required and its results. *72-31*

Clearly, the DSEIS analysis is totally inadequate regarding the alternatives and impacts of using LANL. Such an inadequate DSEIS cannot be used as the basis for a final SEIS.

8. The impacts of long-term storage of the surplus plutonium at SRS must be fully analyzed. The *Technical Summary Report for Long-term Storage of Weapons-Usable Fissile Materials*, July 17, 1996, part of the Storage and Disposition PEIS documentation, discussed the "at least up to 50 years" storage system for plutonium and Highly Enriched Uranium (HEU). The new NEPA analysis should update that Report and re-analyze the storage impacts and costs at the K Area Complex at SRS, including the time period for which that area can "ensure the continued safe storage." The analysis must include the impacts of storing the plutonium in its current forms and in the various forms considered possible. The analysis must include the impacts of *72-32*

shipment within TRUPACT II and HalfPACT transportation packages, and for disposal at WIPP; however, this option would not be implemented until all additional analyses that may be required are completed and approved, and certified containers have been procured.

Regarding the need for additional Type B packages, such as TRUPACT IIs and HalfPACTs, DOE does not expect that additional packages would be required to support the WIPP Alternative. These packages are reusable and would be returned to support additional shipments once they were unloaded at WIPP.

72-24 See the response to comment 72-22 regarding the potential impacts of surplus plutonium disposition activities on WIPP capacity. DOE periodically evaluates the usage of WIPP disposal space as part of operation of the WIPP facility. Use of WIPP to disposition additional surplus plutonium would not be expected to result in the need for additional mining, upgrading of underground drifts or the waste hoist, or improvements of the Waste Handling Building at WIPP. The impact of TRU waste disposal, as analyzed in the *WIPP SEIS* (DOE 1997b), accounts for current and planned receipts of CH-TRU waste from throughout the DOE complex.

CH-TRU waste would be emplaced at WIPP in accordance with its disposal permit. DOE would make decisions about the schedule of shipments of TRU waste to WIPP in the context of the needs of the entire DOE complex. Because the CH-TRU waste proposed to be sent to WIPP would be in accordance with the WIPP waste acceptance criteria and within the WIPP capacity, the effects of disposal would be within those evaluated in the current performance assessment.

Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. See the response to comment 72-22 regarding extending operations at WIPP.

72-25 The subject of international inspections of surplus plutonium disposition facilities is discussed in Chapter 2, Section 2.4, of the *SPD EIS* (DOE 1999) and is not being revisited in this *SPD Supplemental EIS*. International monitoring and inspections of surplus plutonium disposition facilities apply to the 34 metric tons (37.5 tons) of plutonium subject to the U.S./Russian PMDA (USA and Russia 2000). The United States and the Russian Federation are in active negotiations with IAEA regarding a verification agreement that will enable IAEA to independently verify that the PMDA objectives are met.

72-26 See the responses to comments 72-17 through 72-24 regarding the potential impact of proposed surplus plutonium disposition activities on WIPP. Based on the

Commentor No. 72 (cont'd): Don Hancock
Southwest Research and Information Center

bringing additional pits from Pantex and storing them, or treating and storing the resulting disassembled pits at SRS for more than 50 years. *72-32 cont'd*

9. The impacts of long-term storage of plutonium pits at Pantex must be fully analyzed.
The *Final Environmental Impact Statement for the Continued Operations of the Pantex Plan and Associated Storage of Nuclear Weapons Components* (SWEIS, DOE/EIS-0225) analyzed the impacts of plutonium pits storage at Pantex for approximately 10 years. Decisions announced in the 1997 ROD included:

> *Continue providing interim pit storage at Pantex Plant and increase the authorized storage level to 20,000 pits:* This decision will allow the Pantex Plant to continue nuclear weapon dismantlement operations scheduled over the next 10 years until disposition decisions are made and implemented. 62 FR 3883. *72-33*

The most recent Supplement Analysis (SA) in 2008 analyzes the impacts of operations through 2011. DOE/EIS-0225/SA-04 at 1-4. Clearly, neither the Pantex SWEIS nor the SA provides adequate NEPA analysis for long-term storage of plutonium pits. Given that the surplus plutonium disposition program has failed, the long-term storage of plutonium pits at Pantex must for further analyzed, both in a new or supplemented PEIS and in a new or supplemental Pantex SWEIS.

10. The costs of all options must be analyzed.
The DSEIS includes no cost analysis of the alternatives. This is a serious inadequacy, especially given DOE's past decision in 2002 to cancel immobilization because of "budgetary constraints." Further, it appears that an important factor in reconsidering the PDCF is because of its costs and the rising costs of the MFFF. CEQ regulations state:

> Most important, NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail. 40 CFR §1500.1(b). *72-34*

Costs are clearly significant regarding decisions to be made about surplus plutonium storage and disposition. DOE/NNSA, the public, the Congress, and the administration must and will evaluate the alternatives based on costs and "budgetary constraints." That the DSEIS does not include the historic actual costs of the surplus plutonium storage and disposition program or the estimated future costs of the alternatives is a serious inadequacy. Such an inadequate DSEIS is not an adequate basis for a Final SEIS.

11. The comment period must be extended.
As already noted on page 3, the study regarding pit disassembly and conversion alternatives is not available. Moreover, many other references listed in the DSEIS are not publicly available including at reading rooms and they are not available on the SPD website, despite the NEPA requirement that all such documents be available for at least 45 days, the minimum time for public comment on an EIS. 40 CFR §1506.10(c), 10 CFR §1021.313(a). Therefore, if DOE is *72-35*

cumulative impacts presented in Chapter 4, Section 4.5.3.6.3, there is expected to be enough disposal capacity at WIPP to dispose of the projected CH-TRU waste generated under all of the alternatives analyzed in this *SPD Supplemental EIS*.

72-27 See the response to comment 72-2 for further discussion regarding DOE's views on why LANL is appropriately within the scope of this *SPD Supplemental EIS* and why a new programmatic EIS is not necessary.

The commentor is correct that up to 45.1 metric tons (49.7 tons) of surplus plutonium could be turned into MOX fuel under the MOX Fuel Alternative. However, only the portion consisting of pits and metal would require disassembly and conversion; oxides would not require disassembly and conversion. To ensure that DOE fully analyzed the impacts associated with this pit disassembly and conversion option, DOE evaluated a range of plutonium operations at LANL to conservatively envelop the possible operational scenarios (see Appendix B, Tables B–2 and B–3, for a summary of the options). The impacts of the pit disassembly and conversion options, which maximize the operations of facilities at LANL and SRS, are described in detail in the appendices and summarized in Chapter 4.

72-28 As described in Appendix B, Section B.2.1, after pit disassembly and possible conversion to oxide, the plutonium would be canned, as shown in Figure B–5. It would then be safely stored in the TA-55 vault before being shipped to SRS for use in MFFF. Chapter 4 and Appendix E of this *SPD Supplemental EIS* evaluate the impacts of transporting plutonium pits and other nuclear material (such as plutonium oxide) to and from LANL (see Appendix E, Section E.8, for further discussion). The details of such shipments are classified; however, a summary of the risks associated with these shipments is included in Tables E–6 through E–10.

A 5-year history of worker doses at LANL is provided in Chapter 3, Section 3.2.6, and the additional worker doses associated with the proposed pit disassembly and conversion activities at PF-4 are discussed in Chapter 4, Section 4.1.2.1, and its associated subsections (see Table 4–3 for estimated doses under each alternative).

With respect to accident history, Chapter 3, Section 3.2.6.4, summarizes the unplanned radiological or nonradiological releases to the environment at LANL, and Appendix D, Sections D.1.5.2.11 and D.2.9, address a range of possible accidents involving the proposed pit disassembly and conversion activities, including criticality accidents, at PF-4.

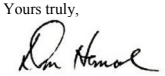
Commentor No. 72 (cont'd): Don Hancock Southwest Research and Information Center

continuing the SEIS process, it must extend the public comment period for at least 45 days from the date that all references are made publicly available (which should include availability on the SPD website). The only option to avoid such an extended comment period is to terminate the SPD SEIS process.

72-35 cont'd

Thank you for your careful consideration of, and response to, these and all other scoping comments.

Yours truly,



Don Hancock

15

72-29 As discussed in Appendix B, Section B.2.1, DOE would modify PF-4 to support the proposed pit disassembly and conversion activities that could occur there should the decision be made to expand pit disassembly and conversion activities at LANL. The impacts associated with these modifications are considered in Chapter 4 and Appendix F of this *SPD Supplemental EIS*.

As discussed in Table 4–13 and Appendix E, Section E.5.1, this *SPD Supplemental EIS* evaluates the capacity impacts from onsite disposal of low-level radioactive waste generated at LANL from the proposed activities as well as the impacts from shipment of the waste to Federal or commercial disposal facilities. It was assumed for purposes of analysis that mixed low-level radioactive waste would be shipped to commercial facilities or the Nevada National Security Site for disposal and that the TRU waste would be shipped to WIPP.

Funding decisions on major Federal programs and projects at LANL, such as cleanup activities, are beyond the scope of this *SPD Supplemental EIS*. While cleanup and remediation of existing contamination at LANL are outside the scope of this *SPD Supplemental EIS*, progress on implementing the Consent Order is not linked to, and does not contradict, decisions on pit disassembly and conversion activities. As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topics A and C, of this CRD. Decisions regarding funding for specific Federal programs and projects at LANL, such as cleanup activities, are outside the scope of this *SPD Supplemental EIS*.

72-30 DOE is aware of the seismic concerns associated with the continued operation of PF-4 and is aggressively pursuing additional analyses of and upgrades to this facility to ensure that it continues to operate safely. Appendix D of this *SPD Supplemental EIS* presents the evaluation of postulated accidents at PF-4. In addition to evaluating a design-basis accident based on the current understanding and interpretation of the seismic risk, radiological impacts of a beyond-design-basis earthquake are evaluated. This analysis assesses the radiological impacts if an earthquake occurred that was so severe that major failures of PF-4 structure and equipment resulted and a widespread fire followed. As described in Chapter 4 and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, risks to the public are expected to be minor from both normal operations and potential accidents under any proposed alternative. For further discussion, refer to Section 2.3, Topic B, of this CRD.

Commentor No. 72 (cont'd): Don Hancock
Southwest Research and Information Center

WIPP DISPOSAL VOLUMES (cubic meters)											
(as of January 14, 2012)											
	Panel 1	Panel 2	Panel 3	Panel 4	Panel 5	Panel 6	Panel 7	Panel 8	Panel 9	Panel 10	Totals
55-gal. Drums	38,139	23,865	8,394	12,858	21,255	6,339					110,850
Volume	8,009.19	5,011.65	1,762.74	2,700.18	4,463.55	1,331.19					23,278.50
SWB	1,239	3,176	1,730	1,405	2,200	741					10,491
Volume	2,329.32	5,970.88	3,252.40	2,641.40	4,136.00	1,393.08					19,723.08
TDOPS	35	1,451	2,227	1,048	788	131					5,680
Volume	157.50	6,529.50	10,021.50	4,716.00	3,546.00	589.50					25,560.00
85-gal drums	2	0	0	3	0	0					5
Volume	0.64	0.00	0.00	0.96	0.00	0.00					1.60
100-gal. Drums	0	1,278	5,409	11,050	9,951	1,218					28,906
Volume	0.00	485.64	2,055.42	4,199.00	3,781.38	462.84					10,984.28
SLB2s	0	0	0	0	0	5					5
Volume	0.00	0.00	0.00	0.00	0.00	36.95					36.95
R-Lid 72-Bs	0	0	0	198	246	74					518
Volume	0.00	0.00	0.00	176.22	218.94	65.86					461.02
F-Lid 72 Bs	0	0	0	0	18	0					18
Volume	0.00	0.00	0.00	0.00	16.02	0.00					16.02
CH volume	10,496.65	17,997.67	17,092.06	14,257.54	15,926.93	3,813.56					79,584.41
RH volume	0.00	0.00	0.00	176.22	234.96	65.86					477.04
Sources: Container numbers: http://www.wipp.energy.gov/general/GenerateWippStatusReport.pdf											
Container volumes: http://www.nmenv.state.nm.us/wipp/documents/Part3.pdf											
RH legal limit											***7,079***
RH canister capacity				176.22	234.96	534	650	650	650	650	3,545.18
CH legal limit											***168,485***
CH capacity	10,496.65	17,997.67	17,092.06	14,257.54	15,926.93	18,750.00	18,750.00	18,750.00	18,750.00	18,750.00	169,520.85
Cumulative	10,496.65	28,494.32	45,586.38	59,843.92	75,770.85						
2011 Inventory remaining (DOE/TRU-11-3425, pages 426-427)											
CH						76,561					
RH (undercounted)						*3,459*					
RH (per Patterson - 1/26/2012)						*5,336*					
Note: Numbers in red are based on WIPP permit volumes and differ from the volumes in the source document, which undercounts the volumes..											
Compiled by: Don Hancock, Southwest Research and Information Center; [redacted]											

72-31 Chapter 4, Section 4.1.6, of this *SPD Supplemental EIS* analyzes the environmental justice impacts of the options for pit disassembly and conversion at LANL. Section 4.5.3.8 describes cumulative environmental justice impacts and includes a summary of the impacts from consideration of a special pathways scenario.

DOE invited Native American tribes to provide comments at the seven public hearings held in Alabama, New Mexico, South Carolina, and Tennessee. During the public comment period, DOE met with the four accord Pueblos (Cochiti, San Ildefonso, Jemez, and Santa Clara) to ensure they understood the proposed activities at LANL and to give them an opportunity to ask additional questions about and provide comments on the proposed activities. DOE has also engaged with those pueblos that have requested it to arrange for government-to-government consultation. For further discussion, refer to Section 2.6, Topic A, of this CRD.

72-32 See the response to comment 72-2 regarding DOE's views on why a new programmatic EIS is not necessary. The environmental impacts resulting from implementation of the alternatives, including the No Action Alternative, are discussed in Chapter 4. As described in Appendix B, Table B–2, 40 years of storage of surplus plutonium is analyzed in this *SPD Supplemental EIS* under the No Action Alternative. Storage for fewer years is analyzed under the action alternatives. DOE's alternatives for surplus plutonium disposition would complete these activities within the 50-year storage period previously analyzed.

72-33 See the response to comment 72-2 regarding DOE's views on why a new programmatic EIS is not necessary. As described in Chapter 4, page 4-2, the impacts from continued storage of plutonium pits at the Pantex Plant are not addressed directly in this *Final SPD Supplemental EIS.* Appendix A, Section A.2.1, of this *SPD Supplemental EIS* incorporates by reference the analysis of impacts of continued pit storage as described in the *Final Supplement Analysis for the Final Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapon Components* (DOE 2012d); annual impacts associated with continued storage of plutonium pits at the Pantex Plant would be small.

72-34 This *SPD Supplemental EIS* evaluates the environmental impacts of proposed surplus plutonium disposition activities, pursuant to CEQ and DOE's NEPA regulations. While cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation, CEQ and DOE NEPA regulations do not require that costs be included in an EIS.

Commentor No. 72 (cont'd): Don Hancock
Southwest Research and Information Center

72-35 See the response to comment 72-3 regarding the availability of references for this *SPD Supplemental EIS*. In response to multiple requests for more time to review and comment on the *Draft SPD Supplemental EIS*, DOE extended the originally scheduled comment period by an additional 15 days through October 10, 2012.

Commentor No. 73: Mark Holland

From: markaholland
Sent: Sunday, September 09, 2012 2:03 AM
To: spdsupplementaleis@saic.com
Subject: No shipments of pits to LANL!!!

Dear Ms. McAlhany,

I am very concerned about Department of Energy's plan for surplus plutonium as outlined in its Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement. No additional plutonium should be brought to Los Alamos National Laboratory (LANL). LANL is not meeting its waste cleanup schedule and its facilities do not meet seismic standards in case of a severe earthquake. Bringing thousands of plutonium pits to LANL would further endanger public health and safety and divert resources away from cleanup. *73-1*

The Waste Isolation Pilot Plant (WIPP) has a limited mission and does not have the capacity for all surplus plutonium. Stop the Mixed Oxide (MOX) Plutonium Fuel Program and immobilize and safely store plutonium until technically sound, suitable disposition facilities are available.

Sincerely,

Mark Holland

73-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

Commentor No. 74: Cathy Holt

From: Cathy Holt
Sent: Sunday, September 09, 2012 10:13 PM
To: spdsupplementaleis@saic.com
Subject: Reject MOX!

Dear Sachiko McAlhany,

The plan to use recycled plutonium from weapons in nuclear reactors which are designed only for enriched uranium sounds like a dangerous and ill-advised idea. The TVA is considering this mixed oxide fuel for the Sequoyah Nuclear Reactor and the Browns Ferry Nuclear Plant. Please reject this untested and dangerous fuel. *74-1*

Thank you,

Cathy Holt

74-1 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. While there are differences in MOX fuel compared to LEU fuel, these differences are understood and can be addressed using measures such as modifications to reactivity control systems and core fuel management procedures. Before any MOX fuel is used in the United States, NRC would perform a comprehensive safety review, which would include information prepared by TVA or other reactor operators, as part of the 10 CFR Part 50 license amendment process. For further discussion, refer to Section 2.4, Topic A, and Section 2.5, Topic B, of this CRD.

Commentor No. 75: Dr. Rose O. Hayes (Fox)

From: rose hayes
Sent: Monday, September 10, 2012 12:00 PM
To: spdsupplementaleis@saic.com
Cc: Lindsay Graham
Subject: Surplus Plutonium Disposition SEIS

DOE should delay selecting a preferred alternative until adequate testing has been conducted to ensure that U.S. MOX fuel, different in components from European MOX fuel, is compatible with American nuclear reactors built to produce energy, as opposed to research reactors. An additional factor which adds to the critical need to test the fuel further is the aging of U.S. reactors. Many have experienced equipment failures and/or have been shut down due to various malfunctions related to their age. The MOX fuel from SRS should be tested in a statistically significant number of randomly selected U.S. commercial nuclear plants before being distributed for use. *75-1*

Finally, no MOX fuel, other than that dedicated for testing, should be produced until there are contracts for its purchase from commercial U.S. nuclear energy plants or until a facility has been licensed and built for its secure storage, located in a consent-based site. *75-2*

Dr. Rose O. Hayes (Fox)

75-1 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In the *Draft SPD Supplemental EIS*, the MOX Fuel Alternative was DOE's Preferred Alternative for surplus plutonium disposition. DOE's preferred option for disposition of surplus non-pit plutonium that is not suitable for MOX fuel fabrication was disposal at WIPP. DOE's preferred option for pit disassembly and conversion of surplus plutonium metal, regardless of its origins, was to use some combination of facilities at TA-55 at LANL and K-Area, H-Canyon/HB-Line, and MFFF at SRS, rather than to construct a new stand-alone facility.

In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose.

As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. There are differences in nuclear reactor core physics between MOX and LEU fuel cores, but these differences are understood and can be addressed using measures such as modifications to reactivity control systems and core fuel management procedures. As summarized in Section J.2.1, tests performed by Duke Energy demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

Commentor No. 75 (cont'd): Dr. Rose O. Hayes (Fox)

Before any MOX fuel is used in the United States, NRC would perform a comprehensive safety review, which would include information prepared by TVA or other reactor operators, as part of the 10 CFR Part 50 license amendment process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

75-2 As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. The disposition of this 13.1 metric tons (14.4 tons) of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts per NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors (see Appendix I, Section I.2).

Commentor No. 76: Karen Patterson, Chair
State of South Carolina Governor's Nuclear Advisory Council

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September 6, 2012

Ms. Sachiko McAlhany
SPD Supplemental EIS NEPA Document Manager
U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324

Comments on the Draft SPD Supplemental EIS

Dear Ms. McAlhany:

The South Carolina Governor's Nuclear Advisory Council (GNAC) appreciates this opportunity to comment on DOE's *Draft* Surplus Plutonium Disposition (SPD) Supplemental Environmental Impact Statement (SEIS). The SEIS describes previous decisions that still stand and focuses on alternatives for the disposition of an additional 14.4 tons of surplus plutonium for which no disposition decision has previously been made, identifies options for pit disassembly and conversion of the plutonium metal to oxide, and describes the preferred alternative identified in the January 12, 2012 second amended Notice of Intent.

The preferred alternative for the surplus plutonium is the MOX fuel alternative. This option maximizes the plutonium converted to MOX fuel, generates the least amount of transuranic waste and generates very little waste (approximately two additional canisters) that must be processed through the Defense Waste Processing Facility and stored at SRS until such time as a geologic repository is available. The transuranic wastes would be shipped to the Waste Isolation Pilot Plant in New Mexico for ultimate disposal.

The GNAC supports the selection of the MOX fuel alternative as the preferred alternative. First, we believe it is the alternative that gets the plutonium processed most quickly, and maximizes the conversion of weapons plutonium into commercial power reactor fuel. Second, it generates the least amount of waste of the alternatives considered. Finally, as stated in our scoping comments, our overarching consideration is that activities necessary for plutonium disposition should not delay or forestall the liquid radioactive waste disposition program at SRS. The MOX fuel alternative meets these criteria. Other alternatives analyzed do not.

DOE has identified four options for the pit disassembly and conversion process in this SEIS but has not identified the preferred option. The four options are a hydride/ dehydride process in a stand-alone facility in F Area; a similar process at a facility constructed in existing facilities in K Area; and performing pit disassembly at an existing facility at Los Alamos National Laboratory (LANL), and in gloveboxes installed in K Area with the conversion from metal to oxide done in H Canyon and HBLine. We prefer the option of disassembly at LANL and K Area with the conversion to oxide done in H Canyon and HB Line for the following reasons:

76-1

76-2

76-1 DOE acknowledges the commentor's opinion.

76-2 As indicated in Chapter 2, Section 2.5, of this *Final SPD Supplemental EIS*, DOE is not prepared to make a decision in the near term regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability).

Commentor No. 76 (cont'd): Karen Patterson, Chair
State of South Carolina Governor's Nuclear Advisory Council

- The construction of the PDC facility either in F or K Areas is estimated to take 13 years. Our experience with DOE's construction estimates is that they are overly optimistic; we believe it unlikely the project would be completed in 13 years. More importantly, the country does not have the funds for another large construction project.
- The PDC process requires a hydride/dehydride process which is not as well understood as the processes used in the H Canyon and HBLine option.
- Pit disassembly at LANL and in K Area requires no new facility construction, only modifications to existing facilities, making the time line shorter, and the costs more reasonable.
- Dissolving plutonium in H Canyon and converting metals to oxides in HB Line are proven processes with well understood chemical interactions.

76-2 cont'd

GNAC is aware than a completed EIS and its Record of Decision do not guarantee the initiation of a project. The National Defense Authorization Act of 2002[1] (NDAA) required DOE to have a plutonium disposition plan prior to consolidating plutonium from several DOE sites at SRS. Since that time DOE has created and abandoned and re-created several plans for plutonium disposition. South Carolina has been patient as DOE has struggled to establish its SPD plans. We hope DOE will issue a Record of Decision by early 2013, that there are no more NEPA analyses to be done, and that DOE is strongly committed to this plan and will immediately develop a schedule, secure funding, and begin dispositioning plutonium.

We thank you for this opportunity to comment on the SPD DSEIS, and continue to look forward to the day when planning gives way to execution.

Sincerely,

Karen K. Patterson

Karen Patterson, Chair
South Carolina Governor's Nuclear Advisory Council

Cc: Gov. Nikki Haley
Members of the Council
Mr. Tom D'Agostino, Administrator, DOE National Nuclear Security Administration
Mr. David Huezinga, Senior Advisor, DOE Environmental Management
Mr. Doug Dearolph, Manager, National Nuclear Security Administration, SRS
Dr. Dave Moody, Manager, DOE-SR

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[1] Section 3155 of Public Law 107-107, entitled "Disposition of Surplus Defense Plutonium at Savannah River Site, Aiken, South Carolina", of the National Defense Authorization Act for Fiscal Year 2002.

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Commentor No. 77: Charles N. Utley, Environmental Justice Campaign Coordinator, Blue Ridge Environmental Defense League

Blue Ridge Environmental Defense League

www.BREDL.org 3417 Sutton Place Augusta, Georgia 30906 (706) 772-5558 cutley@paine.edu

Remarks of Charles N. Utley
to the National Nuclear Security Administration, U.S. Department of Energy
North Augusta Municipal Center, 100 Georgia Avenue, North Augusta, South Carolina
RE: SPD Supplemental EIS, DOE/EIS–0283–S2
September 4, 2012

On behalf of the Blue Ridge Environmental Defense League, I have the following comments on the Surplus Plutonium Disposition Supplemental Environmental Impact Statement noticed in the Federal Register on July 27, 2012.[1]

In brief, we oppose the expansion of radioactivity-producing activity at the Savannah River Site in South Carolina and at the Los Alamos National Laboratory in New Mexico.

Background

The current Draft SPD Supplemental EIS analyzes the environmental impacts of the disposition of an additional 14.4 tons of surplus plutonium from dismantled nuclear weapons. Also, the draft now considers the potential use of plutonium fuel in commercial nuclear reactors operated by the Tennessee Valley Authority at Sequoyah in Tennessee and Browns Ferry in Alabama. Unchanged is the DOE's plan to convert 37.5 tons of plutonium to fuel at the SRS Mixed Oxide Fuel Facility.

Under the four action alternatives proposed in this draft EIS, the US Department of Energy (DOE) considers:

1. Immobilizing 14.4 tons of the additional plutonium at the SRS Defense Waste Processing Facility
2. Converting most of the plutonium to fuel at the SRS Mixed Oxide Fuel Factory for use in commercial reactors and sending the remainder to the Waste Isolation Pilot Plant in New Mexico
3. Converting some of the plutonium to fuel at the SRS Mixed Oxide Fuel Factory for use in commercial reactors and sending the remainder to SRS's H–Canyon/HB–Line for disposal at the SRS Defense Waste Processing Facility
4. Converting some of the plutonium to fuel at the SRS Mixed Oxide Fuel Factory for use in commercial reactors and sending the remainder to WIPP for disposal.

The DOE's stated preference is alternative number 2, converting the metallic pit plutonium and much of the non-pit plutonium into fuel at the SRS Mixed Oxide Fuel Factory and sending the remainder to the Waste Isolation Pilot Plant in New Mexico.

Comments

We oppose the reprocessing of plutonium as civilian nuclear power fuel because it presents unsupportable risks to public safety and the environment. Plutonium fuel requires transportation of weapons grade plutonium and fuel across thousands of miles of open country, making transport vulnerable to terrorist attacks and theft. Manufacturing

77-1

[1] Federal Register Volume 77, Number 145, Pages 44222-44224, July 27, 2012

Dum spiro spero

77-1 As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium.

Transport of plutonium would be required under any *SPD Supplemental EIS* alternative. Under the MOX fuel program, DOE would transport, as necessary, plutonium between DOE sites, as well as MOX fuel from SRS to a commercial domestic reactor, using the NNSA Secure Transportation Asset Program. Under this program, security measures specific to the materials being transported would be implemented to protect them from diversion. Chapter 2, Section 2.1, of this *Final SPD Supplemental EIS* was revised to clearly indicate that transportation of materials such as plutonium oxide and pits would be conducted under the NNSA Secure Transportation Asset Program.

Chapter 4, Section 4.1.4, discusses the estimated quantities of waste that would be generated under the various plutonium disposition alternatives. Section 4.1.4 also discusses the disposal pathways for the waste streams and the impacts on existing waste management systems. Waste generation from operations at SRS under all alternatives would be within the capacities of existing waste management facilities (including WIPP given certain waste packaging assumptions). For further discussion, refer to Section 2.4, Topic A, of this CRD.

There are some minor differences between MOX fuel and LEU fuel, such as the amount of actinides in used MOX fuel rods would be higher than in used LEU fuel rods. These differences, however, are not expected to affect reactor safety or meaningfully increase the environmental consequences or risks associated with the use of a partial MOX fuel core. As summarized in Chapter 4, Section 4.1.2, and described in detail in Appendices I and J of this *SPD Supplemental EIS*, the risks associated with using a partial MOX fuel core versus a full LEU fuel core in commercial nuclear power reactors are expected to be comparable. The risks associated with postulated accidents would be small. For further discussion, refer to Section 2.5, Topic B, of this CRD.

As described in Chapter 4 and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, risks to the public are expected to be minor from normal operations, potential accidents, and transportation under any proposed alternative.

Commentor No. 77 (cont'd): Charles N. Utley, Environmental Justice Campaign Coordinator, Blue Ridge Environmental Defense League

plutonium fuel would create vast quantities of radioactive waste. The plutonium fuel contractor for the US estimates *annual* waste outputs of up to 21,000 gallons of high activity radioactive waste containing 84,000 Curies of americium, 46,000 gallons of plutonium- and uranium-bearing wastes, and 385,000 gallons of low-level radioactive waste.[2]

77-1 cont'd

Further, we oppose the use of plutonium fuel at commercial nuclear power reactors anywhere, including those operated by the Tennessee Valley Authority; specifically, three boiling water reactors at Browns Ferry, Alabama and two pressurized water reactors at Sequoyah near Soddy-Daisy, Tennessee.

Radioactivity around SRS rising, health impacts mounting

A report issued in February by Joseph J. Mangano, MPH MBA, finds that in the past decade, levels of most types of radioactivity at the Savannah River Site are rising, as are rates of radiosensitive diseases. The 75-page report is available on our website and is incorporated into my comments by reference.[3] The Mangano report is based on a year-long study of data from the U.S. Energy Department, state and federal environmental regulators and health departments in Georgia and South Carolina. Among the findings were indicators that radiation levels are gradually increasing, rather than decreasing, and that "radiosensitive" diseases and deaths—including infant and fetal deaths, thyroid and lung cancers and leukemia—exceeded the national average in the five-county area surrounding SRS, where about 2,000 excess morbidities and mortalities have occurred since 2002. In brief, Mangano's principal findings:

77-2

1. From the late 1990s to the 2000s (when EM activities reached full capacity), emissions and environmental concentrations of radioactivity in or near SRS increased for 71% of measures with complete data. With nuclear weapons manufacturing at an end and environmental remediation attempting to reduce radioactivity, this finding differs from the expectation that levels would steadily decrease over time.
2. In the five counties within 25 miles of SRS, with a current population of 417,000, rate increases in 96% of radiosensitive diseases or causes of death exceeded that of the U.S. In 20, the increase was statistically significant. The categories included were those affecting the fetus (infant deaths, fetal deaths, low weight births); cancer among children and the very elderly; radiosensitive cancers (thyroid, female breast, and leukemia); and those conditions in which previous articles had detected a risk among SRS workers (leukemia, lymphoma, lung cancer, myeloma, and non-cancerous lung diseases).
3. Approximately 2,000 excess deaths and cases of disease occurred in the five counties during the latest nine year period.

[2] *Mixed Oxide Fuel Fabrication Facility Environmental Report, Revision 1 & 2*, Duke COGEMA Stone & Webster, 11 July 2002, (tables 3-3 and 3-4)
[3] *Assessing Changes in Environmental Radioactivity and Health Near the Savannah River Site*, Joseph J. Mangano, Executive Director, Radiation and Public Health Project, February 22, 2012, available at http://www.bredl.org/pdf3/FINAL_CIF_Report.pdf

Dum spiro spero

77-2 A review of the report (DOE 2012b) concluded that (1) the report's conclusions regarding excess health risk among persons living near SRS does not conform to typical methodology because it uses the United States population as a comparison group rather than a more appropriate local or regional population; (2) the report's conclusion is contrary to the results from a study conducted by Medical University of South Carolina researchers that shows cancer rates in the population living near the SRS were "lower than expected"; and (3) contrary to the assertion that, "…there is a relative paucity of articles on the health of SRS workers...or those living in proximity to SRS...," in fact, there are at least two dozen publications that include data directly related to SRS or include SRS in multi-site studies. Such studies include those conducted by the Centers for Disease Control and Prevention and the Agency for Toxic Substances and Disease Registry.

Analyses in this *SPD Supplemental EIS*, including for cumulative impacts, were performed for all potentially affected environmental, human health, and social resource areas, consistent with applicable CEQ and DOE NEPA regulations. As described in Chapter 4, Section 4.1.2.1, and summarized in Chapter 2, Section 2.6, Table 2–3, no LCFs are expected, and there would be little offsite impact on the public from normal operations of surplus plutonium disposition facilities. Workers would be protected in accordance with a radiation protection program developed in accordance with DOE regulations (10 CFR 835) that requires their annual doses to be maintained below 2,000 millirem and as low as reasonably achievable. As described in Section 4.5.3.3, operation of surplus plutonium disposition facilities would contribute little to adverse cumulative health effects among the offsite population.

Commentor No. 77 (cont'd): Charles N. Utley, Environmental Justice Campaign Coordinator, Blue Ridge Environmental Defense League

Pursuant to NEPA—specifically, Section 102 42 U.S.C. 4332—DOE must utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment. Therefore, before proceeding with any new facilities at SRS, the DOE must ensure that future activities proposed in this EIS do not undermine the safety and health of local residents and workers.

77-2 cont'd

Commercial Nuclear Reactors are Unsuitable for Plutonium Fuel

Originally, DOE had contracted with two electric utilities to use plutonium fuel in their power plants: Duke Energy and Virginia Power. But both have withdrawn their reactors from the program. In 2008, Duke Energy aborted its experiment with plutonium fuel. Tests of plutonium fuel scheduled to run for four-and-a-half years in Duke's Catawba nuclear reactor were ended after three years. The fuel assemblies grew abnormally long in the reactor, indicating a safety hazard in the MOX/plutonium fuel.[4] Also, during tests utilizing plutonium fuel in France, in accidents involving the loss of cooling water, slumping and ballooning of zirconium-clad fuel was observed, altering core geometry and restricting water flow.

77-3

Now TVA has stepped into the breach. The draft EIS considers the use of Sequoyah and Browns Ferry. However, there are critical differences between plutonium fuel and conventional uranium fuel which should disqualify both of the subject TVA reactors.

The critical problem is that plutonium is fundamentally different from uranium. With plutonium fuel loaded into any commercial reactor, the power station becomes more dangerous because plutonium releases energy in a different way than uranium. Plutonium has a higher neutron flux, meaning higher energy particles at higher speeds. This and other nuclear phenomena break down metal reactor parts quicker; a process called embrittlement. This weakening of metal components would be accelerated in any reactor using plutonium fuel. Greater embrittlement means the reactor vessel may fail under circumstances which would otherwise not cause a problem. If and when failure happens and radioactive materials are released from the plant, more dangerous radionuclides are released from a reactor containing plutonium fuel, including greater quantities of radioactive elements which pose hazards to human health. The NRC's reactor safety committee stated:

77-4

> Public attention has been drawn to the higher actinide inventories available for release from MOX than from conventional fuels. Significant releases of actinides during reactor accidents would dominate the accident consequences. Models of actinide release now available to the NRC staff indicate very small releases of actinides from conventional fuels under severe accident conditions. (emphasis added) [5]

[4] Duke Energy's report to the NRC, ADAMS digital library: ML081650181, June 10, 2008, available at www.nrc.gov/reading-rm/adams/web-based.html

[5] Letter from Advisory Committee on Reactor Safeguards to US Nuclear Regulatory Commission Chairman, May 17, 1999

Dum spiro spero

77-3 Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

With respect to cited issues for French reactors using MOX fuel, a 2007 report providing a review and interpretation of reactivity-induced accident experiments at the CABRI reactor in France, the NSRR test reactor in Japan, and the IGR and BIGR reactors in the Russian Federation concluded that there is no evidence that MOX fuel behaves differently than LEU fuel in terms of failure propensity (Vitanza 2007). This *SPD Supplemental EIS* does, however, analyze the risks associated with the use of a partial MOX fuel core under various accident scenarios, including failures that could lead to a core meltdown, and concludes that the risks are comparable to those associated with the use of full LEU cores (see Chapter 4, Section 4.1.2.4, and Appendix J, Section J.3.2).

77-4 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. As addressed in Chapter 4 and Appendix I, reactor operations using a partial MOX fuel core are not expected to change substantively from operations using a full LEU fuel core. Although there are differences in MOX fuel compared to LEU fuel, these differences are not expected to affect reactor safety. There are differences in nuclear reactor core physics between MOX and LEU fuel cores, but these differences are understood and can be addressed using measures such as modifications to reactivity control systems and core fuel management procedures. For example, concerns that the higher neutron flux in MOX fuel can lead to pressure vessel embrittlement can be addressed through fuel management procedures.

As addressed in Appendix J of this *SPD Supplemental EIS*, the impacts that could result from a nuclear reactor accident depend on the complete quantities of actinides, fission products, and activation products involved in the accident, not just plutonium or uranium. As summarized in Chapter 4, Section 4.1.2, under normal operating as

Commentor No. 77 (cont'd): Charles N. Utley, Environmental Justice Campaign Coordinator, Blue Ridge Environmental Defense League

No matter the utility or type of reactor, plutonium fuel has greater quantities of plutonium and other hazardous radioactive isotopes such as Americium 241 and Curium 242—actinide elements—which would cause additional harmful radiation exposure to the public.

77-4 cont'd

Sequoyah

Sequoyah's nuclear reactors utilize ice condenser containments, baskets of borated ice, to reduce heat and pressure in the event of an accident. Sandia National Laboratories evaluated the reactor containment structures at similar to those at Sequoyah Units 1 and 2 and found that if an accident involving hydrogen ignition occurs, the concrete containment will almost certainly fail.[6] Such systems are particularly vulnerable to reactor sump clogging; numerous problems with ice condensers have been identified during the last two decades of operation.

77-5

Browns Ferry

The Nuclear Regulatory Commission has issued a notice of violation to the Browns Ferry plant because of the failure of a coolant injection valve, a "red" finding of "high safety significance." The NRC has only issued five red findings nationwide in the past decade. Browns Ferry is a similar design to the Fukushima Dai-ichi nuclear plant in Japan and should be closed down entirely rather than subjected to a plutonium fueled experiment.

Conclusion

For over a decade, the Blue Ridge Environmental Defense League has opposed the reprocessing of plutonium as civilian nuclear power fuel because it presents unsupportable risks to public safety and the environment. We have partnered with Russian non-governmental organizations who, like us, support dismantling of nuclear weapons but who also call for abolition of the plutonium fuel program. Our overall opposition to plutonium fuel programs is based on the negative impacts on public health, the critical safety hazards of plutonium fuel in commercial nuclear power plants and the fundamental injustice of siting plutonium waste facilities in African-American and Native American communities in the Central Savannah River Area and New Mexico.

77-6

Thank you for the opportunity to comment on this matter.

Respectfully,

Charles N. Utley
Blue Ridge Environmental Defense League
Environmental Justice Campaign Coordinator

[6] NUREG/CR-6427, Assessment of the Direct Containment Heating Issue for Plants With Ice Condenser Containments, April 2000

Dum spiro spero

well as postulated accident conditions, the impacts of operating reactors using partial MOX fuel cores are not expected to change meaningfully from those associated with use of full LEU fuel cores. Additional information is presented in Appendices I and J.

As summarized in Chapter 4, Section 4.1.2, and described in detail in Appendices I and J, the risks associated with both normal operations and accidents for a partial MOX fuel core and full LEU fuel core are expected to be comparable. For further discussion, refer to Section 2.5, Topic B, of this CRD.

77-5 The Sequoyah Nuclear Plant ice condenser containment design is one of three U.S. commercial PWR nuclear power reactor containment designs (the others are large dry ambient pressure and dry subatmospheric pressure). Although the design pressure of ice condenser containments such as Sequoyah is lower than dry PWR containments, the presence of ice as an energy-absorbing medium results in lower pressures associated with a design-basis loss-of-coolant accident. As shown in an NRC containment integrity report authored by Sandia National Laboratories (NRC 2006c), the safety margin from design pressure to any containment failure from overpressurization is actually larger for an ice condenser containment design than dry PWR containment designs. NRC identified an issue regarding severe accident hydrogen combustion in ice condenser containments in 2000, but this issue, identified as Generic Safety Issue 189, has been resolved. Each containment design has inherent design, operational, maintenance, and safety advantages and disadvantages; but all, including the ice condenser, have been reviewed and approved by NRC and are licensed for operation in accordance with all applicable safety regulations.

NRC evaluated the issue of PWR sump blockage, including the ice condenser containment design, in Generic Safety Issue 191 and issued recommendations in 2012 that were subsequently unanimously approved by the NRC commissioners and are being implemented by all licensees, including the Sequoyah Nuclear Plant (NRC 2012d, 2012e).

The Browns Ferry and Sequoyah Nuclear Plants are designed and maintained to meet stringent NRC safety requirements for nuclear power reactors. Equipment, especially safety equipment, is regularly inspected, maintained, and replaced well before the end of its scheduled operating life. As discussed in Appendix J, Sections J.1 and J.2, of this *SPD Supplemental EIS*, continued assurance of the safe operation of these plants is the responsibility of the plant operator which operates under the independent regulatory oversight of NRC, including NRC regulations and

license conditions. If the plant operator were to make a decision to use MOX fuel, it would be the joint responsibility of the plant operator and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely. For further discussion, refer to Section 2.5, Topics A and B, of this CRD.

Accident analyses for U.S. nuclear power reactors already consider the radiological impacts of accidents like the Fukushima accident in that the safety evaluations include evaluation of beyond-design-basis accidents. As discussed in Appendix J, Section J.3, the analysis in this *SPD Supplemental EIS* compares the accident results for partial MOX fuel and full LEU fuel cores to determine whether the use of MOX fuel in these TVA reactors would make any substantive difference in the potential risks associated with the accidents analyzed. The beyond-design-basis accidents include severe accidents with a subsequent loss of containment similar to the accident at Fukushima. The results show that the consequences of such an accident, should it occur, would be comparable, regardless of whether the reactor was using a partial MOX fuel core or a full LEU core. DOE does not believe that the accident at the Fukushima Dai-ichi Nuclear Power Station changes this conclusion. At the time of that accident, the Fukushima Dai-ichi Nuclear Power Station's Unit 3 was operating using a partial MOX fuel core. However, at least one authority has determined that the accident involved failures unrelated to the use of MOX fuel, and there is no evidence to suggest that the presence of MOX fuel in Unit 3 increased the consequences of the accident (ONR 2011). For further discussion, refer to Section 2.5, Topic C, of this CRD.

77-6 See the response to comment 77-1 regarding general opposition and concerns about reactor safety. Regarding environmental justice issues, as addressed in Chapter 4, Section 4.1.6, there would be no disproportionately high and adverse impacts on minority or low-income populations within the vicinities of SRS, LANL, or the TVA reactors. For further discussion, refer to Section 2.6, Topic A, of this CRD.

Commentor No. 78: Clint Wolfe, Executive Director Citizens for Nuclear Technology Awareness

Published in the Aiken Standard on Aug. 28th

A public hearing is scheduled for September 4 on the Department of Energy's (DOE) Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement. That's a mouthful that ordinarily would cause my eyes to glaze over and lead to a rapid turning to the next page. But this one has a roadmap in it called the "preferred alternative" that is extremely important to the citizens of the Central Savannah River Area (CSRA) in particular and to all Americans in general.

The entire plutonium disposition program has been formulated over the past 20 years as a result of the breakup of the Soviet Union and a monumental agreement between former nuclear foes, Russia and the U.S., to demilitarize 34 metric tons of plutonium each. That is roughly equivalent to removing 17,000 nuclear weapons from the arsenals of the two countries. The original estimates of cost, made years ago, for various portions of the work are likely to be exceeded. When that happens in the nation's current budget situation there will be the inevitable hue and cry that it is too expensive and that we should shelve it. But the program is too important for that kind of knee-jerk response and besides, DOE's "preferred alternative" contains a change in the original plan that saves enough money to fund potential overruns in other portions of the program so that the overall cost of getting the job done is lowered – not raised.

The original plan consisted of constructing a Pit Disassembly and Conversion Facility (PDCF) which would turn the plutonium from nuclear weapons into plutonium oxide to feed the Mixed Oxide (MOX) Fuel Fabrication Facility which is currently under construction at the Savannah River Site (SRS). The MOX facility will turn the plutonium from weapons of mass destruction into fuel to provide electricity. The PDCF by itself is a $4 - $5 billion dollar project and would not be built under DOE's "preferred alternative." Instead, a combination of existing facilities with some modifications would be used to provide the feed for the MOX project. Key among these facilities would be H-Canyon/HB line at SRS. These facilities are the nation's only ones capable of performing chemical separations of this type on a large scale and should be preserved. The DOE plan would not only preserve the capability in H-Area, but would give it a very important mission for several years while the nation decides whether to engage in recycling of commercial used nuclear fuel. Plutonium - bearing materials that are not suitable for MOX feed would be disposed of as transuranic waste at the Waste Isolation Pilot Plant (WIPP) in New Mexico.

The downside of this alternative is that one of three major facilities to be built at the SRS in return for minding the nation's plutonium will not be realized. The MOX facility and the waste solidification building would remain in the DOE plan but the PDCF will not. DOE will need to make some additional investments in facilities both at SRS and elsewhere in the complex to replace the function intended for the PDCF. This approach should lower both the cost and the technical risk of the entire disposition program.

It has become a national pastime to complain about the federal government, but it deserves our support on this issue as it strives to meet treaty obligations that are arguably the most important commitments in the history of mankind while preserving national assets that may be crucial to our future energy

78-1

78-1 DOE acknowledges the commentor's opinion.

security. The best interests of the CSRA and the nation are served by supporting DOE's "preferred alternative."

78-1 cont'd

Clint Wolfe

The author is the Executive Director of Citizens for Nuclear Technology Awareness and formerly chaired the Technical Advisory Panel for the DOE's Plutonium Focus Area.

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Commentor No. 79: Ernest S. Chaput
Economic Development Partnership

COMMENTS
DRAFT SURPLUS PLUTONIUM DISPOSITION
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT DOE/EIS-0283-S2
By
ECONOMIC DEVELOPMENT PARTNERSHIP
NORTH AUGUSTA MUNICIPAL CENTER
SEPTEMBER 4, 2012

The Economic Development Partnership of Aiken and Edgefield Counties, South Carolina (EDP) has long supported DOE's Surplus Plutonium Disposition (SPD) program objective to render a significant part of the United States and Russian Federation stockpiles of weapons-usable plutonium into a form which is not readily usable in nuclear weapons. To date the US and the Russian Federation have committed over 90 tons of weapons grade plutonium to the SPD program – enough plutonium to make over 20,000 nuclear weapons. We believe this is a victory of great importance for planet Earth and should be loudly applauded and vigorously supported.

The EDP remains committed to the use of MOX fuel as the only currently viable way of destroying large quantities of weapons-usable plutonium. Using MOX fuel in nuclear reactors has been proven safe and effective world-wide; for both pressurized and boiling water reactor types. Because burning MOX fuel in a nuclear reactor results in a shift in the isotopic spectrum of remaining plutonium, the plutonium is changed forever. All other plutonium disposition methods considered by DOE, such as immobilization or direct burial are reversible – if plutonium is recovered it remains weapons-useable. *79-1*

The Draft Supplemental Environmental Impact Statement (SEIS) being discussed today is an important step in allowing the US to more quickly reduce its inventory of weapons-usable plutonium while saving significant taxpayer dollars. DOE's preferred alternative (1) provides for the cost effective modification and utilization of existing DOE facilities to prepare surplus plutonium from dismantled weapons and elsewhere for disposition, saving billions of dollars when compared to previous plans, (2) analyzes use of Mixed Oxide (MOX) fuel in up to five Tennessee Valley Authority reactors – the most critical step in the timely destruction of weapons-usable plutonium, and (3) identifies disposal pathways for non-weapons capable plutonium which cannot used as MOX fuel. The EDP supports DOE's preferred alternative outlined in the draft SEIS. *79-1 cont'd*

We offer two additional comments:

1. DOE should complete this NEPA action at the earliest time and then aggressively budget for and execute the implementing actions. The sooner MOX fuel prepared with surplus weapons plutonium is being used in nuclear reactors the sooner the world will realize a reduction in the amount of weapons-useable plutonium. *79-2*
2. We note that DOE has not established the annual quantity or total quantity of MOX feed to be produced by each of the three facilities proposed for this purpose: PF-4 (with major enhancements) at Los Alamos National Laboratory; H-Canyon/HB-Line (with minor enhancements) at Savannah River; and the MOX facility (with major enhancements) at Savannah River. NEPA impacts for each option were prepared using a 'bounding analysis.' *79-3*

   As DOE establishes the design output for each of these alternate pathways we recommend that:
   A. Technical maturity of processes and facilities be considered. Selected alternatives should favor processes with established relevant track records at proposed production rates

79-1 DOE acknowledges the commentor's opinion.

79-2 Consistent with the requirements of NEPA, DOE may issue a ROD no sooner than 30 days after its announcement of a Preferred Alternative in the *Federal Register*. As shown in Appendix B, Table B–2, MFFF is estimated to operate between 21 to 24 years, depending on the amount of plutonium to be processed. Decisions regarding funding for specific Federal programs and projects are outside the scope of this *SPD Supplemental EIS*.

79-3 Appendix B, Table B–3, lists the maximum annual throughput for each of the facilities/capabilities analyses in this *SPD Supplemental EIS*. The analyses in this *SPD Supplemental EIS* are based on this maximum throughput.

The projected modifications to PF-4 and MFFF represent relatively minor modifications to structures that already exist or are under construction. DOE's analysis, as presented in this *SPD Supplemental EIS*, represents potential environmental impacts at a given facility while allowing DOE flexibility in how the program is carried out. The costs and technical maturities of processes and facilities are factors that may be considered in reaching a decision on the Surplus Plutonium Disposition Program. DOE would prepare additional NEPA analyses, as appropriate, if it were to consider an increase in the evaluated maximum annual throughput through H-Canyon/HB-Line of 1 metric ton (1.1 ton) of plutonium per year.

Commentor No. 79 (cont'd): Ernest S. Chaput Economic Development Partnership

B. Implementation and operation costs be considered. Cost per kilogram of MOX feed material produced, including amortization of capital costs is a suggested metric
C. Sufficient redundancy be included in production rates to safeguard against an feed material disruption at one facility limiting MOX operations.

We specifically recommend that DOE consider increasing the annual output from H-Canyon/HB Line to more than one metric ton per year.

79-3 cont'd

Thank you for the opportunity to comment on this draft SEIS.

Ernest S. Chaput
Economic Development Partnership

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Commentor No. 80: Mel Buckner

A DOE facility to manufacture mixed oxide fuel (MOX) from weapons plutonium is currently under construction at the Savannah River Site in South Carolina. This facility is being constructed to fulfill a U.S.-Russia disarmament agreement to dispose of 34 metric tons of surplus weapons plutonium in each country -- an amount equal to 17,000 nuclear warheads, according to the Department of Energy. The Tennessee Valley Authority is considering the feasibility of using some of the MOX beginning in 2018 at two of its nuclear plants, Sequoyah near Chattanooga and Browns Ferry in northern Alabama.

Once plutonium is converted into MOX, it has limited use in making a weapon. MOX has proven to be safe and dependable. MOX can also be made from plutonium in used-nuclear fuel, and about 30 power reactors worldwide are presently using it to produce electricity. Many supporters of nuclear power want to see such recycling utilized in this country, because it would extend global supplies of uranium and greatly reduce the amount of high-level nuclear waste.

For reasons of national security alone, the case for reducing nuclear weapons stockpiles and turning excess plutonium and highly-enriched uranium into fuel is compelling. Under a separate disarmament agreement, nuclear power plants in the United States are using fuel derived from 500 metric tons of Russia's highly-enriched uranium to produce half of the U.S. nuclear-generated electricity (20% of the total U.S. electrical production). Yet U.S. anti-nuclear organizations object to the use of MOX for fuel and recommend that excess weapons plutonium should be treated as nuclear waste.

Because it would be good for electricity production and beneficial for national security, TVA should approve the use of MOX at the Sequoyah and Browns Ferry plants. The opportunity to turn weapons plutonium into useful fuel is too good to waste.

Mel Buckner, [redacted]

80-1

80-1 DOE and TVA acknowledge the comment.

Commentor No. 81: Tom Clements, Nonproliferation Policy Director Alliance for Nuclear Accountability

Alliance for Nuclear Accountability
http://www.ananuclear.org/

Comments by Tom Clements for September 4, 2012 Hearing on
DOE's *Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement*

Just like the experimental plutonium fuel (MOX) program itself, the draft Supplemental EIS now before us is flawed in many ways. Let me point out some of the problems with the document and the program and why no new Record of Decision (ROD) can be issued in the event a Final SEIS might be issued.

No reactors have been identified or secured to use experimental plutonium fuel (MOX)

While the document includes the Browns Ferry and Sequoyah reactors – both plants owned by the Tennessee Valley Authority (TVA) – the draft document makes a stunning confession:

"The TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose."

Even if DOE makes a conclusion that it wants to pursue use of MOX in TVA reactors, it will be TVA which makes that decision and it will be TVA which will then have to do its own reactor-specific analysis under the National Environmental Policy Act (NEPA). That document will have to be in-depth as the analysis now before us is cursory and incomplete. *81-1*

DOE claims in the Draft SEIS that it is looking at unnamed "generic" reactors – what utilities are considering MOX use? – and stated in an earlier Interim Action Determination that non-existent "next-generation light water reactors" are being considered. This may well signal that DOE believes that pursuit of experimental MOX use in TVA reactors is failing. A full explanation of these non-TVA reactors is needed.

DOE must fully explain how it thinks that it can make a decision, via a "preferred alternative," for a separate U.S. government agency which does not share the conclusion of that "preferred alternative." DOE's presentation that it can make a decision on behalf of TVA raises a host of legal questions under NEPA which must be explored.

Testing program for weapons-grade MOX not analyzed

Even if TVA decides to tentatively pursue use of experimental MOX fuel made from weapons-grade plutonium – a "new fuel form" which has never been used anywhere in the world on a commercial basis – the Nuclear Regulatory Commission will require confirmatory performance testing before any license can be considered for commercial MOX use. *81-2*

1

81-1 The disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts as required by NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors, including, but not limited to five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants. These reactors are explicitly considered because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Section I.1). However, the MOX Alternative also analyzes irradiation in generic commercial nuclear reactors including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2), and is not dependent on TVA participation.

Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In the *Draft SPD Supplemental EIS*, the MOX Fuel Alternative was DOE's Preferred Alternative for surplus plutonium disposition. DOE's preferred option for disposition of surplus non-pit plutonium that is not suitable for MOX fuel fabrication was disposal at WIPP. DOE's preferred option for pit disassembly and conversion of surplus plutonium metal, regardless of its origins, was to use some combination of facilities at TA-55 at LANL and K-Area, H-Canyon/HB-Line, and MFFF at SRS, rather than to construct a new stand-alone facility.

In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose. TVA, as a cooperating agency, may adopt this *Final SPD Supplemental EIS* after independently reviewing the EIS and determining its comments and suggestions have been satisfied (40 CFR 1506.3(c)).

81-2 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the

Commentor No. 81 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

DOE has backed off its earlier assertions that MOX could be loaded and used without testing but AREVA, apparently driven by some unclear political agenda, has persisted in its false claims that this fuel form has been used before.

A presentation by Global Nuclear Fuel to the NRC on August 8, 2012 makes clear that a six-year test of weapons-grade MOX would be needed for the NRC to even consider licensing MOX. Such a test and the possibility of need to repeat a test in the Sequoyah "pressurized water reactor" must be fully discussed in this analysis.

No presentation of MOX plant operating schedule

The document before us gives no indication of what type of fuel the MOX will fabricate and also doesn't present any operational schedule for the MOX plant. As the schedule for production and the types of fuel to be produced have environmental impacts, this is a significant oversight of the draft document.

DOE has stated in the past that 8 fuel assemblies would be produced in 2018 in the MOX plant. It is unknown what these are or where they would be used. My guess is that they will have to be "lead use assemblies" for lengthy testing. DOE needs to clarify what these assemblies are, how long the MOX plant will operate given the need for testing, and what types of fuel will be produced.

81-2 cont'd

The "spent fuel standard" is dead – DOE opens the door for waste disposal options

DOE earlier presented that getting plutonium into a form which had the equivalent radiation barrier as spent fuel – the so-called "spent fuel standard" – was driver for the plutonium disposition program. Now, DOE quietly admits in the Draft SEIS that:

"DOE believes that the alternatives analyzed in this *SPD Supplemental EIS*, including the WIPP Alternative, provide protection from theft, diversion, or future reuse in nuclear weapons akin to that afforded by the Spent Fuel Standard." (S-14)

81-3

This admission is an affirmation that MOX isn't the only option and underscores the need for a new, in-depth analysis for disposal of plutonium as waste. Given the lack of clarity with the MOX option, it is clear that a "Plan B" for non-MOX options is urgently required. This draft "alternatives study" must get underway immediately and DOE must fully explain as part of the NEPA process when this will be finished and when the public can comment.

MOX costs spiraling while special interests profit – what is the cost of MOX?

My estimate of the amount yet to be spent for the MOX program is around $17.5 billion. Nobody should be interested in my estimate but there should be keen interest in DOE's estimate of the cost of MOX looking forward and the cost of the overall program since its inception.

81-4

2

use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

It is important to note that, whether using reactor- or weapons-grade plutonium, the total quantity of fissile plutonium within a fuel element is adjusted so that it represents only a small fraction of the material within the fuel rod (currently planned to be approximately 4 to 5 percent fissile plutonium within each MOX fuel rod).

As summarized in Chapter 5, Section 5.3.3, of this *SPD Supplemental EIS*, use of MOX fuel in TVA or other reactors would require an amendment to the reactor's operating license in accordance with 10 CFR Part 50.

As described in Appendix B, Section B.1.1.2, of this *SPD Supplemental EIS* and analyzed in the *Interim Action Determination, Flexible Manufacturing Capability for the Mixed Fuel Fabrication Facility (MFFF)* (DOE 2011a), signed on April 1, 2011, MOX fuel could be fabricated for BWRs, PWRs, or next-generation LWRs. There are currently no plans to fabricate fuel for other types of reactors. Use of MOX fuel in other types of nuclear reactors would require the preparation of additional NEPA documentation.

A detailed program schedule is not required to perform the environmental impacts analysis in this *SPD Supplemental EIS*. The actual production schedule for MFFF would depend on factors such as license conditions and the specific contracts received from customers to manufacture specific types of MOX fuel. As shown in Appendix B, Table B–2, MFFF is estimated to operate for 21 to 24 years, depending on the amount of surplus plutonium to be fabricated into MOX fuel.

The eight fuel assemblies mentioned in the DOE FY 2013 budget is a key milestone to meet the MOX production objective identified in public law (P.L. 107-314, as amended). The use of assemblies produced by MFFF would be determined as fuel sales agreements and contracts are put into place. MFFF would not produce MOX fuel on a commercial scale unless contracts or other arrangements are in place for its use. If MOX fuel LTAs were required, they would likely be fabricated at MFFF from feedstock supplied by the existing plutonium inventory. There is currently no schedule for fabrication and testing of LTAs.

Commentor No. 81 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

But, amazingly, DOE adamantly refuses to release any cost estimate for the life-cycle cost of the MOX program or the costs looking forward. All we know is that the DOE estimates that the MOX plant operational costs are a stunning $499 million per year.

In contrast to the budget-busting cost of MOX, the cost of disposal of one kilogram of plutonium in WIPP is on the order of $80,000-$100,000 per kilogram. While the WIPP option is available for only a relatively small amount of plutonium, the cost of disposing of 34 metric tons as waste is around $3.4 billion, far below the cost of MOX.

81-4 cont'd

As part of and parallel to the NEPA process, DOE needs to come clean and reveal the price tag of this program to those of us who pay the bills. Further, DOE must explain why it is choosing the highest-cost option for plutonium disposal

No final EIS or ROD can be presented

Given the flaws with the draft SEIS and the host of open questions surrounding the MOX program, it is clear that no final SEIS can be issued. In any event, no "Record of Decision" (ROD) based on the SEIS can be issued as too many unknowns exist concerning MOX use, especially that TVA has not decided to test and use MOX.

81-5

While more legal analysis is needed, it appears at this time that issuance of a ROD based on a document lacking in analysis and options would be improper and premature.

Tom Clements
Nonproliferation Policy Director
Alliance for Nuclear Accountability
[redacted]

3

As discussed in Chapter 4, Section 4.6, current plans are for the operator to deactivate the facility and request that NRC terminate the license once the facility's mission for surplus plutonium disposition is completed. MFFF would then become the responsibility of DOE. The environmental impacts associated with MFFF operations are evaluated in Chapter 4 and Appendix G of this *SPD Supplemental EIS*. Analyses of MFFF operations are also provided in cited references such as the original *SPD EIS* (DOE 1999) and NRC's *Environmental Impact Statement on the Construction and Operation of a Proposed Mixed Oxide Fuel Fabrication Faculty at the Savannah River Site, South Carolina* (NRC 2005). For further discussion, refer to Section 2.4, Topic A, of this CRD.

81-3 DOE believes that the alternatives analyzed in this *SPD Supplemental EIS* meet the goals of the Spent Fuel Standard. The Spent Fuel Standard is a term, coined by the National Academy of Sciences and modified by DOE, denoting the main objective of alternatives for the disposition of surplus weapons-usable plutonium: that such plutonium be made roughly as inaccessible and unattractive for weapons use as the much larger and growing stock of plutonium in civilian spent (used) nuclear fuel.

Removal of WIPP from further analysis in the *Storage and Disposition PEIS* (DOE 1996) was not based on the Spent Fuel Standard. WIPP was not considered for further analysis in the *Storage and Disposition PEIS* because disposal of 50 metric tons (55 tons) of surplus plutonium would exceed WIPP's disposal capacity.

As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) considered numerous alternatives for disposition of surplus plutonium, including immobilization and direct disposal of the entire surplus plutonium inventory as waste. DOE selected an approach for disposition of some of the plutonium declared surplus (68 FR 20134). As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS,* but DOE is evaluating alternatives for the disposition of an additional 13.1 metric tons (14.4 tons) of surplus plutonium, including use of the surplus plutonium as MOX fuel or its conversion into waste forms suitable for disposal. The action alternatives evaluated for the 13.1 metric tons (14.4 tons) of surplus plutonium are the Immobilization to DWPF Alternative, MOX Fuel Alternative, H-Canyon/HB-Line to DWPF Alternative, and WIPP Alternative.

81-4 Cost information on DOE programs is made publicly available as part of the President's annual budget submission to Congress. CEQ and DOE NEPA regulations

Commentor No. 81 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

Alliance for Nuclear Accountability (ANA)
http://www.ananuclear.org/

Submitted for the September 4, 2012 Hearing Record - on the
Draft Surplus Plutonium Disposition Supplement Environmental Impact Statement (Draft SEIS)

Key Questions DOE Must Answer about the Plutonium Disposition Program

- The *Draft Surplus Plutonium Disposition Supplement Environmental Impact Statement (Draft SEIS)* states in the "preferred alternative" (on page S-iv) that "The TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose." How is it possible that DOE can have a "preferred alternative" but TVA doesn't have one and hasn't even made a decision to consider MOX testing and use? *81-6*

- How can any formal "Record of Decision" be made on the Draft SEIS when the "preferred alternatives" of DOE and TVA are in conflict?

- As "generic" reactors are mentioned in the Draft SEIS, what "generic" reactors are being sought to use MOX fuel? Please name the utilities besides TVA that have interest in MOX.

- Please confirm that Energy Northwest, a public utility located in the state of Washington that operates a GE Mark I reactor, has halted interest in using MOX. *81-7*

- What is "Plan B" if neither the Tennessee Valley Authority (TVA) nor other utilities chose to pursue MOX or if MOX made from weapons-grade plutonium can't be licensed by the Nuclear Regulatory Commission? *81-8*

- MOX made from weapons-grade plutonium has never been tested in a boiling water reactor (BWR) nor used commercially in either a BWR or a "pressurized water reactor" (PWR), correct?

- In order that we know when plutonium will be removed from South Carolina, what is the anticipated production schedule for the MOX plant over its life-time? How long will the MOX plant operate and when will it be decommissioned? Where is the environmental analysis of MOX production? *81-9*

- When will MOX be tested by TVA - so-called "lead use assemblies" (LUAs) - and when will TVA begin full commercial use of MOX? Global Nuclear Fuel, which makes uranium fuel for boiling water reactors (BWRs) such as Browns Ferry, gave a presentation on August 8, 2012 to the Nuclear Regulatory commission which stated that 16 LUAs would be tested in a BWR from 2019-2025. (See presentation at: http://www.ananuclear.org/Portals/0/GNF%20on%20MOX%20LUAs%20NRC%20meeting%208.8.2012.pdf)

do not require that costs be included in an EIS. Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

81-5 Based on this *SPD Supplemental EIS* and consistent with the requirements of NEPA, DOE may make a decision in a ROD to be issued no sooner than 30 days after its announcement of a Preferred Alternative in the *Federal Register*. For further discussion, see the response to comment 81-1 regarding TVA's interagency agreement with DOE.

81-6 TVA is a cooperating agency for this *SPD Supplemental EIS* and is not required to declare a preferred alternative. TVA does not have a preferred alternative in this *Final SPD Supplemental EIS*. As discussed in the response to comment 81-1, DOE and TVA have separate decisionmaking processes with respect to the proposed actions in this *SPD Supplemental EIS*.

81-7 DOE cannot speak for Energy Northwest or its intentions regarding the use of MOX fuel. DOE would entertain interest from any U.S. utility regarding use of MOX fuel in its reactors. TVA PWRs and BWRs are evaluated in this *SPD Supplemental EIS* because DOE and TVA have entered into an interagency agreement to evaluate the use of MOX fuel in the Sequoyah and Browns Ferry Nuclear Plants. From a technical perspective, DOE believes that MOX fuel could potentially be used in any domestic commercial nuclear power reactor.

81-8 DOE and TVA have an agreement to evaluate the use of MOX fuel in TVA reactors. As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. NRC would perform a comprehensive safety review of the use of MOX fuel in the proposed reactor as part of the 10 CFR Part 50 licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

81-9 See the response to comment 81-2 regarding MOX fuel use in PWRs and BWRs, program schedule, and MOX fuel testing.

Commentor No. 81 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

- Does NNSA agree with Global Nuclear Fuel schedule for testing "lead use assemblies" in Browns ferry? Does NNSA agree with the NRC's statement that weapons-grade MOX is a "new fuel form" which requires in-reactor testing?

81-10

81-10 Should TVA decide to pursue the use of MOX fuel in any of its reactors, TVA would work with NRC to determine the steps needed to approve the use of MOX fuel in the chosen reactors.

- The 60-year licenses of the three Browns Ferry reactors expire in 2033, 2034 and 2036. If the MOX plant can't even begin to produce BWR MOX before the LUA test is complete and evaluated - likely well after 2025 - please explain how there will be enough time to use MOX in the Browns Ferry BWRs before their 60-year licenses are up.

81-11

81-11 See the response to comment 81-2.

- DOE said in the Fiscal Year 2012 budget request (on page 392 at http://www.cfo.doe.gov/budget/12budget/Content/Volume1.pdf) that "Supplying BWR MOX fuel to the Browns Ferry BWR's would account for 50 percent of the MOX facility's production." Please explain how the operation of the MOX plant will be impacted if no BWR MOX can be made before the LUA test in Browns Ferry is completed, the LUAs analyzed and MOX use licensed by the NRC.

81-12

81-12 See the response to comment 81-2.

- As DOE has said in the Fiscal Year 2013 budget request (on page 461at http://www.cfo.doe.gov/budget/13budget/Content/Volume1.pdf) that the MOX plant will cost $499 million/year to operate, please explain the cost impact of not being able to produce BWR MOX until 2025 or later.

- What is the life-cycle cost of the overall MOX program and why won't NNSA release this figure?

- Figures from DOE indicate that it is costing around $80,000-$10,000/kg to dispose of MOX in WIPP, which means that to dispose of 34 metric tons of plutonium would cost $3.4 billion. What is the cost per kg of disposing of plutonium via MOX, including all associated costs?

- What will it cost to redesign the MOX plant to place ovens in it to process weapons pits, in order to make MOX feedstock?

81-13

81-13 See the response to comment 81-4.

- What is the status of the intervention by public interest groups against issuance of an NRC license for operation of the MOX plant?

81-14

81-14 The Intervenors' contentions are being adjudicated before the Atomic Safety Licensing Board; the Board proceeding is independent of and outside the scope of this *SPD Supplemental EIS*. As explained in this *SPD Supplemental EIS*, a license from NRC under 10 CFR Part 70 is required before MFFF can receive, possess, and use special nuclear material (SNM).

- And, most important from policy and programmatic perspectives, why did DOE refuse to answer key questions raised above in the *Draft Surplus Plutonium Disposition Supplement Environmental Impact Statement (Draft SEIS)*? If these questions won't be answered in the final SEIS when will they be answered?

81-15

81-15 Refer to the above responses to individual comments. Chapter 1, Section 1.6, summarizes the scoping comments received during the scoping period. All scoping comments were considered in preparing the *Draft SPD Supplemental EIS*.

Despite the stated closing date of the comment period, DOE considered all comments received on the *Draft SPD Supplemental EIS*, including those received after the close of the comment period. This CRD provides responses to those comments.

Submitted on behalf of the Alliance for Nuclear Accountability by Tom Clements, Columbia, SC

Commentor No. 82: Catherine A. Euler, Ph.D.

From: Dr Catherine Euler
Sent: Monday, September 10, 2012 6:12 PM
To: spdsupplementaleis@saic.com
Subject: Comment on DOE/EIS-0283-S2

Sachiko McAlhany
SPD Supplemental EIS
US Department of Energy
PO Box 2324
Germantown, MD 20874-2324

September 10, 2012

COMMENT ON D.O.E.'s DRAFT SURPLUS PLUTONIUM DISPOSITION SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT DOE/EIS-0283-S2

To whom it may concern:

I applaud efforts to make even 14 tons of plutonium non-weaponizable; I am only sorry you are not revisiting the plans to turn another 34 tons of Pu into MOX.

Fabricating Pu into MOX is a costly, filthy alternative that only delays the solving of the problem by burdening private companies and the taxpayer with yet another future waste storage problem. Nuclear power both in the US and abroad has been winding down in the horrific aftermath of Fukushima: there is no guarantee you would have a market for the MOX. ***82-1***

The only semi-acceptable alternative given in the EIS is for the complete immobilization and permanent storage of these 14 tons of plutonium. If vitrification makes it less accessible for weapons, then this is a better alternative than transmuting any of it into MOX fuel, to be used again in nuclear reactors and stored at a later date (after creating yet more nuclear waste).

It is really time for DOE and its subcontractors and potential fuel "customers" to face the fact that no manufactured MOX will be needed in future power plants. No one will want it as the industry winds down. They are not even licensing new nuclear power plants in the US until the waste storage problem is actually solved. ***82-2***

Furthermore, let me say that the entire EIS is flawed through its dependence on an outdated method of measuring radiation risk. The only measure used is for external exposures that lead to Latent Cancer Fatalities (LCFs). In fact man-made ionizing particles of all kinds have additional serious consequences for human and environmental health besides cancer, and even the cancer numbers are questionable, given the current scientific controversy between the International Committee on Radiological Protection (ICRP) and European Committee on Radiation Risk (ECRR) risk estimates. ***82-3***

82-1 As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, the use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would displace LEU fuel that otherwise would have been used to power the nuclear power reactor. Used MOX fuel would be managed within the reactor's normal planning for storage of its used fuel.

82-2 As indicated in Chapter 4, Section 4.1.4, DOE expects that adequate disposal capacity would be available for all waste generated from the MOX fuel program. As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel, by storing it in the reactor's used fuel storage pool or placing it in dry storage. The use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would displace LEU fuel that otherwise would have been used to power the nuclear power reactor. Use of MOX fuel could increase used nuclear fuel generation by 8 to 10 percent for TVA's Browns Ferry and Sequoyah Nuclear Plants, and from 2 to 16 percent for generic reactors during the period MOX fuel could be used at a reactor. DOE expects that increases of this magnitude would be managed within the reactor's normal planning for storage of its used fuel.

DOE and TVA have entered into an interagency agreement to evaluate the use of MOX fuel in up to five operating TVA reactors, including PWRs (Sequoyah Nuclear Plant) and BWRs (Browns Ferry Nuclear Plant). The NRC published its final rule on the Continued Storage of Spent Nuclear Fuel, formerly known as Waste Confidence, in the *Federal Register* on September 19, 2014 (79 FR 56238). NRC's final rule became effective on October 20, 2014. As of October 20, the previous

Commentor No. 82 (cont'd): Catherine A. Euler, Ph.D.

We must also keep in mind that radionuclides are also mutagens, and can cause genomic instablity for several thousand generations. I see no mention of this potential disaster in your EIS worst-case scenarios, and thus it is deeply flawed by ignoring a risk that has been known to the entire scientific community for over 50 years. LCFs are not the only measure. Besides genomic instability, there is evidence from exposed Rongelap islanders and the atomic bomb survivors, as well as in studies of the aftermath of British testing in Australia and the ongoing aftermath of Chernobyl, that long-term exposure to inhaled and ingested radionuclides has a multiplicity of human health consequences, depending on the radionuclide in question, which can include heart irregularities, diabetes, asthma and auto-immune conditions, among others. Any EIS which fails to take into account the entire spectrum of human health effects from radiological exposures is simply a bogus EIS. ***82-3 cont'd***

Sincerely,

(Sent by email, Sept. 10, 2012)
Catherine A. Euler, Ph.D.

NRC suspension on licensing actions was lifted. For further discussion, refer to Section 2.4, Topic A, of this CRD.

82-3 Appendix C of this *Final SPD Supplemental EIS* was revised to include a more detailed discussion of the measures of human health impacts in addition to the description of the health impact assessment methods. As discussed in Section C.2.5, inhalation and ingestion, in addition to external exposure, are accounted for in the modeling. The additional information in Section C.1 discusses the basis for the risk factor of 0.0006 LCFs per person-rem (for the population) or rem (for an individual) and shows in Table C–2 the relative magnitude of the risks of LCFs and genetic effects. As is typical in DOE NEPA documents, LCFs are used as a measure of the risk associated with radiation exposure.

In the *Report of the United Nations Scientific Committee on the Effects of Atomic Radiation* (UNSCEAR 2010:13), United Nations researchers concluded that current scientific data are not sufficient to establish a causal relationship between ionizing radiation and cardiovascular disease at doses of less than about 100 to 200 rad (equivalent to about 100 to 200 rem for x-ray, gamma, and beta radiation) and that studies linking other fatal non-cancer diseases to radiation at doses of less than about 100 to 200 rad have yielded even less evidence of a causal relationship than that which exists for circulatory diseases. A study by the National Cancer Institute that included the Browns Ferry and Sequoyah Nuclear Plants did not detect excess mortality due to leukemia or other cancers in counties near domestic, commercial nuclear power reactors (NCI 2011).

Commentor No. 83: Ellen Thomas
Women's International League for Peace and Freedom

From: Ellen Thomas
Sent: Monday, September 10, 2012 10:02 PM
To: spdsupplementaleis@saic.com
Cc: disarm@wilpf.org
Subject: Ellen Thomas comments for DOE hearing on MOX fuel 9/11/12 in **Chattanooga**

Submission by Ellen Thomas to the DOE at the hearing on the Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (Draft SEIS), in Chattanooga 9/11/12:

I refer you to the statements submitted during this process by Tom Clements of Alliance for Nuclear Accountability, Charles Utley of Blue Ridge Environmental Defense League, Mel Jenkins and Ruth Thomas of Environmentalists Inc, Laura Sorensen of SAFE Carolinas, and Mary Olson of Nuclear Information and Resource Service.* I agree with all of their comments. I have some other thoughts to present.

First, I oppose the proposed "alternative option" of mixed oxide (MOX) fuel, and instead propose a concerted effort to achieve "absolute containment." Perfect containment is impossible with MOX fuel and its bi-products, as well as with all of the other proposals listed in the Draft SEIS, Volume I, pages 2-1 to 2-18. ***83-1***

Second, I strongly agree with the need to neutralize weapons grade plutonium, but, unfortunately, the method for safely doing this has not yet been discovered. What is possible is not to make the weapons-grade plutonium buildup any worse than it is, and not to make plutonium metal even more lethal than it is.

Third, I am concerned with the decision-making process being followed by the Department of Energy (DOE), especially with respect to the National Environmental Policy Act (NEPA). It isn't just that the DOE hasn't complied with NEPA; it has done the exact opposite, by suggesting that it is safe for the plutonium pits to be converted to much more dangerous plutonium oxide powder, "feed"ing it through a highly toxic process to create MOX fuel along the Savannah River, which will be transported over our nation's highways to be used in aging nuclear power plants such as Sequoyah and Browns Ferry, burning hotter than other types of fuel, irradiated, stored in already overloaded fuel pools, and perhaps then transported again, unless the DOE and Nuclear Regulatory Commission have finally recognized that we MUST have hardened on-site storage (HOSS) until the issue of ultimate nuclear waste containment is finally resolved. At this point in time, since there is no known way of neutralizing plutonium, we should keep it contained in the hard form of plutonium metal. ***83-2***

83-1 As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS,* but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. The action alternatives evaluated for the 13.1 metric tons (14.4 tons) of surplus plutonium are the Immobilization to DWPF Alternative, MOX Fuel Alternative, H-Canyon/HB-Line to DWPF Alternative, and WIPP Alternative. All of the action alternatives evaluated in this *SPD Supplemental EIS* are considered to render surplus plutonium into a proliferation-resistant form or result in proliferation-resistant disposal.

83-2 DOE disagrees with the opinion of the commentor about DOE's compliance with NEPA. In this *SPD Supplemental EIS*, DOE evaluated the potential environmental impacts of a range of reasonable alternatives for the disposition of 13.1 metric tons (14.4 tons) of surplus plutonium, in accordance with the requirements of NEPA. These analyses, as well as the comments on the *Final SPD Supplemental EIS*, may be considered by DOE in preparing the ROD.

As summarized in Chapter 4, Section 4.1.2, and described in detail in Appendices I and J of this *SPD Supplemental EIS*, the risks associated with both normal operations and accidents for a partial MOX fuel core and full LEU fuel core are expected to be comparable. The MOX fuel core would be designed and licensed to the same operating and safety criteria a full LEU fuel core (e.g., same operating temperature, electrical output, etc.). The MOX fuel core may require enhanced reactivity controls (increased soluble boron in the reactor coolant for pressurized water reactors and/or additional control rods) to meet the licensed operating conditions. The risks associated with transporting MOX fuel are small, as discussed in Appendix E. Regarding the storage of used MOX fuel, irradiated MOX fuel initially produces about 4 percent less decay heat than equivalent LEU fuel. However, decay heat production in MOX fuel declines at a slower rate than LEU fuel due to isotopic differences in the irradiated MOX fuel. As a result, irradiated MOX fuel continues to produce slightly more decay heat than irradiated LEU fuel, about 16 percent more after 5 years. Initially, used MOX fuel would be discharged to the reactor's used fuel storage pool, where it would be stored with existing used LEU fuel. After about 5 years, the decay heat load from both fuel types would be low enough to allow the fuel to be transferred to dry storage casks (ANS 2011). After about 30 years of cooling, the decay heat difference would be equivalent to the heat produced by a few incandescent light bulbs. For further discussion, refer to Section 2.5, Topic B, of this CRD.

Commentor No. 83 (cont'd): Ellen Thomas
Women's International League for Peace and Freedom

Other comments:

I urge the Tennessee Valley Authority not to use MOX fuel at Sequoyah and Browns Ferry nuclear power plants. *83-3*

I request an extension of public comment time. *83-4*

I ask for timely assistance toward discovering missing or non-located data. *83-5*

I ask that the DOE not issue a "Record of Decision" (ROD). *83-6*

Submitted for the September 11, 2012 Draft SPD Supplemental EIS Public Hearing

Ellen Thomas

Co-Chair, Women's International League for Peace & Freedom Disarm Committee

http://wilpf.org/issues_disarm Co-founder, Proposition One Campaign for global nuclear weapons abolition and economic and energy conversion - http://prop1.org

* links:

Tom Clements, Alliance for Nuclear Accountability Comments

http://www.ananuclear.org/Portals/0/MOX%20hearing%20fact%20sheet%20 8.31.2012%20pdf%20FINAL.pdf

Charles Utley, Blue Ridge Environmental Defense League Comments

http://bredl.org/pdf3/120904_BREDL_comments_on_SPD-EIS.pdf

Nuclear Information and Resource Service

http://nirs.org

83-3 DOE and TVA acknowledge the comment.

83-4 In response to requests for additional public hearings and an extension of the comment period, DOE added a public hearing in Española, New Mexico, held on September 18, 2012, to the six meetings that DOE had initially scheduled and extended the comment period through October 10, 2012.

83-5 Because the commentor did not indicate the nature of information thought to be missing, DOE cannot determine, and is therefore unable to provide, the additional data the commentor is seeking.

83-6 Based on this *Final SPD Supplemental EIS* and consistent with the requirements of NEPA, DOE may announce a decision in a ROD to be issued no sooner than 30 days after its announcement of a Preferred Alternative in the *Federal Register*.

Commentor No. 84: Virginia J. Miller

From: Virginia J Miller
Sent: Tuesday, September 11, 2012 6:58 AM
To: spdsupplementaleis@saic.com
Subject: SPD Supplemental EIS Comments

Sachiko McAlhany
NEPA Document Manager
SPD Supplemental EIS
U. S. Department of Energy
Germantown, MD

Sachiko McAlhany:

I oppose the Department of Energy plans for surplus plutonium. No additional plutonium should be sent to Los Alamos National Laboratory (LANL). Its mission is to clean up TRU and low-level waste at Area G and ship it to WIPP for storage and it is behind schedule. LANL facilities sit on a fault and do not meet seismic standards in the event of a severe earthquake endangering public health and safety. WIPP has a limited mission and does not have the capacity for all surplus plutonium. ***84-1***

Stop producing Mixed Oxide fuel (MOX) which is very expensive and dangerous and will remain so for thousands of generations. Surplus plutonium should be immobilized and safely stored until new effective disposition options are available. Carry out pit disassembly at sites that minimize transportation, which does not include LANL. ***84-2***

STOP PRODUCING NEW PLUTONIUM. We don't know what to do with the surplus plutonium that already exists and it will be dangerous basically forever. Let's use some common sense! while we safely dismantle nuclear power facilities and move toward global and verifiable nuclear disarmament. ***84-3***

Thank you.

Virginia J. Miller

84-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

84-2 As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS,* but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. The action alternatives evaluated for the 13.1 metric tons (14.4 tons) of surplus plutonium are the Immobilization to DWPF Alternative,

Commentor No. 84 (cont'd): Virginia J. Miller

MOX Fuel Alternative, H-Canyon/HB-Line to DWPF Alternative, and WIPP Alternative.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

Appendix E and Chapter 4, Section 4.1.5, describe the human health risk from transportation of nuclear material between DOE facilities, including the risk of accidents. As shown in Chapter 4, Table 4–22, under all alternatives, the radiological risks to the public from shipments of radioactive materials would be comparable, with no LCFs expected among the transportation crew or general public along the transportation routes. All shipments would be in compliance with applicable DOT, NRC, and DOE requirements.

Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, Section 2.2, Topic A, and Section 2.4, Topic A, of this CRD.

84-3 Examining plutonium production is not within the scope of this *SPD Supplemental EIS*. The United States is not producing new plutonium for nuclear weapons. The United States' nuclear weapons and energy policies are not within the scope of this *SPD Supplemental EIS*.

Commentor No. 85: Laura Sorensen

From: Laura Sorensen
Sent: Tuesday, September 11, 2012 12:01 PM
To: spdsupplementaleis@saic.com
Subject: submission of public comment

Laura Sorensen
S.A.F.E. Carolinas
SPD Supplemental EIS
US Dept of Energy
PO Box 2324
Germantown, MD 230874-0277

Comments for SPD Supplemental EIS 9/11/12

First I would like to make clear that MOX is not an "alternative" fuel nor is it a "new fuel form". In the United States MOX is an experiment waiting to explode and taxpayers are trapped guinea pigs. If U.S. citizens really had a choice we would remove plutonium from human hands and treat it safely as waste for approximately $4 billion. But we're being asked (or told?) to pay about $17.5 billion toward an elaborate, risky, untested, dangerous plan that could send all of us up in smoke! (Dollar amounts are based on figures provided by Alliance for Nuclear Accountability.) ***85-1***

Please remember Fukushima and the plutonium reactor there. ***85-2***

Using MOX as reactor fuel at the aging nuclear power plants, Sequoyah and Browns Ferry, will never be stable and safe. Tests for pressurized water reactors like those at Sequoyah have been incomplete as evidenced through Duke's experience in testing at the Catawba Nuclear Station which was cut short in 2008. Boiling water reactors like those at Browns Ferry now require a 6 year test. ***85-3***

TVA has not committed to the MOX fuel program and so far three utilities have rejected this untested fuel. And yet the $6 billion fabrication facility is already under construction at Savannah River Site in SC. This is not in the best interest of the taxpayer! ***85-1 cont'd***

The DOE claims MOX as the solution to the nuclear weapons nonproliferation treaty with Russia.

This is far from the truth when you consider the waste from MOX fuel rods is even more dangerous than other irradiated fuel and additional plutonium is created in the process. Our children are still left with a dangerous inheritance for millions of years. The nuclear stockpile and waste issue will only grow. ***85-4***

85-1 As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. The disposition of this 13.1 metric tons (14.4 tons) of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts per NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors (see Appendix I, Section I.2).

Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

85-2 DOE notes the commentor's concerns regarding potential reactor accidents such as those that occurred at the Fukushima Dai-ichi Nuclear Power Station in Japan on March 11, 2011. For further discussion, refer to Section 2.5, Topic C, of this CRD.

85-3 NRC is continually inspecting and assessing the safety of the Nation's nuclear power reactors and issuing findings to help assure these plants continue to operate safely. As discussed in Appendix J, Sections J.1 and J.2, of this *SPD Supplemental EIS*, continued assurance of the safe operation of these plants is the responsibility of the plant operator, which operates under the independent regulatory oversight of NRC. If the plant operator were to make a decision to use MOX fuel, it would be the joint responsibility of the plant operator and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely. For further discussion, refer to Section 2.5, Topics A and B, of this CRD.

As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. There are differences in nuclear reactor core physics between MOX and LEU fuel cores, but these differences are understood and can be addressed using measures such as modifications to reactivity control systems and core fuel management procedures. Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing

Commentor No. 85 (cont'd): Laura Sorensen

Today we have renewable energy technology like wind, solar and geothermal spreading across the planet. Our talents and money need to grow these businesses while supporting research and development that provide a healthy, safe, secure means of meeting our energy demands while preserving our environment. If we dump our hard earned money into a dinosaur nuclear industry, we will waste our chance at leaving a bright future for our kids. *85-5*

Please, TVA, do not participate in the MOX program at Browns Ferry and Sequoyah. Please DOE, cancel the Savannah River Site MOX fabrication facility before you spend our money on a dead end technology. *85-6*

Using explosive material to turn on the lights is simply irresponsible.

--

Laura Sorensen
S.A.F.E. Carolinas
working to end the nuclear power myth
Stop Duke's proposed W.S. LEE nuclear plant!

weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

85-4 The United States remains committed to the PMDA (USA and Russia 2000) with the Russian Federation, under which both countries have agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. The use of MOX fuel in nuclear power reactors is consistent with U.S. nonproliferation policy and international nonproliferation agreements. Use of MOX fuel in commercial nuclear power reactors would render surplus plutonium into a used fuel form that is not readily usable for nuclear weapons.

Footnote 3 in Chapter 2 of this *SPD Supplemental EIS* describes a 60 percent reduction in plutonium-239 after irradiation for 2 cycles in a domestic commercial nuclear power reactor. For further discussion, refer to Section 2.4, Topic A, of this CRD.

As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel, by storing it in the reactor's used fuel storage pool or placing it in dry storage. The use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would displace LEU fuel that otherwise would have been used to power the nuclear power reactor. Use of MOX fuel could increase used nuclear fuel generation by 8 to 10 percent for TVA's Browns Ferry and Sequoyah Nuclear Plants, and from 2 to 16 percent for generic reactors during the period MOX fuel could be used at a reactor. DOE expects that increases of this magnitude would be managed within the reactor's normal planning for storage of its used fuel.

85-5 The United States' policy on the continued use of nuclear energy and the use of renewable energy technologies is not within the scope of this *SPD Supplemental EIS*.

85-6 DOE acknowledges the commentor's opinion regarding TVA's participation in the MOX fuel program.

As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS.* This *SPD*

Commentor No. 85 (cont'd): Laura Sorensen

Supplemental EIS evaluates alternatives for 13.1 metric tons (14.4 tons) of surplus plutonium for which a disposition path is not assigned.

Commentor No. 86: Joseph L. Murphy, P.E.

From: Joe Murphy
Sent: Wednesday, September 12, 2012 8:07 PM
To: spdsupplementaleis@saic.com
Subject: SPD S-EIS, Murphy Public Comment

I am Joseph Murphy, a licensed professional engineer (PE) in the state of South Carolina that endorses the DOE/EIS-0283-S2 preferred alternative strategy for the Surplus Plutonium Disposition program. As a PE, I have a commitment to preserve and maintain public health and welfare and agree the proposed preferred alternative accomplishes that goal. The analysis and evaluations address the environmental, safety and health issues. I have worked at the Savannah River Site for over 28 years and I have had the opportunity to review the document in my present assignment. My SRS experience includes management of Special Nuclear Materials (SNM) since 1998 in facilities that process, receive, store, package and ship these materials. I find the preferred alternative consistent with the safety and security requirements of these facilities and programs. I believe use of existing facilities to process weapon pits and prepare the materials for MOX fuel fabrication is a cost effective way to implement the disposition program commitments. I also believe the use of the plutonium to produce fuel for electric power is a beneficial and secure way to convert the material into a nonproliferable state with the added benefit of mutual conversion of Russian material program via an international treaty.

Joseph L. Murphy, PE

86-1

86-1 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

Commentor No. 87: Stephen C. Willard, P.E.

From: Steve Willard
Sent: Thursday, September 13, 2012 3:12 AM
To: spdsupplementaleis@saic.com
Subject: SCWillard comments on SPD Supplemental EIS-Sept 2012
Attachments: MOX EIS statement 9-2012.doc.docx

Please see the attached file containing personal comments from Stephen C. Willard P.E. addressing the Surplus Plutonium Disposition (SPD) Supplemental Environmental Impact Statement (EIS).

Stephen C. Willard P.E.

Response side of this page intentionally left blank.

Commentor No. 87 (cont'd): Stephen C. Willard, P.E.

September 12, 2012
Personal comments from Stephen C. Willard P.E.
addressing the Surplus Plutonium Disposition (SPD) Supplemental Environmental Impact Statement (EIS)

Comments:
The United States needs a full mix of energy sources to meet the needs of the people. While all forms of energy (the potential to do work/damage) can be dangerous, I am convinced that the surplus plutonium (Pu) stockpile is a tremendous energy resource and that it can (under proper and careful regulation) be safely used for production of electrical power.

I concur that the MOX Fuel Alternative should be the Preferred Alternative for disposition of the surplus Pu. I would recommend that this option be maximized to the fullest extent possible.

I am further convinced that the environmental cost/benefit ratio of the MOX Fuel Alternative is small; that is, the environmental costs and effects are very small in comparison to the social benefits of reduction in proliferation of nuclear weapons along with the needed generation of electrical power.

I believe the MOX Fuel Alternative is a proper and prudent use of federal government resources. This project provides for the common good of the entire nation (and for the entire world if the Global Threat Reduction Initiative is fully exercised) by developing the processes and preparing the path to allow for future use of MOX fuel in our commercial reactors.

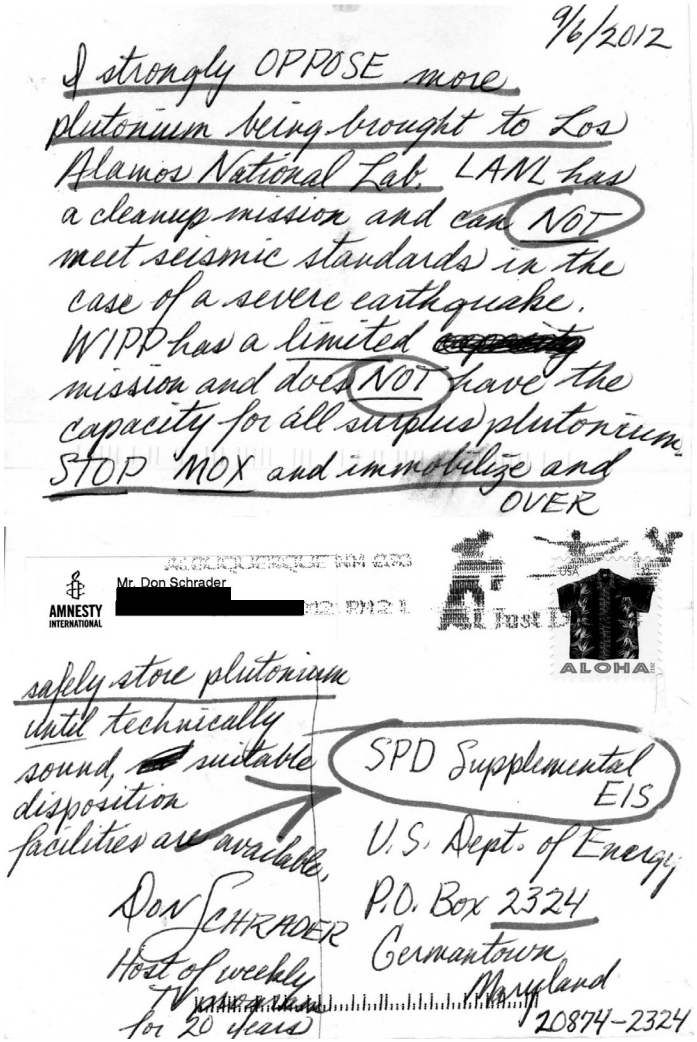
Stephen C. Willard P.E.
[redacted]

Comments provided via Email to spdsupplementaleis@saic.com

87-1

87-1 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

Commentor No. 88: Don Schrader



9/6/2012

I strongly OPPOSE more plutonium being brought to Los Alamos National Lab. LANL has a cleanup mission and can NOT meet seismic standards in the case of a severe earthquake. WIPP has a limited ~~capacity~~ mission and does NOT have the capacity for all surplus plutonium. STOP MOX and immobilize and

OVER

AMNESTY INTERNATIONAL

Mr. Don Schrader

[redacted]

ALOHA

safely store plutonium until technically sound, suitable disposition facilities are available.

SPD Supplemental EIS

U.S. Dept. of Energy
P.O. Box 2324
Germantown
Maryland
20874-2324

Don Schrader
Host of weekly TV
for 20 years

88-1

88-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

Commentor No. 89: Mary Jacklyn Dulle

Mary Jacklyn Dulle
[redacted]

Ms. Sachiko McAlhany
NEPA Document Mgr. SPD
Supplemental EIS, US Dept. of Energy
P.O. Box 2324
Germantown, MD 20874-2324

Dear Ms. Sachiko McAlhany:

I am very concerned about DOE plans for surplus plutonium. No additional plutonium should be brought to Los Alamos National Lab, which has a cleanup mission and cannot meet seismic standards in the case of a severe earthquake. WIPP has a limited mission and does not have the capacity for all surplus plutonium. Stop MOX and immobilize and safely store plutonium until technically sound suitable disposition facilities are available.

I appreciated the opportunity to attend the public meeting on August 23rd and to hear you speak.

Sincerely,

Jacklyn Dulle

89-1

89-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

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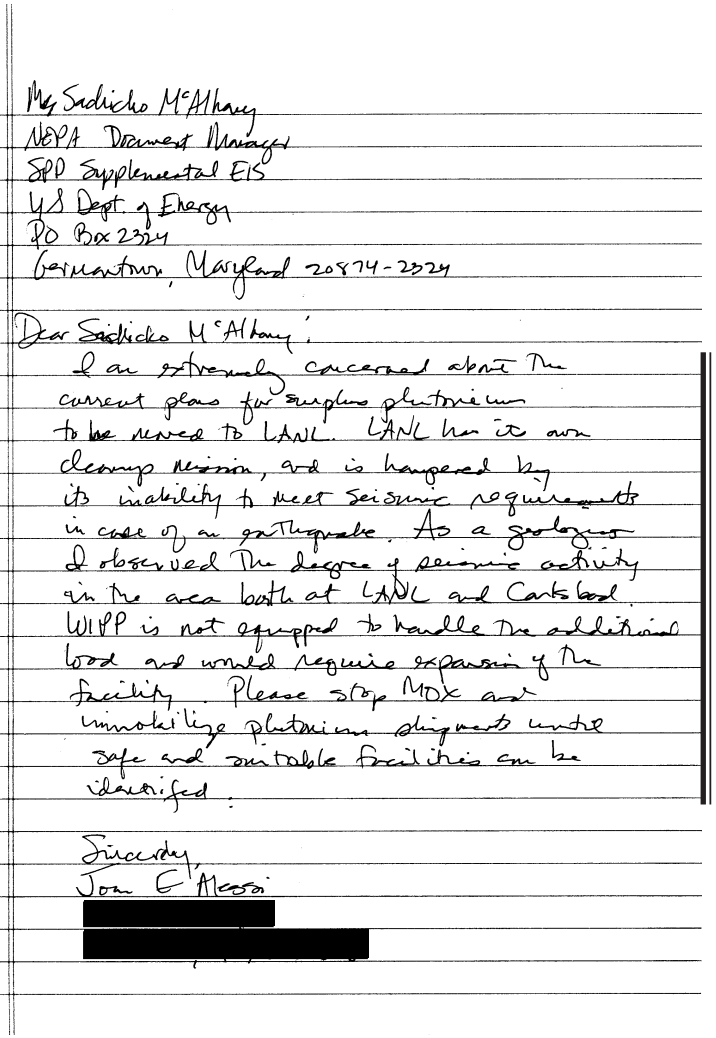
DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

Commentor No. 90: John E. Alessi



Ms Sadiecko McAlhany
NEPA Document Manager
SPD Supplemental EIS
US Dept. of Energy
PO Box 2324
Germantown, Maryland 20874-2324

Dear Sadiecko McAlhany:
I am extremely concerned about the current plans for surplus plutonium to be moved to LANL. LANL has its own cleanup mission, and is hampered by its inability to meet seismic requirements in case of an earthquake. As a geologist I observed the degree of seismic activity in the area both at LANL and Carlsbad. WIPP is not equipped to handle the additional load and would require expansion of the facility. Please stop MOX and immobilize plutonium shipments until safe and suitable facilities can be identified.

Sincerely,
John E Alessi
[redacted]

90-1

90-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

Commentor No. 91: Eric Enfield

Dear Sachicko McAlhany:

I am concerned about current plans held by the Department of Energy to bring surplus plutonium into New Mexico. Los Alamos National Lab does not meet seismic standards in the case of severe earthquake and needs to hold to a cleanup mission regarding materials already stored here. WIPP has a limited mission and does not have the capacity for all surplus plutonium.

91-1

Please consider safer alternatives. Stop MOX. Instead, mobilize and safely store plutonium until technically sound and suitable disposition facilities are available. Care for the plutonium with the least amount of travel between facilities.

Name Eric Enfield

Address [redacted]

Comments are to be submitted by **September 25, 2012**
To:
Sachiko McAlhany
NEPA Document Manager, SPD Supplemental EIS, U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324

91-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

Chapter 4 and Appendix E address transportation impacts. No LCFs are expected from transportation radiation exposure under any of the surplus plutonium disposition alternatives, and the overall risks among the alternatives are comparable. One traffic fatality could result from transportation under the surplus plutonium disposition alternatives.

Commentor No. 92: Kelly Sue Miller

Dear Sachicko McAlhany:

I am concerned about current plans held by the Department of Energy to bring surplus plutonium into New Mexico. Los Alamos National Lab does not meet seismic standards in the case of severe earthquake and needs to hold to a cleanup mission regarding materials already stored here. WIPP has a limited mission and does not have the capacity for all surplus plutonium. *92-1*

Please consider safer alternatives. Stop MOX. Instead, mobilize and safely store plutonium until technically sound and suitable disposition facilities are available. Care for the plutonium with the least amount of travel between facilities.

Name Kelly Sue Miller

Address [redacted]

Comments are to be submitted by **September 25, 2012**
To:
Sachiko McAlhany
NEPA Document Manager, SPD Supplemental EIS, U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324

92-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

Chapter 4 and Appendix E address transportation impacts. No LCFs are expected from transportation radiation exposure under any of the surplus plutonium disposition alternatives, and the overall risks among the alternatives are comparable. One traffic fatality could result from transportation under the surplus plutonium disposition alternatives.

Commentor No. 93: David M. Trayer

To: Ms. Sachiko McAlhany, NEPA Document Manager, SPD Supplemental EIS, U. S. Department of Energy, Post Office Box 2324, Germantown, MD, 20874-2324.

From: David M. Trayer, [redacted]

Date: 3 Sept. 2012.

Subject: Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement, Summary, DOE/EIS-0283-S2, July 2012.

Thank you so much for giving me the opportunity to review this subject document. I had commented to you earlier (7 Aug. 2010) on the use of MOX in TVA nuclear power reactors at Browns Ferry Nuclear Plant (BFN) and Sequoyah Nuclear Plant (SQN).

The subject document seems to address the subject adequately. My concern, as an informed resident living about ten miles from SQN, is simply that the use of MOX in these reactors will unacceptably increase the potential threats to public health. My concern is based on several factors, including the following:

1. Plutonium is well- known to be one of the most biologically hazardous substances. Internal exposure is particularly harmful because of its radioactive emission as well as it's toxicity as a heavy metal. It is an identified human carcinogen. It is a greater hazard than the Uranium commonly used as a fuel in civilian reactors. The radioactive half-life of Plutonium-239 is over 24,000 years, making it a dangerous environmental contaminant. The human hazards of Plutonium are solidly documented in scientific and medical literature.
2. The number of persons at-risk from possible containment failure, either in the operating reactors or the spent fuel stored on-site, is unacceptably high. The subject document estimates the population at-risk in a 50-mile radius is 984,000 at SQN and 820,500 at BFN (including plant workers).
3. The BFN and SQN reactors are old (BFN Unit 1 is over 38 years old, and SQN Unit 1 is over 31 years old). This significantly increases their likelihood of failure. An additional risk to the public and plant workers is the on-site storage of highly radioactive spent fuel at both plants.
4. The community infrastructure at both the BFN and SQN sites is inadequate to provide safety and medical services to civilian populations in the event of a major radiological incident. This includes considerations such as: public education and communications, evacuation procedures including traffic management, emergency protection against overexposure, decontamination of possibly exposed persons, and provision of safe emergency refuges.

1

93-1

93-1 The Browns Ferry and Sequoyah Nuclear Plants are designed and maintained to meet stringent NRC safety requirements for nuclear power reactors. Safety-related equipment is regularly inspected, maintained, and monitored in accordance with procedures and vendor recommendations and replaced well before the end of its scheduled operating life. Presently available information and analysis leads TVA to believe that Browns Ferry and Sequoyah have the capability to safely utilize MOX fuel with only minor modifications. As addressed in Chapter 4 and Appendix I of this *SPD Supplemental EIS*, under normal operating as well as postulated accident conditions, the impacts of operating reactors using a partial MOX fuel core are not expected to change appreciably from those associated with use of full LEU fuel cores. This assessment is consistent with the analysis performed for the *SPD EIS* (DOE 1999). As analyzed in Appendix J, Section J.3, of this *SPD Supplemental EIS*, the risks to the MEI and the surrounding population of developing a fatal cancer as a result of one of the analyzed accidents are small, regardless of whether the reactors are using partial MOX or full LEU fuel cores. The accident analyses in Appendix J, Section J.3, of this *SPD Supplemental EIS* are based on site-specific population, traffic, and evacuation information used by TVA in NRC licensing activities and emergency planning preparations. For further discussion, refer to Section 2.5, Topic B, of this CRD.

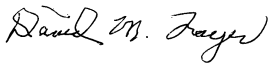
Commentor No. 93 (cont'd): David M. Trayer

5. The increased presence of Plutonium at the plant sites will also make them more attractive as targets for terrorists and groups seeking materials for nuclear bombs.

93-2

For these reasons, I am morally opposed to the use of MOX fuel in civilian reactors, specifically in the TVA reactors at BFN and SQN. The probability of a serious release of Plutonium is low, but the seriousness of a release is just too great. I plead, therefore, to DOE and to TVA to abandon plans to use MOX in these reactors.

93-3



David M. Trayer

cc: Mr. Tom Kilgore, President and Chief Executive Officer, Tennessee Valley Authority, Knoxville, TN.

Senator Lamar Alexander, United States Senate, Washington, DC.

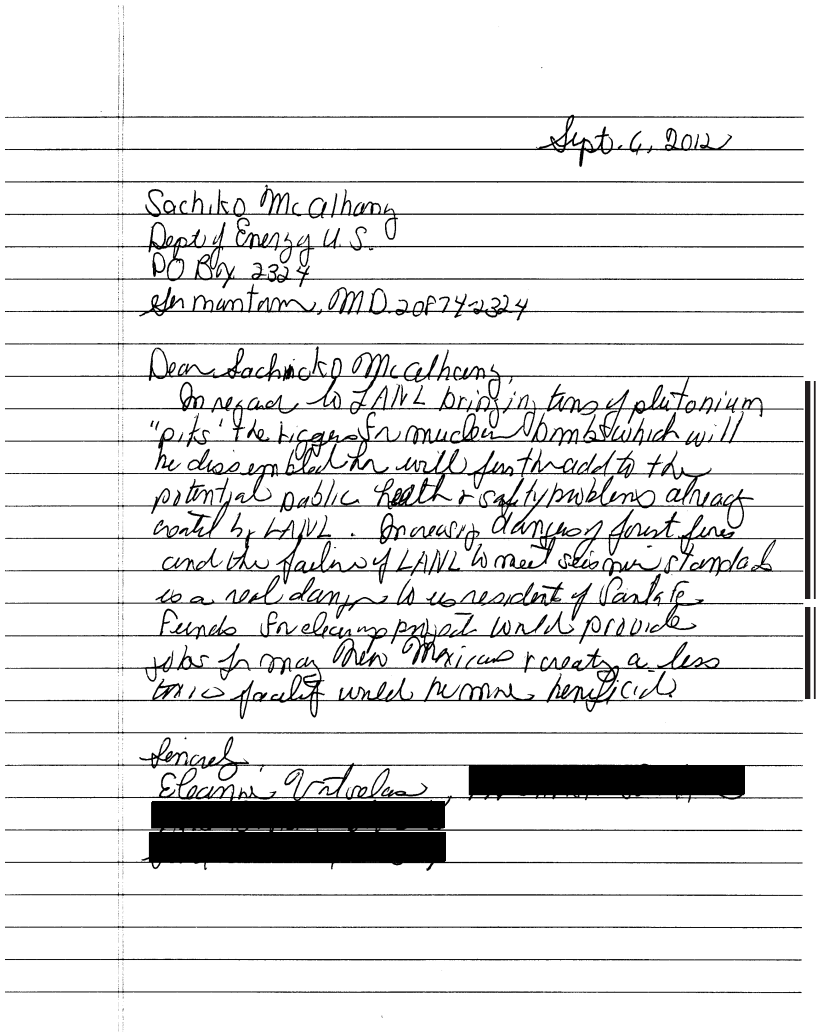
Senator Bob Corker, United States Senate, Washington, D. C.

2

93-2 The purpose of the Surplus Plutonium Disposition Program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally sound manner to ensure that it can never again be readily used in nuclear weapons. Various quantities of plutonium currently exist at DOE sites. Current security systems and procedures at SRS, LANL, and the Pantex Plant are designed to protect plutonium inventories and to prevent access to the sites by unauthorized personnel (e.g., terrorists). Current nuclear power reactor security provides protection from terrorists and groups seeking access to nuclear material, including nuclear fuel, in accordance with NRC regulations. Central to the purpose of the Surplus Plutonium Disposition Program is protecting plutonium from terrorists, so appropriate safeguards and security measures are taken at facilities and during transportation to protect against unauthorized access to materials.

93-3 See the response to comment 93-1 for a discussion on the similarities between a MOX fuel core and an LEU fuel core under both normal operations and accident conditions.

Commentor No. 94: Eleanore M. Voutselas



Sept. 6, 2012

Sachiko McAlhany
Dept of Energy U.S.
PO Box 2324
Germantown, MD 20874-2324

Dear Sachiko McAlhany,
In regard to LANL bringing tons of plutonium "pits" the triggers for nuclear bombs which will be disassembled, this will further add to the potential public health & safety problems already created by LANL. Increasing dangers of forest fires and the failure of LANL to meet seismic standards is a real danger to us residents of Santa Fe. Funds for cleanup project would provide jobs for many New Mexicans & create a less toxic facility which remains beneficial.

Respectfully,
Eleanore Voutselas, [redacted]

94-1

94-2

94-1 DOE is aware of the potential for earthquakes and wildfires in the LANL region. Recognizing the risks posed by wildfires, forests at LANL are thinned as part of an ongoing Wildfire Hazard Reduction Program to reduce the fuel load available in the event of a fire. As exemplified in 2000, post-event soil erosion and sediment control measures are implemented to minimize the on- and offsite environmental impact potential of wildfires (see Chapter 3, Section 3.2.2.2). The risks and potential impacts of a wildfire on the entire LANL site were evaluated in the 2008 *LANL SWEIS*, Appendix D (DOE 2008). PF-4 at TA-55 was not included as a facility that presents a substantial risk due to wildfires because it is constructed of noncombustible materials and is surrounded by a buffer area in which combustible materials including vegetation are kept to a minimum. This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9). The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

94-2 Examining issues related to the relative costs and benefits of surplus plutonium disposition activities versus the costs and benefits of the cleanup of LANL is not within the scope of this *SPD Supplemental EIS*.

Commentor No. 95: Nadia A. Anhalt

[redacted]

Ms Sachiko McAlhany,
NEPA Document Manager
SPD Supplemental EIS
US Dept. of Energy
PO Box 2324
Germantown, MD 20874

Sept 6th 2012.

Dear Sachicko McAlhany,

I am very concerned about Department of Energy plans for surplus plutonium. No additional plutonium should be brought to Los Alamos National Lab (LANL), which has a clean up mission & cannot meet seismic standards in the case of a severe earthquake. WIPP has a limited mission & does not have the capacity for all surplus plutonium. Stop MOX & immobilize & safely store plutonium until technically sound, suitable disposition facilities are available.

Yours faithfully,
Nadia A. Anhalt
NADIA A. ANHALT

95-1

95-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

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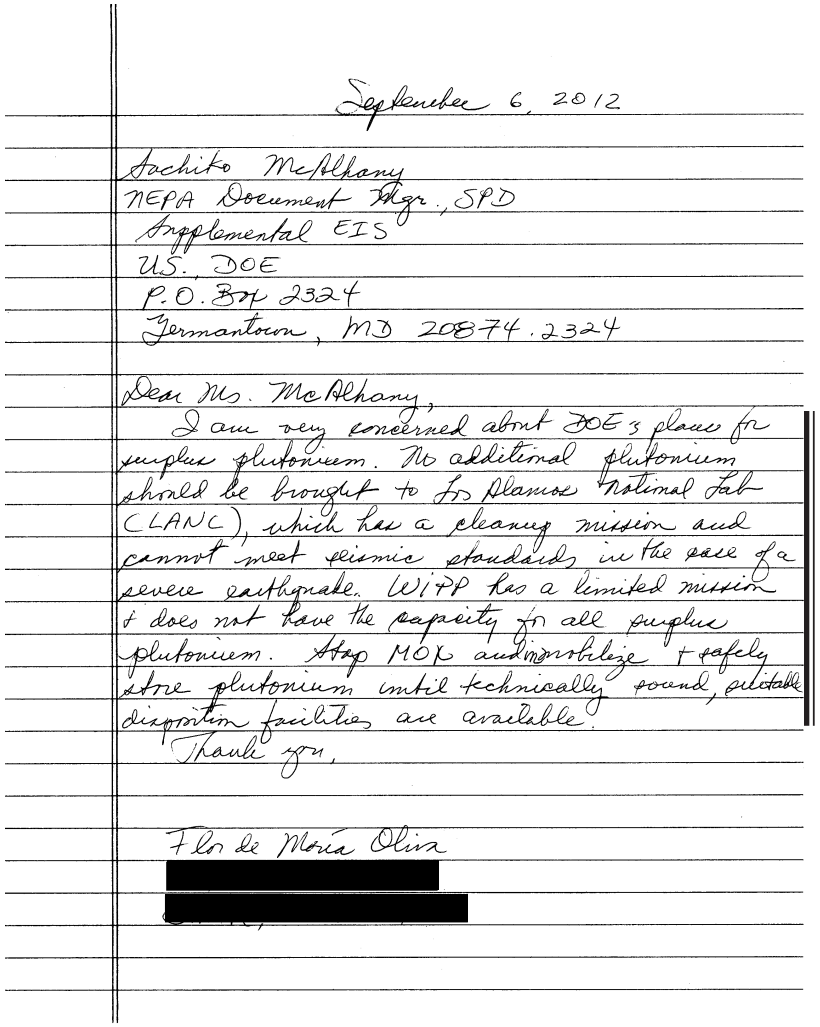
DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

Commentor No. 96: Flor de Maria Oliva



September 6, 2012

Jachito McAlhany
NEPA Document Mgr., SPD
Supplemental EIS
U.S. DOE
P.O. Box 2324
Germantown, MD 20874-2324

Dear Ms. McAlhany,

I am very concerned about DOE's plans for surplus plutonium. No additional plutonium should be brought to Los Alamos National Lab (LANC), which has a cleanup mission and cannot meet seismic standards in the case of a severe earthquake. WIPP has a limited mission & does not have the capacity for all surplus plutonium. Stop MOX and immobilize & safely store plutonium until technically sound, suitable disposition facilities are available.

Thank you,

Flor de María Oliva
[redacted]

96-1

96-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

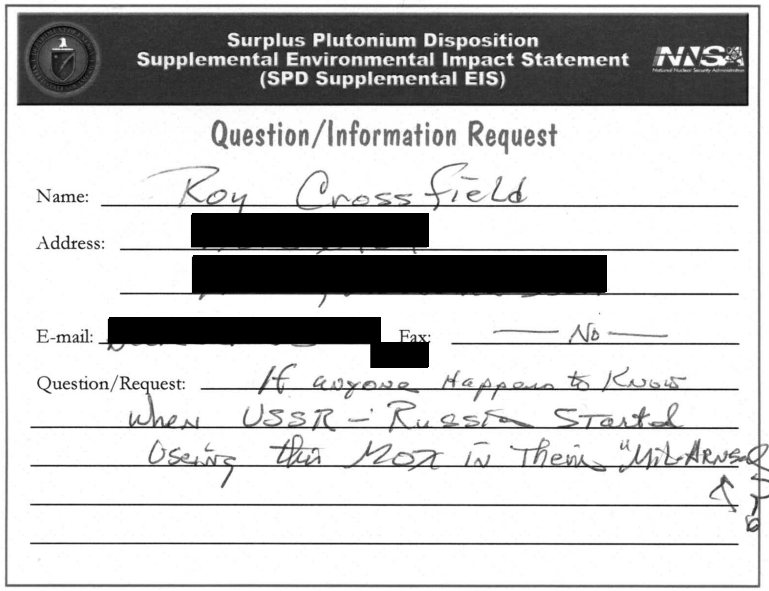
This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

Commentor No. 97: Roy Crossfield



Surplus Plutonium Disposition
Supplemental Environmental Impact Statement
(SPD Supplemental EIS)

NNSA

Question/Information Request

Name: Roy Crossfield

Address: [redacted]

E-mail: [redacted] Fax: — No —

Question/Request: If anyone happens to know when USSR - Russia started using their MOX in their "Military"

97-1

97-1 MOX fuel is used in nuclear power reactors to produce electricity. It cannot be used in nuclear weapons or other military ordnance.

Commentor No. 98: Jennifer F. Elson

From: Elson, Jennifer F
Sent: Monday, September 17, 2012 12:18 PM
To: spdsupplementaleis@saic.com
Subject: Agree with DOE's preferred option

I would just like to add a comment that I agree with the DOE preferred option for the Surplus Plutonium Disposition Project. *98-1*

Jennifer Elson
MET-2, Pit Integrated Technologies

98-1 DOE acknowledges the commentor's opinion.

Commentor No. 99: Rebecca Chamberlin

From: Becky Chamberlin
Sent: Monday, September 17, 2012 12:27 PM
To: spdsupplementaleis@saic.com
Subject: agree with preferred option

As a citizen of Los Alamos, NM, I agree with the preferred option for Surplus Plutonium Disposition which includes ongoing pit disassembly and conversion activities at LANL's TA-55 PF-4 facility. I am proud that New Mexico will have the opportunity to contribute to this important treaty obligation which serves to reduce the global nuclear danger, and I am confident that LANL operations will be conducted safely and with the utmost respect for the environment. *99-1*

Thank you.

Rebecca Chamberlin

99-1 DOE acknowledges the commentor's opinion.

Commentor No. 100: Dr. Albert Migliori

From: Migliori, Albert
Sent: Monday, September 17, 2012 12:35 PM
To: spdsupplementaleis@saic.com
Subject: Surplus Plutonium Disposition

Only Los Alamos has the expertise and the physical facilities to deal properly with this issue of national importance. In my private opinion, there is not a safer, better, more knowledgeable, and prepared place for this work than LANL. *100-1*

Dr. Albert Migliori, Laboratory Fellow
Director, Seaborg Institute

100-1 DOE acknowledges the commentor's opinion.

Commentor No. 101: Micheline Devaurs

From: Devaurs, Micheline
Sent: Monday, September 17, 2012 2:32 PM
To: spdsupplementaleis@saic.com
Subject: Comments on Supplemental EIS re: Surplus Plutonium Dispositino Project

Both as a Los Alamos National Laboratory employee and as a private citizen, I'd like to communicate my preference and support the preferred alternative that we use one or more of the existing facilities, including PF-4 at TA-55 at LANL and existing SRS facilities. *101-1*

Thank you for your consideration.

Micheline

Micheline Devaurs
MaRIE Strategic Coordination Lead

101-1 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

Commentor No. 102: Coleen Meyer

From: Coleen Meyer
Sent: Wednesday, September 19, 2012 12:34 AM
To: spdsupplementaleis@saic.com
Subject: Support Surplus Plutonium Disposition Project

I support DOE/NNSA's disposition proposals in the SPD Supplemental EIS. I believe Los Alamos National Laboratory would be a safe part of this vital process. *102-1*

Coleen Meyer, PMP

102-1 DOE acknowledges the commentor's opinion.

Commentor No. 103: Mel Jenkins, Executive Director, Ruth Thomas, Lead Researcher/Executive Director Emeritus, Environmentalists, Inc.

From: Mel Jenkins
Sent: Wednesday, September 19, 2012 1:41 PM
To: spdsupplementaleis@saic.com
Subject: (From MelJ) ATTN: Ms. Sachiko McAlhany - Questions on SPD **Supplemental** EIS

19th September 2012

Ms. McAlhaney:

Ruth Thomas and I, as associated with Environmentalists, Inc., have tried to get help in a more detailed understanding of the "Draft SPD Supplemental EIS." (Draft SPD)

Your assistance will be greatly appreciated. Noting the very proximate closing date for comments (10th October 2012), we are asking the following:

1) Where is the section in the Draft SPD on "Human Error?"

2) Where is, or can you provide, a list of the "independent environmental organizations" whose researchers commented at the Scoping hearings of 2007 and 2010?

3) Information on how to to contact those who prepared and gave input for this report *103-1*

4) What areas of inquiry did each of the, above referenced, "independent environmental organizations" address?

5) We are particularly interested in communicating with those involved in preparing this report who are familiar with plutonium and enriched uranium. Will you provide that data?

6) The sections on the steps on converting weapons metal plutonium to Mixed Oxide fuel is not clear to us. With whom can we communicate to expand descriptions and and find more detailed diagrams. *103-2*

7) Coverage of transportation actions seems to need expansion. As an example, between which facilities would plutonium "pits" be transported? And, between which facilities would plutonium oxides be transported? *103-3*

We do appreciate the good responses we have found on this project and look forward to continued positive cooperation between all of us, as we work for mutual goals of safety and disarmament.

Yours,

Mel Jenkins - Executive Director
Ruth Thomas - Lead Researcher/Executive Director Emeritus

103-1 Appendix D and Appendix J of this *SPD Supplemental EIS* evaluate the human health effects of accidents at DOE nuclear facilities and NRC licensed nuclear reactors, respectively. As described in these appendices, both DOE and NRC consider human error in determining the things that might go wrong and lead to an accident, as well as in evaluating the probabilities of the accident occurring. Chapter 9, "Distribution List," includes individuals and organizations that were on the DOE site mailing lists and those individuals and organizations that provided scoping comments. Chapter 1, Section 1.6, Public Scoping, includes a summary of the comments received during the scoping period. Information on the preparers of this *SPD Supplemental EIS*, including education, years of experience, and responsibilities, is contained in Chapter 8, "List of Preparers."

If there are questions concerning this *SPD Supplemental EIS*, please contact the NEPA Document Manager as specified in the Summary, Section S.14, Next Steps.

103-2 Appendix B, Section B.1.1.1, of this *SPD Supplemental EIS* describes the process used to disassemble pits and convert plutonium metal into oxide to feed MFFF. Section B.1.1.2, describes the process used to fabricate MOX fuel. Some of the more detailed information is classified and, therefore, cannot be presented. Additional information is included in Chapter 2, Sections 2.4.1 and 2.4.3, of the *SPD EIS* (DOE 1999).

103-3 Chapter 4, Section 4.1.5, and Appendix E, Section E.4.1, of this *SPD Supplemental EIS* list, for each radioactive material, the facilities that would send and receive these materials. Specific to the comment, plutonium pits would be transported from the Pantex Plant in Texas to SRS in South Carolina or LANL in New Mexico, and plutonium oxide would be transported between LANL and SRS.

Commentor No. 104: Elizabeth Bluhm

From: Liz Bluhm
Sent: Wednesday, September 19, 2012 2:15 PM
To: spdsupplementaleis@saic.com
Subject: Draft SPD Supplemental EIS

As a citizen of Los Alamos, NM, I agree with the preferred option for Surplus Plutonium Disposition which includes ongoing pit disassembly and conversion activities at LANL's TA-55 PF-4 facility. I am proud that northern New Mexico will have the opportunity to contribute to this important treaty obligation which serves to reduce the global nuclear danger. LANL has the proven technology, skills and people required to perform the work safely and without any additional environmental impacts. LANL has already converted 400 kg of weapons grade plutonium metal into usable oxide. Last, with the current budget shortfalls facing this country and our nuclear complex, in general, the government should be good stewards of our tax dollars by allowing LANL to perform the work for less money than it would cost to build a new multi-billion dollar facility at the Savannah River Site, SC. *104-1*

Thank you.

Elizabeth Bluhm

104-1 DOE acknowledges the commentor's opinion.

Commentor No. 105: Ubaldo F. Gallegos

From: Gallegos, Ubaldo F
Sent: Wednesday, September 19, 2012 7:05 PM
To: spdsupplementaleis@saic.com
Cc: Clark, David L; Martz, Joseph C
Subject: Comments on Draft SPD EIS

Comments as a concerned citizen:

I listened last night at Espanola to the presentation and felt I had to address this from a very personal perspective, not as a scientist, or a scientist pitching a better method, or as a protestor inciting fear even among themselves. As I near completion of my career here at LANL I tell co-workers that 36 years have passed rather quickly, they only gasp, wondering how that could be possible.

I am a lifelong (36 years) employee of Los Alamos National Laboratory, for 28 of those years I worked as a technician doing explosives testing then moving over to work for two years at DP West, the original plutonium facility in Los Alamos. I began working at TA55 when the doors opened in August 1978. As my career progressed I became very interested in research work and thus began my introduction to not just handling and processing plutonium but actually beginning to understand the science.

I currently work at TA55 but have transitioned to being an Industrial Hygiene and Safety Professional for the last eight years, but I still talk about the great work and people I had the opportunity to work with in plutonium science.

Let me state that I wholly support the proposal for MOX, the core of specialized workers here are fully dedicated and trained to carrying out the mission of LANL and its customers, that is how I operated and I fully believe that even though many of my co-workers have either rotated out of that work (like myself) that the dedication and commitment of the current glovebox workers remains. *105-1*

Where else could I have worked side by side with world class scientists doing cutting edge science on materials no one else has access to? Sounds like most people would run in the opposite direction, and many did even here. Working with nuclear materials, especially plutonium, is not any more dangerous than handling chemicals, different hazards and consequences. Where else could I have worked with scientists who took an interest in teaching and mentoring so that I might one day publish articles, build instruments, and travel to present my work among my peers and those who mistook me for a scientist. I was lucky to have travelled to Rocky Flats and later do some collaborative work as they prepared to close their doors in 2002. I was lucky to have had the opportunity to meet Sen. Pete Domenici as he gave the keynote address during “Global 99”, and most recently shook hands

105-1 DOE acknowledges the commentor’s opinion.

Commentor No. 105 (cont'd): Ubaldo F. Gallegos

with him again last year when I served as Chair of the Employee Scholarship Committee here at LANL as we honored him by naming a scholarship award in his name.

I again was presented with an outstanding opportunity with a ground breaking process to perform first ever actinide studies using a High Temperature Melt Solution Calorimeter in Wing 2 of CMR that was built by a collaborative effort thru UC Davis and provided me the opportunity to hire, train, and learn from Dr. Robert Putnam and Dr. Tracy Lee, both post-docs at the time.

These are studies that I will never fully grasp (as I was not expected to) but they fully respected my position as a technician and allowed me function in my own capacity. Is this still about plutonium you ask? Well yes because this work brought me together with people such as these and many other countless scientists and administrators.

I have estimated that as a glovebox worker for 28 years I logged close to 75,000 hours of work and I do not have any ill effects of radiation and have not suffered any abnormal effects. I remained safe in all operations that I performed, which included a time when we recovered and purified Am 241. I had an eye for detail and I also took pride in performing safely, these days I still support TA55 as a Safety Professional and having had all this under my belt has provided me with a tremendous advantage in performing my current job.

Ubaldo F Gallegos

Response side of this page intentionally left blank.

Commentor No. 106: Charles R. Goergen, President, Chief Executive Officer, Nu-Clear Vision Consulting, LLC

From: Charles Goergen
Sent: Wednesday, September 19, 2012 10:36 PM
To: spdsupplementaleis@saic.com
Subject: Charles R. Goergen Public Statement on SEIS
Attachments: Charles R Goergen Public Statement on SEIS.pdf

Ms. Sachiko McAlhany,

Please find attached my documented statement with clarifications from the September 4th public meeting.

I appreciate the opportunity to provide input.

Charles R. “Chuck” Goergen
Nu-Clear Vision Consulting, LLC

Response side of this page intentionally left blank.

Commentor No. 106 (cont'd): Charles R. Goergen, President, Chief Executive Officer, Nu-Clear Vision Consulting, LLC

Charles R. "Chuck" Goergen
President & Chief Executive Officer

4 Longwood Drive
Aiken, SC 29803-5352

Phone: 803-649-4097
Fax: 803-649-4097
Mobile: 803-215-9099

NuClearVisionConsulting@gmail.com

Nu-Clear Vision Consulting
"Where Nuclear Technology and Operations Intersect"

Public Statement on the Surplus Plutonium Disposition Supplemental Environmental Impact Statement

My name is Chuck Goergen and I am the president and chief executive officer of Nu-Clear Vision Consulting, LLC. I am a resident of Aiken. I am retired from the Savannah River Site and have 36 years of nuclear materials processing experience.

I am in favor of the preferred alternative to maximize the use of existing facilities to produce MOX feed.

I believe in the permanent disposition of this material and the Russian material under Treaty. I have been inside their vaults with tons of plutonium produced before shutdown of their production reactors.

I support maximized beneficial use of the plutonium to produce power for the United States has MOX fuel. This means burning the fuel to its full energy value which changes the plutonium isotopics far away from "weapons grade". The Blended Low Enriched Uranium (BLEU) Program has blended down approximately 500 nuclear weapon equivalents and currently provides fuel for three TVA reactors. This Highly Enriched Uranium (HEU) disposition program sets an example of how a partnership between DOE/NNSA and TVA with its contractors (AREVA) could perform.

I urge DOE to continue this course of action defined as the preferred alternative.

I also request considering the ability to handle future surplus pit declarations as the nuclear stockpile decreases.

Submitted
Charles R. Goergen
Nu-Clear Vision Consulting, LLC
4 Longwood Drive
Aiken, South Carolina 29803-5352

106-1

106-1 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

Commentor No. 107: Basia Miller
Concerned Citizens for Nuclear Safety

LCFs are taken out of context .00006 = naturally-occurring + = 560/yr or 60K in US

Michael Lopez NE – Ben Ray – Re Montoya – JB

107-1

[redacted]

18 September, 2012

Sachiko McAlhany,
NEPA Document Manager,
SPD Supplemental EIS,
U.S. Department of Energy,
P.O. Box 2324,
Germantown, MD 20874-2324.

Dear Ms. McAlhany:

My name is Basia Miller. I am a long-time resident of Santa Fe and currently on the Board of Concerned Citizens for Nuclear Safety. Thank you for giving me the opportunity to comment on the Draft Surplus Plutonium Disposition SEIS.

→ To Page 2

~~Second~~ ~~First~~, *it is short-sighted to bring plutonium to LANL.* LANL already has a mission to clean up Trans-Uranic and low-level waste at Area G. This mission is critical, since the TRU-waste is vulnerable to wildfires such as we had with ~~last summer's~~ year's Las Conchas Fire. However, although the mission costs billions of dollars, it is behind schedule and, ~~LANL~~ we know does not always meet its schedules. It is difficult ~~is not in a position to extend its operations – its transportation, storage, manpower and budget~~ – to deal with additional Plutonium.

Second

~~Second~~, *it is tempting the gods to bring additional plutonium to LANL.* LANL facilities do not meet seismic standards in case of a severe earthquake; this has been researched and documented intensively.

A limits to notion of "expected" 1) absence of mileage for the Savannah River to LANL and back — 2) absence of acknowledgement that (of) increased tracking of seismic has been done since the Fuku-Daii disaster seismic disturbances

something like "range of risk" might give a more realistic foundation for considering transportation + (more) seismic hazard

107-3

107-2

107-1 LCF risks reported in this *SPD Supplemental EIS* represent the added risk (in addition to risks from other sources) from radiation exposure that could occur as a result of surplus plutonium disposition activities. A new Section C.1 was added to Appendix C to include a more detailed discussion of human health impact measures and assessment methods. Additional information was provided regarding the basis for the risk factor of 0.0006 LCFs per person-rem (for the population) or rem (for an individual) and the scientific basis of its use. Consistent with U.S. radiation protection practices, the linear non-threshold approach to LCF risk determination is used in the current analysis. As discussed in the background information in Appendix C, the risk factors that have been developed over the years are based on studies of epidemiological data from populations that have been exposed to radiation and, although there are many assumptions connected to the derivation of the risk factors, they represent the best scientific estimates of impacts from radiation exposure. Thus, the values in this *SPD Supplemental EIS* provide a valid semi-quantitative assessment of the incremental potential impacts (beyond those from background radiation), recognizing that the modeling assumptions employed are expected to result in conservatively high impacts.

107-2 DOE is aware of the seismic concerns raised by DNFSB and is aggressively pursuing additional analyses of and upgrades to PF-4 to ensure that it continues to operate safely. Appendix D, Sections D.1.5.2.11 and D.2.9, provide more-detailed information about accidents at PF-4, including consideration of natural phenomena hazards such as earthquakes. To be conservative, the accident analysis in this *SPD Supplemental EIS* considers the current state of PF-4 without future seismic upgrades. As described in Appendix D and summarized in Chapter 2, Section 2.6, Table 2–3, no LCFs are estimated among the public for the maximum design-basis accident at PF-4, should one occur. Risks to the public are expected to be minor from both normal operations and potential accidents under any proposed alternative. For further discussion, refer to Section 2.3, Topic B, of this CRD. Note that all of the radiological impact analyses (normal operations, facility accidents, and transportation) were developed using conservative assumptions, such that the reported results are at the upper end of the ranges of risk. In the case of facility accidents, as discussed in Appendix D, Section D.1.1.2 and D.1.3.2, of this *SPD Supplemental EIS*, accident frequencies are presented in frequency bins that reflect the uncertainty and range of probabilities of the accident occurring. The bins in which the analyzed accidents fall are shown in Appendix D, Tables D–10 through D–18.

Commentor No. 107 (cont'd): Basia Miller
Concerned Citizens for Nuclear Safety

The DNFSB Defense Nuclear Facilities Safety Board has commented on and ~~criticized~~ warned the levels of seismic risk that the LANL Plutonium Facility runs at present. Bringing thousands of plutonium pounds to LANL would only increase the risk to public health and safety from possible seismic activity to unconscionable levels.

107-2 cont'd

Thank you.

Basia Miller

First I wanted to express my ~~interest in~~ appreciation for what the first commenter said about the probabilities used. I would like to add my sense of the inadequacy of using the term "expected" = I feel my cheeks turn warm when I read the summary risk study = 'its patronizing' given that the damage, the risk is so dramatically greater if there were an accident on the transportation route or a possible though unlikely disaster from seismic movements.

107-4

Some variable like "range risk" might give a more realistic foundation for considering alternatives. because as we know things can happen outside the Bell curve. Furthermore the results of CDC's LAHDRA project show an array of health effects from the contamination at LANL.

107-5

Accident analyses for U.S. nuclear power reactors already consider the radiological impacts of accidents like the Fukushima accident in Japan in that the safety evaluations include evaluation of beyond-design-basis accidents. These analyses assume that, for whatever reason, such as a dam failure, effective cooling of the reactor core is lost, substantial damage to the core occurs, and reactor confinement is lost, resulting in the uncontrolled release of radioactivity to the environment. This was the ultimate result of the loss of power at the Fukushima reactors. The focus of activities at U.S. nuclear power reactors is ensuring that severe events such as earthquakes, tsunamis, and dam failures do not ultimately lead to loss of cooling. NRC is incorporating lessons learned from the Fukushima accident in its regulations for U.S. nuclear power reactors. For further discussion, refer to Section 2.5, Topics B and C, of this CRD.

107-3 The distance between LANL and SRS was included as a part of the transportation analysis. Appendix E, Table E–1, of this *SPD Supplemental EIS* shows distances between origin and destination points for all shipments considered. The routes that were analyzed are shown in Appendix E, Figures E–2 and E–3. These distances are used in the analysis to obtain the transportation risk results presented in Tables E–5 through E–10. Table E–1 was revised in this *Final SPD Supplemental EIS* to clarify that the distance from LANL to SRS is included.

107-4 DOE used standard terms and approaches for evaluating the radiological impacts of routine releases and transportation and facility accidents. These concepts and terms are similar to those used in other NEPA documents, safety documents, and NRC documents. The frequency of these accidents is presented in this *SPD Supplemental EIS*, using terms such as "unlikely" or "extremely unlikely" to indicate there is a range of probabilities associated with such accidents and, when these ranges of probabilities are multiplied by the estimated impacts, they result in a range of risks. To be conservative, this *SPD Supplemental EIS* presents the results of the risk calculation, using the higher end of the frequency range. Uncertainties in the estimated impacts associated with such accidents, should they occur, are discussed in Appendix D, Section D.4, for facility accidents; Appendix E, Section E.13, for transportation; and Appendix J, Section J.4, for reactor accidents.

107-5 Chapter 3, Section 3.2.6.3, of this *SPD Supplemental EIS* lists the health effects studies performed in the region around LANL, including the LAHDRA project. As indicated in the LAHDRA final report (CDC 2010), "The LAHDRA project's primary purpose was to identify all available information concerning past releases of radionuclides and chemicals from the Los Alamos National Laboratory," (the vast majority of the releases occurred between the 1940s and the 1970s). This *SPD*

Commentor No. 107 (cont'd): Basia Miller
Concerned Citizens for Nuclear Safety

Supplemental EIS analyzes the potential environmental impacts from operation of facilities at LANL that employ current technologies and practices that minimize the releases of radioactive materials and hazardous chemicals to the environment to protect workers, the public, and the environment, as evidenced by the reporting in LANL's Annual Site Environmental Reports and NESHAPs reports. As shown in Chapter 4 of this *SPD Supplemental EIS,* the potential environmental releases associated with the normal operation of proposed surplus plutonium disposition activities at LANL are very small and pose minimal risk to the public.

Commentor No. 108: Marian Naranjo, Director
Honor Our Pueblo Existence

Department of Energy (DOE) Draft Surplus PU Disposition Supplemental EIS comments @ Northern New Mexico College, Center for the Arts, September 18, 2012 submitted by Marian Naranjo

Umbi A:gin di (With your respect)

My name is Marian Naranjo, a mother of four, a grandmother of seven, a traditional Pueblo potter, and Director of Honor Our Pueblo Existence (HOPE), a community based organization located at the Pueblo of Kha Po Owingeh, Santa Clara Pueblo. I am a Kha Po Owingeh resident and tribal member.

Thank you for the opportunity to comment and for the extension of time to submit comments. These comments are my personal comments and for the record, more research and extensive comments by HOPE will be submitted.

I have been involved in the NEPA process since 1998 and I question the NEPA process that this EIS supplement is undergoing. More research is being looked into. According to the NNSA's Phase 7 Dismantlement Flow, released on September 13, 2012, does not include LANL, but includes Sandia. However, LANL is included in the NNSA's fact sheet on the MOX Fuel Fabrication Facility and U.S. Plutonium Disposition Program as Benefits of MOX Strategy, which is a process developed by France and supports additional NNSA and DOE Missions. The Programmatic EIS did not include LANL or Waste Isolation Pilot Project (WIPP). ***108-1***

I regret that this EIS states that there is no impact as far as Environmental Justice.

I have stated before and will continue to reiterate the fact that Los Alamos National Laboratory is located within the ancestral homelands of Pueblo Peoples. We have witnessed four generations of disconnect to portions of our sacred places and we are suffering because of this disconnect. The Creator gave us this place; it is a place that defines who we are. ***108-2***

We have sacrificed enough years of environmental devastation in this area, to the point of holding on to what's left of our cultural survival life ways.

The devastation that the people of Santa Clara Pueblo, in particular, has undergone and continues to bare the aftermath of two major fires, one in which we lost our

108-1 The Phase 7 Dismantlement Flow diagram describes nuclear weapon dismantlement. Examining the weapons dismantlement process is not within the scope of this *SPD Supplemental EIS*.

The 2010 amended NOI (75 FR 41850) described the inclusion of a WIPP Alternative and the 2012 amended NOI (77 FR 1920) described the inclusion of options for pit disassembly and conversion at LANL.

108-2 Chapter 3, Section 3.2.11, of this *SPD Supplemental EIS* describes minority and low-income populations near LANL. Chapter 4, Section 4.1.6, of this *SPD Supplemental EIS* analyzes the environmental justice impacts of the options for pit disassembly and conversion at LANL and concludes that Native Americans living near LANL would not be exposed to elevated risks compared to nonminority populations living in the same area from the proposed activities, and the risks associated with these activities are small.

For this *Final SPD Supplemental EIS*, the results of a dose assessment similar to that for the MEI were added to Chapter 4, Section 4.1.6, to show the impact on a hypothetical individual living at a pueblo boundary near LANL. The maximum annual dose for a person at the Pueblo de San Ildefonso boundary would be 0.044 millirem; at the Santa Clara boundary, the annual dose would be 0.0046 millirem. These values can be compared to the MEI dose of about 0.081 millirem per year and the average annual dose from natural background radiation of 469 millirem per year (see Chapter 3, Section 3.2.6.1). For further discussion, refer to Section 2.6, Topic A, of this CRD.

This *SPD Supplemental EIS* includes an analysis for a special pathways receptor that was developed for the 2008 *LANL SWEIS* (DOE 2008) using the best information available to DOE to reflect exposures that could result from traditional living habits, including subsistence consumption of native vegetation (pinyon nuts and Indian Tea [Cota]), locally grown produce and farm products, groundwater, surface water, fish (game and nongame), game animals, other foodstuffs, and incidental consumption of soils and sediments (on produce, in surface water, and ingestion of inhaled dust); absorption of contaminants in sediments through the skin; and inhalation of plant materials. These pathways are in addition to the meat, milk, produce, water, and sediment consumption reflected in the "offsite resident" pathway assumption. The analysis concludes that persons living near LANL who practice traditional living habits would receive a higher dose than the rest of the populations living in the same area, but the risks associated with the exposures from LANL would be small (see Chapter 4, Section 4.5.3.8.2).

Commentor No. 108 (cont'd): Marian Naranjo, Director
Honor Our Pueblo Experience

watershed. We were told that because of the radioactive waste and other toxic chemicals at LANL, that saving the lab was more important. If the fire reached these elements, we would all have had to evacuate. Where do we go? DOE/LANL/NNSA knows this and yet in all due respect, the mannerism that is being displayed by this Surplus Plutonium Disposition Draft EIS plan seems to disregard the environmental justice impacts to health, safety and well-being of Aboriginal Peoples. *108-2 cont'd*

This area is also undergoing geological changes. An earth quake has cracked my house; we are witnesses to boulders coming down from our canyon, floods that could cause damage and evacuation to some of the people. This area is a dormant volcano close to the continental divide/Rio Grande rift with known documented fault zones. It is not a feasible geologically safe place to bring nuclear weapons, disassemble and resulting into plutonium oxide powder to be shipped to the Savannah River Site. Our head waters are only five air miles from the lab. *108-3*

Although, I am in support of the idea to dismantle nuclear weapons, it is not in the best interest for 13.1 tons of Plutonium to come to our sacred place, as it is; LANL has other plutonium production missions that endanger public health and safety. It would be wiser and probably less expensive to relocate the ARIES Program at LANL to Pantex for the dismantlement work, instead of trucking the weapons back to LANL to the Pajarito Plateau for the next 24 years. *108-4*

I feel that there are more feasible choices that can be made for the long term for economics, fairness, health and safety to Indigenous Peoples and the general public here in Northern New Mexico. Bringing thousands of plutonium pits to LANL would further endanger public health and safety, continue to impact our cultural life ways to extinction, and divert resources away from genuine clean up, which is long overdue and currently a mission of LANL, which by the way, is behind schedule. *108-5*

As I reviewed the National Nuclear Security Administration's Mission, which is responsibility for the management and security of the nation's nuclear weapons, nuclear non-proliferation and naval reactor programs, and respond to critical accidents that nuclear products cause. I ask that NNSA/ DOE/LANL review and incorporate the United Nations Declaration on "The Rights of Indigenous Peoples" *108-6*

With respect to the impact of wildfires on LANL and the surrounding communities, LANL is continuing to work to reduce the hazards associated with wildfires. For example, forests are thinned as part of an ongoing Wildfire Hazard Reduction Program to reduce the fuel load available in the event of a fire. As exemplified in 2000, post-event soil erosion and sediment control measures are implemented to minimize the on- and offsite environmental impact potentials of wildfires (see Chapter 3, Section 3.2.2.2). The risks and potential impacts of a wildfire on the entire LANL site were evaluated in the 2008 *LANL SWEIS*, Appendix D (DOE 2008). PF-4 at TA-55 was not included as a facility that presents a substantial risk due to wildfires because it has been constructed of noncombustible materials and is surrounded by buffer areas in which combustible materials, including vegetation, are kept to a minimum.

108-3 Chapter 3, Section 3.2.2, of this *SPD Supplemental EIS* describes geology and soils conditions at PF-4 at LANL, including the location of faults and volcanic hazards. Appendix F includes analyses of the environmental impacts and human health risks of expanded pit disassembly and conversion processes in PF-4. Appendix D, Sections D.1.5.2.11 and D.2.9, provide more-detailed information on accidents at PF-4, including consideration of natural phenomena hazards such as flooding, earthquakes, and volcanic eruptions. Section D.1.5.2.11 describes the completed and planned seismic upgrades to PF-4.

108-4 As discussed in Chapter 1, Section 1.7, of this *SPD Supplemental EIS*, pits are currently stored at the Pantex Plant. In the *SPD EIS* (DOE 1999), DOE analyzed and dismissed locating pit disassembly and conversion activities at the Pantex Plant (see 65 FR 1608) because it possesses neither the experience nor the infrastructure needed to support plutonium processing. DOE is reconsidering options for pit disassembly and conversion capabilities only at locations with existing plutonium processing capabilities (i.e., LANL and SRS).

Cost, schedule, technical viability, worker and public safety, environmental impacts, security, and the ability to carry out international agreements are among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

108-5 DOE has identified and analyzed a range of reasonable options for carrying out pit disassembly and conversion activities. Public health and safety and environmental justice concerns are addressed in the response to comment 108-2. For further discussion, refer to Section 2.3, Topic A, of this CRD.

Commentor No. 108 (cont'd): Marian Naranjo, Director
Honor Our Pueblo Experience

into the Environmental Justice aspect of your work which was signed and adopted by the U.S. on December 16th, 2010. If anything, and in all due respect, this would offer a check list to enhance decision making in the NEPA process and overall nuclear enterprise, thus, helps protect **Peoples** and their aboriginal **Places**, and recognizes that respect for Indigenous knowledge, cultures, and traditional practices, contributes to sustainability and proper management of the environment, since time immemorial. Our lives, our devastation here in the Sacred Ancestral Homelands of Kha Po Owingeh, Po Jo geh, Walatowa and Cochiti is revealing the truth of the nuclear industry since the Manhattan Project and the signing of the Cooperative Agreements. The nuclear industry's 70 year history has also become our history, our story. *108-6 cont'd*

We cannot afford to continue living in fear and what if's. Our lives are not to play with or for others to gamble and take chances. If one has the need to gamble or take chances, go to the casinos!

Concentrate on Clean up and abide by the present WIPP regulations for waste. Dismantle the weapons but not here. *108-7*

Kuuda Wa Haa: a Thank you

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD. All CH-TRU waste sent to WIPP as part of the Surplus Plutonium Disposition Program would be in compliance with the WIPP waste acceptance criteria.

108-6 The United States supports the United Nations Declaration on the Rights of Indigenous People (Declaration), which, while not legally binding or a statement of current international law, has both moral and political force. It expresses both the aspirations of indigenous peoples around the world and those of nations seeking to improve their relations with indigenous peoples. Most importantly, it expresses aspirations of the United States that this country seeks to achieve within the structure of the U.S. Constitution, Federal laws, and international obligations, while also seeking, where appropriate, to improve current laws and Government policies. To this end, Federal agencies continue to be informed by the Declaration as they implement policies and develop new initiatives together with tribal leaders.

108-7 See the response to comment 108-5 regarding alternatives and DOE's commitment to environmental restoration.

Commentor No. 109: David McCoy, Executive Director Citizen Action New Mexico

From: David McCoy
Sent: Wednesday, October 10, 2012 6:36 PM
To: spdsupplementaleis@saic.com
Subject: Citizen Action Comments for SPUD
Attachments: Draft Surplus Plutonium Disposition Comments.doc

Please see attached comments.

Thank you.

David B. McCoy, Esq.
Executive Director
Citizen Action New Mexico

Response side of this page intentionally left blank.

Commentor No. 109 (cont'd): David McCoy, Executive Director Citizen Action New Mexico

Draft Surplus Plutonium Disposition
Supplemental Environmental Impact Statement ("SPUD")

Citizen Action New Mexico Comments
October 10, 2012

Citizen Action Mexico is a nonprofit organization established in 2000 established to deal with issues of public health related to nuclear waste and nuclear weapons at Department of Energy Facilities. Over the last few years Citizen Action has been involved in activities for hazardous waste permits, environmental impact proceedings, groundwater contamination and nuclear reactor safety at LANL, SNL and other locations in New Mexico.

Citizen Action objects to the failure of NDOE/NNSA to hold meetings for SPUD in Albuquerque ("ABQ"), New Mexico as the major population center. Bernalillo County where ABQ is located has experienced an increasingly higher cancer rate and is exposed additionally to radioactive and hazardous waste contamination from Sandia National Laboratories and Kirtland Air Force Base. Epidemiological studies for LANL area are out of date. Greater impacts on an already health burdened minority population will result from increased releases of radiation. NNSA consistently violates concerns for environmental justice. *109-1* *109-2*

Citizen Action rejects the reprocessing of pits for MOX use in commercial reactors. There is no economic analysis of benefits that would be derived from pit and non-pit reprocessing given costs of handling the waste stream and transportation, risk of accidents and health costs. All environmental consequences and economic costs must be compared with existing costs for current fuel supply and waste management at commercial reactors. *109-3*

The SPUD is vague to the extent that environmental consequences are not fully considered and cannot be understood by the public. One example is the Tennessee Valley Authority addressing the use of MOX fuel in its reactors without knowing if it will pursue use of MOX in its reactors. *109-4*

The consequences of reactor accidents are poorly described and do not include the experience or capacity of the reactors in various locations to safely burn MOX fuel. NNSA has presented no evidence that commercial reactor facilities are capable of burning, willing to burn or have made any contracts to burn MOX fuel. The effect of the age of the reactors in relation to MOX burn is not discussed. The safety of US reactors is much in question after the Fukushima experience. *109-5*

Differential costs, environmental aspects, transportation and technical problems in processing various configurations of pit and non-pit plutonium for MOX fuel are not discussed. *109-6*

109-1 Examining activities at Sandia National Laboratories and Kirtland Air Force Base is not within the scope of this *SPD Supplemental EIS*. Ultimately, New Mexico-based hearings were held in Carlsbad, Española, Los Alamos, and Santa Fe. As a convenience to the public, DOE also made the public hearing in North Augusta, South Carolina, available for viewing on the *SPD Supplemental EIS* website.

109-2 Chapter 3, Section 3.2.6, of this *SPD Supplemental EIS* presents information regarding human health in the potentially affected environment near LANL, including radiation exposure and risks. Section 3.2.6.3 summarizes the health effects studies performed for the region around LANL. Section 3.2.6.3 summarizes the results of health effects studies at LANL. Section 3.2.11 describes minority and low-income populations near LANL. Chapter 4, Section 4.1.6, analyzes the environmental justice impacts of the options for pit disassembly and conversion at LANL and concludes that minority and low-income populations living near LANL would not be exposed to elevated risks compared to nonminority and non-low-income populations living in the same area from the proposed activities, and that the risks associated with these activities are small. No LCFs are expected among the offsite population, including minority and low-income populations, as a result of the normal operations of the proposed surplus plutonium disposition facilities. For further discussion, refer to Section 2.6, Topic A, of this CRD.

109-3 Cost, schedule, technical viability, worker and public safety, environmental impacts, security, and the ability to carry out international agreements are among the factors that the decisionmaker may consider when selecting an alternative for implementation. CEQ and DOE NEPA regulations do not require that costs be included in an EIS.

109-4 As described in Chapter 4 and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, risks to the public are expected to be minor under any proposed alternative.

The disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts as required by NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in generic commercial nuclear power reactors, including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2). This *SPD Supplemental EIS* also provides specific analysis of five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Section I.1).

Commentor No. 109 (cont'd): David McCoy, Executive Director Citizen Action New Mexico

Reliance on the aged facilities across the weapons complex for processing MOX fuel along with the inexperience of NNSA in producing MOX fuel is prone to accidents, proliferation and potential terrorist events. *109-6 cont'd*

The WIPP alternative fails to discuss availability of room for surplus plutonium waste disposal at WIPP in competition with TRU waste remaining for shipping from LANL and INL. The WIPP alternative does not discuss the amount of waste stream that would be expected from TRU in relation to storage capacity. Potential delays in removing TRU waste from LANL need discussion. *109-7*

The use of MOX fuel will generate more spent fuel than currently exists and will further exacerbate the problem of spent fuel management whether in spent fuel pools or dry cask storage. The capacity and availability for additional spent fuel storage and disposition pathway is ignored by the SPUD. *109-8*

Commitment of funds for construction of the RLWTF at LANL are uncertain for treatment of liquid waste. Existing treatment discharges liquid into the environment. *109-9*

Evidence of increased seismic risks for facilities at LANL such as at the PF-4 have not been adequately considered. *109-10*

What will be the means of international inspection for all DOE facilities that are processing, storing, and disposing of pit and non-pit plutonium? The US already has several metric tons of missing and unaccounted for plutonium. *109-11*

Thank you for consideration of these comments.

Sincerely,

David B. McCoy, Esq.
Executive Director
Citizen Action New Mexico
POB 4276
Albuquerque, NM 87196-4276
505 262-1862
dave@radfreenm.org
www.radfreenm.org

109-5 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. As summarized in Chapter 5, Section 5.3.3, of this *SPD Supplemental EIS*, use of MOX fuel in TVA or other reactors would require an amendment to the reactor's operating license in accordance with 10 CFR Part 50. Before any MOX fuel is used in the United States, NRC would perform a comprehensive safety review, which would include information prepared by TVA or other reactor operators, as part of the 10 CFR Part 50 license amendment process. As addressed in Chapter 4 and Appendix I of this *SPD Supplemental EIS*, normal operation of reactors using a partial MOX fuel core is not expected to change substantively from operation using a full LEU fuel core. Correspondingly, under both normal operating and postulated accident conditions, the impacts of operating reactors using a partial MOX fuel core are not expected to change appreciably from those associated with use of full LEU fuel cores. This assessment is consistent with the analysis performed for the *SPD EIS* (DOE 1999). For further discussion, refer to Section 2.5, Topic B, of this CRD.

Accident analyses for U.S. nuclear power reactors already consider the radiological impacts of accidents like the Fukushima accident in that the safety evaluations include evaluation of beyond-design-basis accidents. As discussed in Appendix J, Section J.3, the analysis in this *SPD Supplemental EIS* compares the accident results for partial MOX fuel and full LEU fuel cores to determine whether the use of MOX fuel in these TVA reactors would make any substantive difference in the potential risks associated with the accidents analyzed. The beyond-design-basis accidents include severe accidents with a subsequent loss of containment similar to the accident at Fukushima. The results show that the consequences of such an accident, should it occur, would be comparable, regardless of whether the reactor was using a partial MOX fuel core or a full LEU core. DOE does not believe that the accident at the Fukushima Dai-ichi Nuclear Power Station changes this conclusion. At the time of that accident, the Fukushima Dai-ichi Nuclear Power Station's Unit 3 was operating using a partial MOX fuel core. However, at least one authority has determined that the accident involved failures unrelated to the use of MOX fuel, and there is no evidence to suggest that the presence of MOX fuel in Unit 3 increased the consequences of the accident (ONR 2011). For further discussion, refer to Section 2.5, Topic C, of this CRD.

Commentor No. 109 (cont'd): David McCoy, Executive Director Citizen Action New Mexico

109-6 See the response to comment 109-3 regarding the factors to be considered by the decisionmaker.

Pit disassembly and conversion facilities and options are described in Chapter 2 and Appendix B. The environmental impacts of these options are analyzed in Appendix F, presented with the appropriate alternatives in Chapter 4, and summarized in Chapter 2, Section 2.6, Table 2–3. Transportation impacts are described in detail in Appendix E and are summarized in Chapter 4 and Chapter 2, Section 2.6, Table 2–3.

MFFF is a new facility currently under construction at SRS. DOE has contracted with Shaw AREVA MOX Services to help construct and operate MFFF at SRS. AREVA has extensive data on the performance of MOX fuel in both BWRs and PWRs and is performing similar activities in Europe.

109-7 DOE expects that activities related to surplus plutonium disposition would result in minimal disruption of cleanup and remediation activities at LANL, including its program for shipment of legacy TRU waste to WIPP. Chapter 4, Section 4.5.3.6.3, discusses the amount of TRU waste that is projected for disposal at WIPP, as published in the *Annual Transuranic Waste Inventory Report – 2012* (DOE 2012a), as well as the amount of unsubscribed CH-TRU waste disposal capacity that would be necessary to support the alternatives analyzed in this *Final SPD Supplemental EIS*. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity. For further discussion, refer to Section 2.2, Topic B, of this CRD.

109-8 As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel, by storing it in the reactor's used fuel storage pool or placing it in dry storage. The use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would displace LEU fuel that otherwise would have been used to power the nuclear power reactor. Use of MOX fuel could increase used nuclear fuel generation by 8 to 10 percent for TVA's Browns Ferry and Sequoyah Nuclear Plants, and from 2 to 16 percent for generic reactors during the period MOX fuel could be used at a reactor. DOE expects that

increases of this magnitude would be managed within the reactor's normal planning for storage of its used fuel.

109-9 Chapter 3, Table 3–44, of this *SPD Supplemental EIS* describes both the existing Radioactive Liquid Waste Treatment Facility (RLWTF) and the planned replacement RLWTF. As discussed in Chapter 4, Section 4.1.4, the environmental impacts analyses are based on the treatment capacity of the existing RLWTF. Replacement of RLWTF is analyzed in the *LANL SWEIS* (DOE 2008), but is not within the scope of this *SPD Supplemental EIS*.

109-10 DOE is aware of the seismic concerns associated with the continued operation of PF-4 at LANL and is aggressively pursuing additional analyses of and upgrades to this facility to ensure that it continues to operate safely. Chapter 3, Section 3.2.2, of this *SPD Supplemental EIS* describes geology and soils conditions at PF-4, including the locations of faults and seismic and volcanic hazards. This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9). The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

109-11 The subject of international inspections of surplus plutonium disposition facilities is discussed in Chapter 2, Section 2.4, of the *SPD EIS* (DOE 1999) and is not being revisited in this *SPD Supplemental EIS*. International monitoring and inspections of surplus plutonium disposition facilities apply to the 34 metric tons (37.5 tons) of plutonium subject to the U.S./Russian PMDA (USA and Russia 2000). The United States and the Russian Federation are in active negotiations with IAEA regarding a verification agreement that will enable IAEA to independently verify that the PMDA objectives are met. The international monitoring and inspection regime will apply to the plutonium that is subject to the PMDA once the materials are at MFFF and will continue at the reactor facilities and with the long-term storage of the associated spent fuel, as well as during transport between those facilities.

Commentor No. 110: Bobbie Paul, Executive Director Georgia Women's Action for New Directions

From: bobbie
Sent: Wednesday, October 10, 2012 6:46 PM
To: spdsupplementaleis@saic.com
Subject: Comments on Draft Surplus Pu Disposition
Attachments: GAWANDcomments.PUdisp..pdf

Greetings!

Attached please find comments submitted by Georgia Women's Action for New Directions.

Thank you.

Sincerely,

Bobbie Paul

Bobbie Paul
Executive Director
Georgia Women's Action for New Directions (Georgia WAND)

Response side of this page intentionally left blank.

Commentor No. 110 (cont'd): Bobbie Paul, Executive Director Georgia Women's Action for New Directions

GEORGIA WAND

Women's Action for New Directions

October 10, 2012

Ms. Sachiko McAlhany
SPD Supplemental EIS
U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324

RE: SPD Supplemental EIS, DOE/EIS–0283–S2, July 2012

Dear Ms. McAlhany,

Below please find comments from Georgia Women's Action for New Directions (Georgia WAND) on the Department of Energy's Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement. Additionally, Georgia WAND has signed onto group comments submitted by the Alliance for Nuclear Accountability (ANA) as an active member organization of this national coalition.

Georgia WAND submits that the draft SPD Supplemental EIS is lacking in the following areas:

THE EIS PROCESS and NEPA Compliance

The Department of Energy and the National Nuclear Security Administration is not complying with the National Environmental Policy Act and, therefore, must not go forward with the issuance of a Final Surplus Plutonium Disposition Supplemental Environmental Impact Statement (EIS).

The Draft Supplemental EIS to support decisions about surplus plutonium disposition is tiered from from the December 1996 Storage and Disposition of Weapons-Usable Fissile Materials Programmatic EIS (Storage and Disposition PEIS). The surplus plutonium disposition program discussed in the Draft Supplemental EIS is fundamentally changed from the program and alternatives discussed in the Storage and Disposition PEIS. Therefore, the DOE/NNSA should issue a ***new*** Storage and Disposition PEIS or a Supplemental PEIS that describes the overall surplus plutonium disposition program and its alternatives ***before*** it can proceed with a Final Supplemental EIS.

Georgia Women's Action for New Directions
250 Georgia Ave, Suite 202, Atlanta, GA 30312 | Phone: (404)524-5999 | www.georgiawand.org

110-1

110-1 DOE does not agree with the commentor's opinion about the need for a new programmatic EIS on storage and disposition of surplus plutonium. DOE believes that the decision to prepare this *SPD Supplemental EIS* complies with CEQ and DOE regulations and guidance.

The direct disposal of 50 metric tons (55 tons) of surplus plutonium was eliminated from further analysis in the *Storage and Disposition PEIS* (DOE 1996:2-13) because it would exceed the capacity of WIPP when added to DOE's inventory of TRU waste. In response to comments on the *Draft SPD Supplemental EIS*, DOE expanded the WIPP Alternative to include potential disposal of all 13.1 metric tons (14.4 tons) of the surplus plutonium for which a disposition path is not assigned. The disposal at WIPP of 13.1 metric tons (14.4 tons) of surplus plutonium, which is approximately 26 percent of the amount considered in the *Storage and Disposition PEIS*, could potentially be accomplished within WIPP's capacity and, therefore, is considered to be a reasonable alternative in this *Final SPD Supplemental EIS* (see Chapter 4, Section 4.5.3.6.3). A description of WIPP's capacity and the process that would be used to dispose of surplus plutonium as CH-TRU waste at WIPP is contained in Appendix B, Sections B.1.3 and B.3; the environmental impacts of shipping waste to WIPP are described in Appendix E. For further discussion, refer to Section 2.2, Topic B, of this CRD.

Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In the *Draft SPD Supplemental EIS*, the MOX Fuel Alternative was DOE's Preferred Alternative for surplus plutonium disposition. DOE's preferred option for disposition of surplus non-pit plutonium that is not suitable for MOX fuel fabrication was disposal at WIPP. DOE's preferred option for pit disassembly and conversion of surplus plutonium metal, regardless of its origins, was to use some combination of facilities at TA-55 at LANL and K-Area, H-Canyon/HB-Line, and MFFF at SRS, rather than to construct a new stand-alone facility.

In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

Commentor No. 110 (cont'd): Bobbie Paul, Executive Director Georgia Women's Action for New Directions

GEORGIA WAND
Women's Action for New Directions

Specifically, the program presented in the Draft Supplemental EIS is changed from the Storage and Disposition PEIS in three major ways.

First, on pages 2-10 and 2-15 of the Storage and Disposition PEIS, the alternative of disposing surplus plutonium at the Waste Isolation Pilot Plant (WIPP) was considered and rejected. But the current Draft Supplemental EIS includes WIPP as the preferred alternative for disposition of surplus plutonium that is not suitable for MOX fuel fabrication.

Second, on pages 2-89 through 2-95, the Storage and Disposition PEIS did not include the Los Alamos National Lab as a pit disassembly or conversion location. But the Draft Supplemental EIS includes this site as a pit disassembly and conversion alternative.

110-1 cont'd

Third, the Storage and Disposition PEIS, on pages 2-2 through 2-7, included sites for up to 50 years of long-term storage. However, storage at Savannah RIver Site (SRS) and Pantex could be necessary for more that 50 years, given that the disposition program as described in the 1996 Storage and Disposition PEIS has not yet been implemented.

The fact that these three elements of the current program were not considered in the 1996 Storage and Disposition PEIS means that the plutonium disposition program has *changed in significant ways* and that a new PEIS or supplemental PEIS must be required before the current SEIS can go forward.

ESCALATING COSTS OF THE MOX FACILITY AT THE SAVANNAH RIVER SITE

Construction of the mixed oxide facility at SRS was estimated, in 2003, to be $1.6 billion and the year of its completion was to be 2007. Then, a few years ago after the date of construction completion had long passed, the price tag rose to about $4.8 billion. Currently, the MOX facility, according to a September 26, 2012 Weapons Complex Morning briefing, is projected to cost almost $7 billion although DOE has refused to provide costs estimates for either the MOX facility or the plutonium disposition program for the past 12 months.

110-2

Taxpayers are on the hook for this billion dollar program (with no apparent end in sight) and the spending details of MOX and Pu disposition are being kept secret. This is unacceptable.

Media reports indicate that MOX building costs are running out of control and, on top of that, as of October 10, DOE cannot confirm customers interested in using the fuel that would be fabricated at the MOX facility. Why should taxpayers spend billions on a MOX facility that has no future?

Reports that TVA reactors such as Browns Ferry in Alabama will take the fuel are without merit as that reactor site has not indicated interest in accepting MOX fuel which has never before been run in a commercial reactor.

110-3

The use of LANL to support pit disassembly and conversion has been ongoing. In 1998, DOE completed an environmental assessment of a proposed pit disassembly and conversion demonstration project at LANL (DOE 1998a). The *SPD EIS* (DOE 1999) acknowledged these activities, and the *LANL SWEIS* (DOE 2008) included the impacts associated with these ongoing activities. In this *SPD Supplemental EIS,* DOE is now considering an expansion of these activities and has included an evaluation of all of the environmental impacts associated with this proposal (see Appendix F and the various sections in Chapter 4 that include impacts analyses related to LANL).

As described in Appendix B, Table B–2, of this *SPD Supplemental EIS*, 40 years of storage of surplus non-pit plutonium is evaluated under the No Action Alternative. Storage for fewer years is evaluated under the action alternatives. DOE's alternatives for surplus plutonium disposition would complete these activities within the 50-year storage period previously analyzed.

110-2 Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. CEQ and DOE NEPA regulations do not require that costs be included in an EIS. For further discussion, refer to Section 2.1, Topic B, of this CRD.

110-3 The disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts as required by NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in generic commercial nuclear power reactors, including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2). This *SPD Supplemental EIS* also provides specific analysis of five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Section I.1). Use of MOX fuel in one or more domestic commercial nuclear power reactors would be under the terms of NRC license(s). For further discussion, refer to Section 2.4, Topic A, of this CRD.

Commentor No. 110 (cont'd): Bobbie Paul, Executive Director Georgia Women's Action for New Directions

GEORGIA WAND Women's Action for New Directions

Additionally, Brown's Ferry is a poor choice for this fuel as this site has been given a 'red finding' by the Nuclear Regulatory Commission (NRC) signifying high safety issues.
Shaw AREVA MOX Services continues to reap profits as the main construction entity and, with no apparent cost reviews and accountability reporting requirements, Shaw will be able to continue reaping profits although construction problems persist. into the undefined future.

110-4

NEGLECT OF OTHER SPENDING PRIORITIES AT SRS

MOX is bleeding SRS of necessary funds that should be going to other missions such as properly closing the 47 remaining in-ground tanks of high level radioactive waste and other environmental contamination issues.

110-5

DOE/EM (admittedly not NNSA) cut off funding to the State of Georgia's Environmental Protection Division in 2002-2003 for a robust environmental sampling, testing and monitoring program in Georgia counties that border the Savannah River and that lie directly downwind and downstream from SRS. This program, active for 12 years, began as a result of an Agreement in Principle between the DOE and the neighboring states of South Carolina and Georgia in 1989. This highly respected program cost DOE approximately $630,000 per year. A very modest and doable sum for DOE.

The DOE agreed to restore this funding and sent out press releases announcing its reinstatement in April of 2010. Here is the official press announcement of the reinstatement:

SAVANNAH RIVER OPERATIONS OFFICE
AIKEN, SC 29802
NEWS MEDIA CONTACT: **FOR IMMEDIATE RELEASE**
Jim Giusti, DOE, (803) 952-7697 Tuesday, April 13, 2010
james-r.giusti@srs.gov
DOE Announces Intention to Offer State of Georgia Additional Environmental Monitoring Funds
AIKEN, SC – The Department of Energy (DOE) today announced its intention to fund additional independent environmental monitoring of the Savannah River Site (SRS) by the State of Georgia.
Through its grant program, DOE's Savannah River Operations Office will provide the Georgia Department of Natural Resources financial assistance to conduct independent environmental monitoring in Georgia communities bordering SRS to validate that site operations are having no negative effects on human health or the environment.
"We are offering the State of Georgia environmental monitoring funding to provide its residents additional information on the impacts of our operations at the Savannah River Site," said Dr. Ines Triay, DOE's Assistant Secretary for Environmental Management. "We are striving to be a good neighbor to all residents around our sites."
DOE plans to request a grant proposal from GA DNR this month to negotiate a funding amount and a timeline for the assistance.
The-independent environmental monitoring by the host and neighboring states is in addition to an extensive monitoring program currently conducted by SRS. The SRS environmental monitoring program is operated by Savannah River Nuclear Solutions, the DOE's management and operating contractor at SRS. Sampling includes surface water, sediments, crops, milk, fish, soil, vegetation, thermoluminescent dosimeters, and groundwater in both states. DOE also provides financial assistance to the City of Savannah, GA, for monitoring drinking water from the Savannah River and the state of South Carolina to conduct independent environmental monitoring program.
Additional information on the Department of Energy's Office of Environmental Management and the

110-4 The Browns Ferry Nuclear Plant is designed and maintained to meet stringent NRC safety requirements for nuclear power reactors. Safety-related equipment is regularly inspected, maintained, and replaced well before the end of its scheduled operating life. As discussed in Appendix J, Sections J.1 and J.2, of this *SPD Supplemental EIS*, continued assurance of the safe operation of these plants is the responsibility of the plant operator which operates under the independent regulatory oversight of NRC, including NRC regulations and license conditions. If the plant operator were to make a decision to use MOX fuel, it would be the joint responsibility of the plant operator and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely. For further discussion, refer to Section 2.5, Topics A and B, of this CRD.

Substantial progress has been made on construction of MFFF, with design more than 90 percent complete and construction more than 50 percent complete. DOE contracting strategies for surplus plutonium disposition activities are outside the scope of this *SPD Supplemental EIS*.

110-5 As described in Chapter 4 of this *SPD Supplemental EIS*, surplus plutonium disposition activities at SRS are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with other missions including cleanup and remediation activities at SRS. DOE intends to continue conducting the environmental restoration programs at SRS in parallel with its other missions.

Commentor No. 110 (cont'd): Bobbie Paul, Executive Director Georgia Women's Action for New Directions

GEORGIA WAND Women's Action for New Directions

Savannah River Site can be found at http://www.em.doe.gov or http://www.srs.gov.
-DOE-

SR-10-13

After two years of trying to make sure this program was, in fact, reinstated, it remains dormant and unfunded. DOE has now pulled away from its promise to restore this modestly funded monitoring program as well as its Agreement in Principle of 1989 that provided essential testing to better inform and protect Georgia citizens who live in close proximity to SRS.

This is just one example of a project that should be funded but, instead, we are suffering rfom a runaway budget for a MOX facility at the centerpiece of a newly imagined plutonium disposition plan, no confirmed customers for a new and untested product (i.e. MOX fuel), and, as of yet, no NRC license to operate this facility.

CART BEFORE THE HORSE SYNDROME

Women's Action for New Directions has been monitoring the MOX program for about 16 years and we are amazed that this financial boondoggle continues to receive traction and government money. Once again this fascination with MOX indicates an eagerness to acquire huge amounts of government funds to start another nuclear mission without thinking through the full implications of such an endeavor, including the creation and accumulation of more spent fuel / nuclear waste.

Spent MOX fuel will be thermally hotter than spent uranium fuel and will pose more problems for onsite storage and, if one is ever found, in any long term repository. The current draft document states that 2 to 16% more spent fuel will be created due to MOX use. If it is ever used in a commercial reactor. *110-6*

If MOX fuel is stored onsite it will require additional costs and storage requirements and, if a suitable repository is created, there will be cost increases to handle the additional heat of MOX spent fuel.

Lacking in substantive and realistic plans for MOX use is the knowledge that, before certifying MOX to run in a boiling water reactor, there would be a need for about 16 lead test assemblies to verify its performance at a boiling water reactor site like Brown's Ferry. This testing followed by post-irradiation examination and "license amendment requests" would go into effect before an NRC license could be issued for MOX commercial use.

Global Nuclear Fuel of Wilmington North Carolina, on August 8, 2012 ,made a presentation to the NRC sharing that they would need to begin testing in 2019 and that this testing might not end until 2025 - a full 6 years of testing before any consideration of a license. *110-7*

The current Draft SEIS fails to recognize the need for such a test and ignores special needs of this "new fuel form."

110-6 The nuclear reactor operator, with oversight by NRC, is responsible for used fuel storage at the reactor. As stated in Appendix I, Section I.2.2.4, of this *SPD Supplemental EIS,* "The amount of additional used nuclear fuel generated during the period when MOX fuel would be used in a reactor is estimated to increase by approximately 2 to 16 percent compared to the reactor continuing to use only LEU fuel during the period MOX fuel could be used at a reactor. DOE expects that increases of this magnitude would be managed within the reactor's normal planning for storage in its used storage pool or dry storage casks." Used MOX fuel produces more heat over the long term than the used LEU fuel currently used at the Browns Ferry and Sequoyah Nuclear Plants. The heat from MOX fuel would not affect the ability of TVA to safely store this fuel on site and would not prevent the MOX fuel from ultimately being placed in a geologic repository or other long-term storage facility. For further discussion, refer to Section 2.5, Topic B, of this CRD.

110-7 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

As summarized in Chapter 5, Section 5.3.3, of this *SPD Supplemental EIS*, use of MOX fuel in TVA or other reactors would require an amendment to the reactor's operating license in accordance with 10 CFR Part 50.

The information presented by Global Nuclear Fuels (GNF) was based on use of a GNF-designed fuel and did not address the potential use of AREVA-designed MOX fuel. AREVA has extensive data on the performance of reactor-grade MOX fuel in both BWRs and PWRs. As discussed above, additional information is available from the prior irradiation of MOX LTAs at the Duke Energy Catawba Nuclear Station.

Commentor No. 110 (cont'd): Bobbie Paul, Executive Director Georgia Women's Action for New Directions

GEORGIA WAND Women's Action for New Directions

FINAL NOTE

In the 1970s our country moved away from reprocessing under President Carter 's Executive Order of 1977 promising not to use weapons grade plutonium in commercial reactors. Now, the excuse for making MOX is that it is a good means of nuclear nonproliferation. We contend that is the most problematic means and that funds for nuclear nonproliferation would be much more wisely spent elsewhere - not poured into MOX. *110-8*

It is a good thing that we are committed to securing weapons grade plutonium and keeping it safe and out of the hands of potential terrorists. But the route that we have chosen for plutonium disposition that includes the MOX option is proving to be the most costly, short-sighted. and problematic.

Georgia WAND supports immobilization - a much more sensible way of keeping Pu out of reach. When a science based repository can be found, agreed on, and prepared, we hope that this deadly (and costly) material will be safely buried in glass/ceramic/ steel canisters (or something even better) to decay and rest without harming future generations. *110-9*

Until then we advocate for all disposition options to be placed back on the table and for an end to the highly speculative and risk-filled Pu disposition program that centers around the SRS MOX fuel fabrication facility and presented in the current Draft Supplemental EIS.

Open up the process again, pay attention to the 1996 Surplus Plutonium Disposition of Weapons-Usable Fissile Materials Programmatic EIS, admit technical challenges, and end requests for millions more for a project that is over budget and without an end to spending in sight.

As a nation, we must acknowledge when we're in a hole. MOX is one deep hole we find ourselves in as regards plutonium disposition. It is a hole that we keep digging hoping to find our way out. Digging, as we know, does not provide a way out The way out is to, first, stop digging.

Thank you for this opportunity to express the views of Georgia WAND.

Sincerely,

Bobbie Paul
Executive director

110-8 The Surplus Plutonium Disposition Program does not involve reprocessing of nuclear fuel. The use of MOX fuel is consistent with U.S. nonproliferation policy and international nonproliferation agreements. Use of MOX fuel in commercial nuclear power reactors would render surplus plutonium into a used fuel form that is not readily usable for nuclear weapons. For further discussion, refer to Section 2.4, Topic A, of this CRD.

As noted in the response to comment 110-2, cost is among the factors that may be considered by DOE. Decisions regarding funding for specific Federal programs and projects at LANL are outside the scope of this *SPD Supplemental EIS*.

110-9 DOE acknowledges the commentor's support of immobilization of surplus plutonium.

As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) evaluated numerous alternatives for disposition of surplus plutonium, including immobilization. DOE selected an approach for disposition of some of the plutonium declared surplus (68 FR 20134). As discussed in Section 2.2, Topic A, of this CRD, prior disposition decisions are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. One of the alternatives involves immobilization of this surplus plutonium followed by safe storage.

Commentor No. 111: Reverend Earl R. Rohleder

Dear Sachicko McAlhany:

I am very concerned about Department of Energy plans for surplus plutonium. No additional plutonium should be brought to Los Alamos National Lab (LANL), which has a cleanup mission and cannot meet seismic standards in the case of a severe earthquake. WIPP has a limited mission and does not have the capacity for all surplus plutonium. Stop MOX and immobilize and safely store plutonium until technically sound, suitable disposition facilities are available. *111-1*

Name Rev. Earl Rohleder

Address [redacted]

[redacted]

111-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

Commentor No. 112: Joe Martz

Statement of Dr. Joseph C. Martz, [redacted]

Good evening. My name is Joe Martz. I am a plutonium scientist at Los Alamos speaking tonight as a private citizen. I have spent a portion of my career engaged with the technical challenges of nuclear weapon dismantlement, specifically pits. I support the preferred alternative proposed here. A portion of the work under the preferred alternative will be conducted at Los Alamos, much of it by my colleagues. These men and women are exceptional and have devoted decades to ensuring the safe and environmentally responsible dismantlement of pits. Los Alamos uniquely possesses this expertise along with the facility and capability to ensure the safe recovery of plutonium from pits.

I also support the recommendation that excess plutonium be used in the production of mixed uranium/plutonium oxide fuels – known as MOX - for use in nuclear power production. I note that this is the only alternative among those proposed which truly destroys the plutonium, rendering it unusable for weapons.

I would like to offer one piece of constructive criticism of the supplemental EIS. In both your public presentation and in the EIS itself, you reference the risk due to radiation exposure in the former of latent cancer fatalities, or LCF. You state that the preferred alternative will result in between 0 and some small number of LCFs.

I have reviewed the EIS and carefully listened to public comments from prior hearings regarding latent cancer fatalities. I have obtained and read the supporting references for these statistics, and I suggest that your use of LCFs is taken out of context of the intended use. The LCF number is based upon a recommendation that for comparative risk assessment, a figure of 0.0006 cancer fatalities be used for each person-REM of radiation exposure. For illustrative purposes, this number can be used to calculate the number of LCFs due to naturally-occurring radiation in both New Mexico and the entire US. This number predicts approximately 560 cancer deaths per year in New Mexico due to natural, background radiation; and 60,000 cancer deaths per year in the US as a whole. These per year numbers compare to the predicted 0-1 public cancer deaths for the entire duration of the SPEIS.

Critically, the LCF statistics entail many assumptions and simplifications, a thorough discussion of which would take far more time than I have tonight. The source reference in the SPEIS recommends use of this number ONLY for comparative risk assessment. You have presented LCF statistics as absolute numbers. A more accurate statement would be that there is no appreciable difference in risk due to radiation exposure among all the listed alternatives, including the no-action alternative. Hence, the calculation of radiation exposure risk simply does not discriminate among the alternatives, and is thus not useful in helping to decide among choices on the basis of NEPA factors.

Thank you providing this opportunity to comment on a critical proposal of relevance to all of us here in New Mexico.

112-1

112-1 Appendix C, Section C.1, of this *Final SPD Supplemental EIS* was revised to include additional information regarding the concept of the risk factor, as well as the scientific basis of its use. Consistent with U.S. radiation protection practices, the linear non-threshold approach to LCF risk determination is used in the current analysis. As discussed in the background information in Appendix C, the risk factors that have been developed over the years are based on studies of epidemiological data from populations that have been exposed to radiation and, although many assumptions are connected to the derivation of the risk factors, they represent the best scientific estimates of impacts from radiation exposure. Thus, the values in this *SPD Supplemental EIS* provide a valid semi-quantitative assessment of the incremental potential impacts (beyond those from background radiation) of the alternatives, recognizing that the modeling assumptions employed are expected to result in conservatively high impacts.

Commentor No. 113: Tewa Women United, Environmental Health and Justice Group, and the Circle of Grandmothers

Tewa Women United
Po Box 397
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March 12, 2012

Ms. Sachiko McAlhany
SPD SEIS Document Manager
P.O. Box 2324
Germantown, MD 20874-2324;
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Email: spdsupplementaleis@saic.com

LCF's 0 (-1)
this is false.
These standards are based on an adult male, and does not protect those most vulnerable. ~~How can we [illegible] from this [illegible]~~

113-1

Scoping Comments on the Department of Energy's
Second Amended Notice of Intent to Modify the Scope of the Surplus Plutonium Disposition Supplemental Environmental Impact Statement

Tewa Women United (TWU), TWU's Environmental Health and Justice Group, and the Circle of Grandmothers hereby submit our most heartfelt truths /comments for the record on the Second Amended Notice of Intent to Modify the Scope of the Surplus Plutonium Disposition Supplemental Environmental Impact Statement, which was published in the Federal Register on January 12, 2012 (http://www.gpo.gov/fdsys/pkg/FR-2012-01-12/pdf/2012-445.pdf).

Thank you for including these comments in the record and for making sure that every point is addressed in the draft Supplemental Environmental Impact Statement (SEIS). Another NEPA step is critical for this process to be called public involvement. We need to have the authority to continue responding to responses to our final comments in a way that encourages ongoing communication, so that if further dialogue or rebuttal is necessary we can reply in a way that can still be put on official record. We would also like to add that the time allowed for public comment be extended and respectful of decision-making that can impact future generations. 113-2

•The risk and harm to cultural and re-spirited dispositioning of life givers and uncertainties of expanded pit processing in the PF-4 facility at Los Alamos must 113-3

1

113-1 Appendix C, Section C.1, of this *Final SPD Supplemental EIS* discusses the risk factor of 0.0006 LCF per person-rem. The appendix was revised to include additional background information on the derivation of the risk factor of 0.0006, which is reasonable for a population of approximately equal numbers of males and females and an age distribution such as that in the United States.

113-2 DOE conducted a substantial outreach program in preparation of the *Draft SPD Supplemental EIS* as described in Chapter 1, Section 1.6, Public Involvement, of this *Final SPD Supplemental EIS* and in Section 1 of this CRD. The program included soliciting public comments about how DOE should develop the scope of this *SPD Supplemental EIS* and conducting scoping meetings at 8 locations leading to preparation of the *Draft SPD Supplemental EIS*; holding 7 public hearings on the draft EIS, including 3 public hearings in the areas most likely to be affected by the proposed surplus plutonium disposition activities at LANL: Los Alamos, Santa Fe, and Española; and conducting a 75-day comment period on the *Draft SPD Supplemental EIS*. DOE invited Native American tribes, other Federal agencies, state governments, and the public to provide comments during the comment period and at the public hearings held in Alabama, New Mexico, South Carolina, and Tennessee. All scoping comments and comments on the draft that DOE received were considered in preparing this *Final SPD Supplemental EIS.* In response to multiple requests for more time to review and comment on the *Draft SPD Supplemental EIS*, DOE extended the originally scheduled comment period by an additional 15 days through October 10, 2012. In response to requests for additional public hearings, DOE added a public hearing in Española, New Mexico, held on September 18, 2012, to the six meetings DOE had initially scheduled. DOE continues its long-standing practice of engaging area tribal authorities through several mechanisms, including accords with four pueblo governments (Cochiti, San Ildefonso, Jemez, and Santa Clara) whose lands are adjacent to or near LANL. In addition, DOE maintains a working relationship with member tribes of the Eight Northern Indian Pueblos Council, the All Indian Pueblo Council, and others as relevant to the programs and activities at LANL.

113-3 As described in Chapter 4 and summarized in Chapter 2, Table 2–3, of this *SPD Supplemental EIS*, environmental impacts are generally expected to be minor, and there would be little offsite impact on the public from normal operations of surplus plutonium disposition facilities at LANL. Analyses presented in Chapter 4, Section 4.1.7.6, indicate that no impacts on cultural resources are expected because any construction would likely take place on previously disturbed land. DOE appreciates the viewpoints of local tribes and openly invites additional analysis that

Commentor No. 113 (cont'd): Tewa Women United, Environmental Health and Justice Group, and the Circle of Grandmothers

be addressed in a sacred place of cyclical time.
For reconstitution of sacred elemental time, an internal assessment of risk of harm must be allowed to happen within the timeframe of ancestral wisdom. Based upon the recent fires that have occurred and the destruction of eco-sustenance and the rhythmic patterns of our ancestral ways, our spirited breath of life has been traumatized by the unstable nature of the plutonium-based war weapons industrial complex. What measureable amount of trauma can be realized? You must allow us Indigenous Peoples time to do our own analysis.

113-3 cont'd

The risk and harm to our Indigenous human rights as stated in the Declaration of the Rights of Indigenous peoples need to be addressed.

The United Nations Declaration on the Rights of Indigenous People needs to be recognized and adhered to when conducting decisions that impact the Native populations of our country. Native peoples have already suffered at the hands of environmental racism and institutional policies that are a continuation of the genocide enacted on Native American Peoples. Too often, industries that no one else would allow in their local environment are proposed as being appropriate adjacent to Native communities. This has to stop.

113-4

The following Articles from the **United Nations Declaration on the Rights of Indigenous Peoples** need to be considered and honored in regards to decisions around the Surplus Plutonium Disposition:

Article 7: "1) Indigenous peoples have the rights to life, physical and mental integrity, liberty, and security of person. 2) Indigenous peoples have the collective right to live in freedom, peace and security as distinct peoples and shall not be subjected to any act of genocide or any other act of violence…" The expansion of LANL in any form is a continuation of the culture of violence that has impacted our physical, mental, and spiritual well-being. Instead, we hope that LANL will refocus efforts on legacy waste cleanup, health studies, land revitalization & renewal, and quality medical care of downwind or downriver communities. This is particularly important because LANL is located above a seismically active zone. Immediate funding for health studies and enhanced health care is needed in communities adjacent to nuclear industries. It is vital to communities' ability to move forward and take steps to heal themselves and their environment.

113-5

may help demonstrate how activities at LANL impact the cultural practices and lifestyles of indigenous populations in the region. DOE has responded to all tribal viewpoints voiced throughout the SEIS process as the specificity of the comments permitted.

113-4 The United States supports the United Nations Declaration on the Rights of Indigenous People (Declaration), which, while not legally binding or a statement of current international law, has both moral and political force. It expresses both the aspirations of indigenous peoples around the world and those of nations seeking to improve their relations with indigenous peoples. Most importantly, it expresses aspirations of the United States that this country seeks to achieve within the structure of the U.S. Constitution, Federal laws, and international obligations, while also seeking, where appropriate, to improve current laws and Government policies. To this end, Federal agencies continue to be informed by the Declaration as they implement policies and develop new initiatives together with tribal leaders.

113-5 Decisions regarding the United States' nuclear weapon and energy policies, as well as funding for major Federal programs and LANL missions, such as cleanup activities at LANL or funding for medical monitoring and healthcare, are outside the scope of this *SPD Supplemental EIS*.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities at LANL are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and should not interfere with cleanup and remediation activities. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions.

Appendix F of this *SPD Supplemental EIS* includes more-detailed information on the environmental impacts and human health risks of expanded pit disassembly and conversion processes at PF-4. Appendix D, Sections D.1.5.2.11 and D.2.9, provide more-detailed information on accidents at PF-4, including consideration of natural phenomena hazards such as flooding, earthquakes, and volcanic eruptions.

Commentor No. 113 (cont'd): Tewa Women United, Environmental Health and Justice Group, and the Circle of Grandmothers

Article 11: "1) Indigenous Peoples have the right to practice and revitalize their cultural traditions and customs. This includes the right to maintain, protect and develop the past, present, and future manifestations of their cultures, such as archaeological and historical sites, artifacts, designs, ceremonies, technologies and visual and performing arts and literature." LANL is located on our ancestral homelands amidst the numerous cultural sites located on the Jemez Plateau. We need to begin to heal our homelands that have been desecrated by the for-profit nuclear weapons complex. To do this would require a freeze on further production, contamination and environmental releases, and focus on restorative technologies and research. It is vital that monies and energy are spent on transforming the work of the military into a true non-nuclear, sustainable, "green" energy economy. It is our human right to live in accordance with our shared values and beliefs. These beliefs include balance, care and reciprocity with our homelands, and responsibility for future generations. This means that we are deserving of job options and an economic base that does not conflict with our spiritual or cultural beliefs. As land-based communities, there is no separation between the health of our people and the health of our environment. The various pathways of toxins into our bodies and the subsequent harm are exponential from the multiple exposures over time. Our increased exposure and alternative pathways for toxins need to be addressed and factored in to current environmental exposure policies and regulations.

113-5 cont'd

113-6

Article 29: "1) Indigenous peoples have the right to the conservation and protection of the environment and the productive capacity of their lands or territories and resources. States shall establish and implement assistance programs for Indigenous peoples for such conservation and protection, without discrimination." The quality of Pueblo and private land in surrounding impacted communities is diminished, and our continued existence in this place is threatened when choices are being made for us that place populations adjacent to nuclear weapons production, disposal, research, transportation and storage. The impacted communities need support and decision-making power as work begins towards healing our lands and health.

113-7

Article 29: "2) States shall take effective measures to ensure that no storage or disposal of hazardous materials shall take place in the lands or territories of indigenous peoples, without their free, prior, and informed consent." Community meetings need to be held in each Pueblo and connecting river community in partnership with tribal governments, as well as with heirs of land

113-8

3

113-6 An element of all of the alternatives evaluated in this *SPD Supplemental EIS* is the operation of PF-4 at LANL for pit disassembly and conversion of plutonium to an oxide. Discharges of radiological emissions through the facility stack would essentially be the only discharges to the environment. The analysis shows that inhalation is the most important pathway and accounts for more than 90 percent of the dose. DOE has used the best available information to assess the potential impacts from the proposed activities and alternatives to the "land-based communities" to which the commentor refers.

Chapter 4, Section 4.1.6, of this *SPD Supplemental EIS* analyzes the environmental justice impacts of the options for pit disassembly and conversion at LANL and concludes that Native Americans living near LANL would not be exposed to elevated risks compared to nonminority populations living in the same area from the proposed activities, and that the risks associated with these activities are small. No LCFs are expected among the offsite population, including minority and low-income populations, as well as Native American tribes, as a result of the normal operations of pit disassembly and conversion facilities at LANL.

This *SPD Supplemental EIS* includes an analysis for a special pathways receptor that was developed for the 2008 *LANL SWEIS* (DOE 2008) using the best information available to DOE to reflect exposures that could result from traditional living habits, including subsistence consumption of native vegetation (pinyon nuts and Indian Tea [Cota]), locally grown produce and farm products, groundwater, surface water, fish (game and nongame), game animals, other foodstuffs, and incidental consumption of soils and sediments (on produce, in surface water, and ingestion of inhaled dust); absorption of contaminants in sediments through the skin; and inhalation of plant materials. These pathways are in addition to the meat, milk, produce, water, and sediment consumption reflected in the "offsite resident" pathway assumption. The analysis concludes that persons living near LANL who practice traditional living habits would receive a higher dose than the rest of the populations living in the same area, but the risks associated with the exposures from LANL would be small. For further discussion, refer to Section 2.6, Topic A, of this CRD.

113-7 See the response to comment 113-2.

113-8 Storage or disposal of hazardous materials or waste on tribal lands is not proposed under any of the alternatives; waste storage or disposal would be within existing waste management systems and would be done in accordance with appropriate permits.

Commentor No. 113 (cont'd): Tewa Women United, Environmental Health and Justice Group, and the Circle of Grandmothers

grant communities and all acequia parciantes. *113-8 cont'd*

Article 29: "3) States shall also take effective measures to ensure, as needed, that programmes for monitoring, maintaining and restoring the health of indigenous peoples, as developed and implemented by the peoples affected by such materials, are duly implemented.

Article 30: "1) Military activities shall not take place in the lands or territories of Indigenous peoples, unless justified by a relevant public interest or otherwise freely agreed with or requested by the Indigenous peoples concerned. 2) States shall undertake effective consultations with the Indigenous peoples concerned, through appropriate procedures, and in particular, through their representative institutions, prior to using their lands or territories for military activities.

Article 31: "1) Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge, and traditional cultural expressions, as well as the manifestations of their sciences, technologies, and cultures, including human and genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs, sports, and traditional games and visual and performing arts. They also have the right to maintain, control, protect, and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional, cultural expressions.

Given the long-term and ongoing complexity of the Surplus Plutonium Disposition in this country, it is crucial that these factors are also considered:

1. There are no nuclear power plants in New Mexico, and given the high risks and expense of transporting Surplus Plutonium back to LANL it does not make sense that our people need to deal with this issue when there are greater priorities. Expansion or installation of the essential elements required for providing a pit disassembly and/or conversion capability at Los Alamos is not feasible, necessary or wanted here. We are strongly opposed to any activities that would increase expansion of LANL facilities, and would only contribute to the extensive harm already enacted upon our environment and families by LANL legacy waste contamination and current activities. Our communities deserve and are in critical need of legacy waste clean up, and the protection, preservation, and revitalization of our natural resources. *113-9*

4

DOE invited Native American tribes, other Federal agencies, state governments, and the public to provide comments at seven public hearings held in Alabama, New Mexico, South Carolina, and Tennessee. DOE also continues its long-standing practice of engaging Los Alamos-area tribal authorities through several mechanisms, including accords with four pueblo governments (Cochiti, San Ildefonso, Jemez, and Santa Clara) whose lands are adjacent to or near LANL. In addition, DOE maintains a working relationship with member tribes of the Eight Northern Indian Pueblos Council, the All Indian Pueblo Council, and others as relevant to the programs and activities at LANL. See the response to comment 113-2 for further discussion.

113-9 As discussed in Chapter 1, Section 1.7, of this *SPD Supplemental EIS*, pits are currently stored at the Pantex Plant. In the *SPD EIS* (DOE 1999), DOE analyzed and dismissed locating pit disassembly and conversion activities at the Pantex Plant (see 65 FR 1608) because it possesses neither the experience nor the infrastructure needed to support plutonium processing. DOE is not revisiting that dismissal. DOE is reconsidering options for pit disassembly and conversion capabilities only at locations with existing plutonium processing capabilities. Those locations are LANL and SRS; see Appendix B of this *SPD Supplemental EIS*. Further, in developing the proposed action and reasonable options for pit disassembly and conversion and surplus plutonium disposition, DOE has determined that transportation of plutonium materials between sites cannot be avoided. Therefore, DOE has analyzed the transportation risks for all of the alternatives proposed in this *SPD Supplemental EIS*, including the threat of theft and diversion of radioactive materials. Impacts to the public from transportation of radioactive material and waste are presented in Chapter 4, Section 4.1.5, with additional information provided in Appendix E. As shown in Chapter 4, Table 4–22, under all alternatives, the radiological risks to the public from shipments of radioactive materials would be comparable, with no LCFs expected in the transportation crew or general public along the transportation routes.

Commentor No. 113 (cont'd): Tewa Women United, Environmental Health and Justice Group, and the Circle of Grandmothers

2. Operations to disassemble PITS should happen where they are currently located and stored. We are against unnecessary transportation and re-location of radioactive materials. These materials are not wanted in our backyards where they will only contribute and add to the negative cumulative impacts on our Peoples.

113-9 cont'd

Assembly and/or conversion capability at Los Alamos is not feasible, necessary or wanted here. We are strongly opposed to any activities that would increase expansion of LANL facilities, and would only contribute to the extensive harm already enacted upon our environment and families by LANL legacy waste contamination and current activities. Our communities deserve and are in critical need of legacy waste clean up, and the protection, preservation, and revitalization of our natural resources.

We are in solidarity with the following key points given by the ANA (Alliance for Nuclear Accountability and SACE (Southern Alliance for Clean Energy) :

"By the Department of Energy's (DOE) own admission, the EIS process for which comments are being sought began five years ago. As this process has faced continual delays, it reveals that lack of clarity and direction that persists with the troubled plutonium disposition program. And, even more telling, the NEPA process for the overall plutonium disposition program began in June 1994, with the Storage and Disposition of Weapons-Usable Fissile Materials Programmatic Environmental Impact Statement (SPEIS). In the subsequent 18 years not a single gram of plutonium, beyond small amounts of test material, has been dealt with via the so-called "preferred alternative" - use of the controversial mixed oxide fuel (MOX) in nuclear power reactors. This program stands as a monument to DOE's ineptitude in pursuing a misguided mission that has fallen prey to manipulation by special interests such as the French government-owned company AREVA. What was once a non-proliferation program has sadly devolved into a program, which now has as its main goal to financially benefit contractors working on the MOX program at the Savannah River Site (SRS)."

• MOX program costs are out of control and impacting DOE non-proliferation programs and critical SRS clean-up operations

113-10

113-10 Funding decisions and appropriations for specific major Federal programs and projects, such as the MOX fuel program and cleanup activities, are outside the scope of this *SPD Supplemental EIS*. DOE expects that activities related to surplus plutonium disposition would result in minimal disruption of cleanup and remediation activities at SRS.

Commentor No. 113 (cont'd): Tewa Women United, Environmental Health and Justice Group, and the Circle of Grandmothers

•Plutonium fuel (MOX) as the "preferred alternative" for plutonium disposition must be reconsidered

It is way past logical time to rethink and revisit the decision to pursue MOX fuel as a feasible, affordable route for plutonium disposition. It remains unclear if the MOX program needs to be abandoned, "given both the lack of reactors to test and use MOX and the absolute inability of DOE to outline the operational schedule of the MOX plant now under construction at the Savannah River Site (ANA, SACE)." *113-11*

MOX will still burn a hole in limited budgets. Language of waste of time, waste of money and waste of lives with disguised "preferred alternative" as a feasible, affordable route is only to reclaim a source of business money for unscrupulous, war weapons production industries. We cannot stand in the face of the harm we are experiencing as Peoples and be subject to any more illogical reasoning. Science needs to be balanced with morality, aligned to cultural values of the lands' inhabitants and extended family of caretakers. In the mean time, we who live downwind/downstream are dying from the toxins generated, and we can only type and weep. *113-12*

[The processing of weapons-grade plutonium and placing into MOX fuel, which then is introduced into commerce, has been and remains a proliferation concern. MOX use by the U.S. continues to send the wrong message internationally – that introduction into commerce of weapons-usable materials, and accompanying technologies, is sound from a nuclear nonproliferation perspective. For proliferation reasons alone, the MOX program should be canceled. (ANA, SACE).] *113-13*

To cancel a MOX program will save lives, money and ensure generations of healthy children when done simultaneously with clean up of existing waste and contaminated sites. We envision a non-nuclear industry, rooted in natural sustainable, less impactful energy. In addition, how can a department who does business for profit, in this case the Department of Energy, have the sole power to decide what to do with our taxpayer money? *113-14* *113-15*

[DOE is pursuing MOX use in nuclear power reactors owned by the Tennessee Valley Authority (TVA) which use pressure-suppression systems that causes additional safety concerns. TVA has presented the possibility of testing and using

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113-11 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In the Draft *SPD Supplemental EIS*, the MOX Fuel Alternative was DOE's Preferred Alternative for surplus plutonium disposition. DOE's preferred option for disposition of surplus non-pit plutonium that is not suitable for MOX fuel fabrication was disposal at WIPP. DOE's preferred option for pit disassembly and conversion of surplus plutonium metal, regardless of its origins, was to use some combination of facilities at TA-55 at LANL and K-Area, H-Canyon/HB-Line, and MFFF at SRS, rather than to construct a new stand-alone facility.

In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

In April 2014, DOE's Plutonium Disposition Working Group issued its report, *Analysis of Surplus Weapon-Grade Plutonium Disposition Options* (DOE 2014), which assesses options that could potentially provide a more cost-effective approach for disposition of surplus U.S. weapons-grade plutonium and provides the foundation for further analysis and independent validation.

As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS.* This *SPD Supplemental EIS* evaluates alternatives, including immobilization, for disposition of an additional 13.1 metric tons (14.4 tons) of surplus plutonium.

Nonetheless, DOE does not believe that the current status of the MOX program, with respect to customers or schedule, makes the MOX Fuel Alternative an unreasonable alternative for purposes of this *SPD Supplemental EIS*. The need for additional testing of MOX fuel in U.S. commercial nuclear power reactors will be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

113-12 See the response to comment 113-10.

113-13 The purpose of the Surplus Plutonium Disposition Program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus

Commentor No. 113 (cont'd): Tewa Women United, Environmental Health and Justice Group, and the Circle of Grandmothers

MOX in the three Browns Ferry boiling water reactors (BWRs) located near Athens, Alabama and the two Sequoyah ice condenser pressurized water reactors (PWRs) located west of Chattanooga, Tennessee. ANA, SACE]

We do not recommend this use; we condemn it.

[The aging and historically troubled Browns Ferry BWRs are of the GE Mark I containment design, the exact same design as the reactors, which exploded and melted down in Fukushima, Japan. MOX poses additional safety concerns for the operation of these reactors, the design of which remains a threat to public health and safety. While the Browns Ferry reactors have operating licenses extended to 60 years, it is unclear at this point in time if they will be allowed to reach a 60-year operational period given on-going safety concerns. ANA, SACE] *113-16*

Why extend the time of preemptive death by lethal injection if MOX is already a known lethal toxic presence?

•Urgent need for a comprehensive study on options to manage plutonium as waste is clear *113-17*

There is still reason for life to continue with other healing options. As with any influences of control gone beyond the comprehension of man- who manipulated the system, Lets help nature take back its course of existence. There is no shame in admitting it was mismanaged and a mistake from the start.

•Details of the schedule for use of plutonium feedstock in the MOX plant at the Savannah River Site must be discussed *113-18*

•DOE must reveal the plans for the required testing and production of MOX fuel and MOX "batch" use

•DOE must fully explain what it means by analysis of MOX use in a "generic reactor…for any additional future potential utility customers." *113-19*

•The risks and uncertainties of expanded pit processing in the PF-4 facility at Los Alamos must be discussed in detail *113-20*

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plutonium in the United States in an environmentally sound manner to ensure that it can never again be readily used in nuclear weapons. Although unirradiated (fresh) MOX fuel may not be sufficiently radioactive to be self-protecting, fresh MOX fuel is not an attractive target because it is not readily usable for a nuclear device or dirty bomb. Plutonium in MOX fuel is blended with approximately 20 times as much depleted uranium as plutonium and is formed into ceramic pellets encased in metal cladding. Moreover, the MOX fuel is contained in large, heavy fuel assembly structures that would make theft extremely challenging. Without substantial physical dismantling and chemical separation, the plutonium in the MOX fuel cannot be used in a nuclear bomb. Once the fuel has been irradiated in a reactor, it would be highly radioactive, and recovering the residual plutonium would be impossible without highly specialized equipment.

113-14 See the response to comment 113-5.

113-15 See the response to comment 113-10.

113-16 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. As summarized in Chapter 5, Section 5.3.3, of this *SPD Supplemental EIS*, use of MOX fuel in TVA or other reactors would require an amendment to the reactor's operating license in accordance with 10 CFR Part 50 that must demonstrate that the proposed change would not involve an unreviewed environmental or safety questions. Chapter 4 and Appendix I address reactor operations using a partial MOX fuel core. The analyses performed for this *SPD Supplemental EIS* show that the potential impacts of these operations are not expected to change substantively from those for operations using a full LEU fuel core.

Appendix J, Section J.3.3.3, of this *SPD Supplemental EIS* describes the NRC recommendations developed in response to the March 11, 2011, accident at the Fukushima Dai-ichi Nuclear Power Station in Japan and the subsequent actions TVA has taken to further reduce the likelihood and severity of accidents at its nuclear plants. For further discussion, refer to Section 2.5, Topic C, of this CRD.

113-17 In this *SPD Supplemental EIS*, three of the four disposition options include disposal of some or all of the 13.1 metric tons (14.4 tons) of surplus plutonium as waste: (1) immobilization (see Chapter 2, Section 2.2.1); (2) vitrification with HLW (see

Commentor No. 113 (cont'd): Tewa Women United, Environmental Health and Justice Group, and the Circle of Grandmothers

[Risks related to criticality, vault storage, cost and schedule, secure shipping and handling, waste handling, staffing, worker dose, seismic risks and impacts to other programs are among the possible risks that must be discussed concerning production of plutonium feedstock in the PF-4 facility at Los Alamos National Lab (LANL). Given recent attention to seismic risks at the PF-4 facility, a new technical basis for seismic impacts must be prepared for the facility. Among other things, this must address risks associated with handling and processing larger amounts of plutonium for the MOX program, especially in the more dispersible oxide form, and what would happen if an earthquake occurred during all phases of plutonium preparation operations.

Risks associated with ramping up production of plutonium feedstock using the Advanced Recovery and Integrated Extraction System (ARIES) equipment must be discussed given that this process was never envisaged to be a production-scale facility. The SEIS must discuss risks associated with ARIES contingency plans if higher throughput is necessitated to provide feedstock for the MOX plant in the eventuality that the H-Canyon and other SRS facilities would not be available for pit processing.

The SEIS must discuss the types of pits that would be processed in the PF-4 facility and discuss the risks and uncertainties associated with processing them. The SEIS must discuss specifics of processing pit families 1, 2, 3 and 4 and the amounts of plutonium and HEU in each type of pit as well as the associated waste streams. Any reports prepared by the NNSA's Office of Fissile Materials Disposition concerning expanded pit processing at LANL must be discussed in and attached to the draft SEIS.

An assessment must be made if the LANL Site-Wide Environmental Impact Statement (SWEIS) will need modification given any new pit disassembly mission at the site. ANA, SACE]

113-20 cont'd

•DOE must proceed cautiously in the disposal of non-pit plutonium in the Waste Isolation Pilot Plant

[The only way that disposal of plutonium in the Waste Isolation Pilot Plant (WIPP) can be considered is if the requisite WIPP Waste Acceptance Criteria (WIPP WAC) and other regulatory requirements are met and if there is sufficient volume in

113-21

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Section 2.2.3); and (3) disposal as CH-TRU waste at WIPP (see Section 2.2.4). All of these options are considered reasonable for dispositioning the surplus plutonium. The technology needed to implement any of these options is well understood and has been used to varying degrees for similar activities. In addition to these three options, the disposition of surplus plutonium as MOX fuel is considered a reasonable option, requiring a full evaluation of potential environmental impacts as required by NEPA. As summarized in Section 2.4, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) evaluated numerous other alternatives for disposition of surplus plutonium.

113-18 A detailed program schedule is not required to perform the environmental impacts analysis in this *SPD Supplemental EIS*. The actual production schedule for MFFF would depend on factors such as license conditions and the specific contracts received from customers to manufacture specific types of MOX fuel. As shown in Appendix B, Table B–2, MFFF is estimated to operate for 21 to 24 years, depending on the amount of surplus plutonium to be fabricated into MOX fuel. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process.

113-19 From a technical perspective, DOE believes that MOX fuel could potentially be used in any domestic commercial nuclear power reactor. Because DOE projects that MOX fuel could be made available for use in reactors other than the Sequoyah and Browns Ferry Nuclear Plants, these other, unspecified, domestic commercial nuclear power reactors are analyzed as part of the "generic reactor" analysis in this *SPD Supplemental EIS* (see Appendix I, Section I.2).

113-20 The current pit disassembly and conversion operations ongoing at LANL are performed in accordance with previous DOE NEPA analyses and decisions including the 2008 *LANL SWEIS* (DOE 2008) and ROD (73 FR 55833). This *SPD Supplemental EIS* evaluates the impacts from potentially expanding these existing operations. Appendix B, Section B.2.1, of this *SPD Supplemental EIS* describes pit disassembly and conversion at PF-4 at LANL under the 2-metric-ton (2.2-ton) option, which is reflective of current operations, and the expanded facility (35-metric-ton [38.6-ton]) option, including the amounts of materials processed and the throughputs. As discussed in Section B.2.1, the Advanced Recovery and Integrated Extraction System (ARIES) line at PF-4 is operating at demonstration capacity (based on single-shift operation) to produce 2 metric tons (2.2 tons) of plutonium oxide as early feed for MFFF. Section B.2.1 also describes the upgrades

WIPP, as specified by law.

We note that any decision to ship contaminated non-MOXable plutonium to WIPP is an affirmation that disposal of plutonium utilizing the "spent fuel standard" – by which plutonium is placed in a matrix with a radiation barrier – is essentially dead. The SEIS must thus discuss this shift in the guiding philosophy that was originally behind the plutonium disposition program and why a decision was made to eliminate the "spent fuel standard" as the approach to plutonium disposal. Elimination of the "spent fuel standard" opens the door to cheaper disposal options that do not necessitate a radiation barrier. But this approach may also result in more proliferation concerns. *113-21 cont'd*

Given that the MOX program is in trouble and well could fail and that DOE has so far refused to prepare an alternatives disposition study, the possibility of disposing of all surplus weapons plutonium in WIPP may arise. The possibility of such a troubling approach raises a host of legal, regulatory and environmental concerns that must be discussed in the SEIS. (ANA, SACE)]

•Details of processing plutonium at facilities at the Savannah River site must be discussed in details

Please accept these comments regarding the modification of the Surplus Plutonium Disposition Supplemental Environmental Impact Statement as part of the official record for public comments, and respond in a meaningful/dialogical manner. Too often, the process for public comment is not done in a way that encourages creative dialogue and solutions amongst those impacted, nor is it inclusive of local populations and their unique expertise. Given that the Indigenous Peoples of this land are knowledgeable experts at being caretakers and stewards of their ancestral land.

Pueblos and Acequia communities should be closely included in the process in honor of government-to-government relations, as well as any other community within a 100-mile radius from LANL. Pueblo and local community members need to have a voice and place at the table when it comes to decisions that will directly affect the long-term sustainability and access to our sacred Jemez Plateau and other culturally significant sites. It is with that in mind that we request additional community meetings, and an extension for public comment on this issue. Public *113-22*

to the current ARIES line that would be needed to accommodate an increase in throughput. The increases in throughput would be accomplished by using existing processing rooms in PF-4. Appendix D, Section D.1.5.2.11, describes the accidents considered at LANL in relation to the proposed surplus plutonium disposition activities. The accident analysis has been updated to include information from LANL's latest safety analyses, including revised seismic-related accident impacts for both the base case and the higher-throughput case.

The impacts of processing all pit types that have been declared surplus have been included in the evaluation. For further discussion, refer to Section 2.3, Topic A, of this CRD.

113-21 As discussed in Chapter 2, Section 2.2.4, all plutonium being considered for potential disposal at WIPP would have to meet the WIPP waste acceptance criteria before it could be sent there for disposal. As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Chapter 2, Section 2.4, of this *SPD Supplemental EIS*, and Section 2.2, Topic B, of this CRD.

DOE believes that the alternatives analyzed in this *SPD Supplemental EIS* meet the goals of the Spent Fuel Standard. The Spent Fuel Standard is a term, coined by the National Academy of Sciences and modified by DOE, denoting the main objective of alternatives for the disposition of surplus weapons-usable plutonium: that such plutonium be made roughly as inaccessible and unattractive for weapons use as the much larger and growing stock of plutonium in civilian spent (used) nuclear fuel. Removal of WIPP from further analysis in the *Storage and Disposition PEIS* (DOE 1996) was not based on the Spent Fuel Standard. WIPP was not considered for further analysis in the *Storage and Disposition PEIS* because disposal of 50 metric tons (55 tons) of surplus plutonium would exceed WIPP's disposal capacity.

113-22 See the response to comment 113-2.

Commentor No. 113 (cont'd): Tewa Women United, Environmental Health and Justice Group, and the Circle of Grandmothers

meetings need to occur on land that is non-tribal, yet close to impacted communities, to ensure that our free speech is not compromised. Meetings need to be planned in collaboration with interested NGO's, and meeting formats discussed.

113-22 cont'd

There is no place for nuclear industry, whether for energy or weapons, around human populations or anywhere where life exists. The nature of this issue is complex in that while disarmament of nuclear weapons is a step in the right direction, we are now faced with the dilemma of what to do with waste that is extremely toxic, and yet needs to be disposed of in a way that utilizes the precautionary principal of enacting zero to minimal harm on humans and the environment which we depend on for survival and our cultural, sustainable life-ways.

113-23

Respectfully,

Kathy Sanchez, Grandmother, Tewa Women United(TWU), Director of Environmental Health and Justice

Beata Tsosie, TWU, Environmental Health and Justice

Luis Peña, Community Member, TWU Environnmental Health and Justice

Teresa Chavez, TWU, Environmental Health and Justice

Everitt Rael, Community Member, TWU, Environmental Health and Justice

Lily Martinez-Rael, Community Member, TWU, Environmental Health and Justice

Adam Ford, Community Member, TWU, Environmental health and Justice

Lisa Putkey, Think Outside the Bomb (TOTB), TWU, Environmental Health and Justice

Robert Chavez, TOTB, TWU, Environmental Health and Justice

113-23 See the response to comment 113-5.

Commentor No. 114: Tom Clements, Nonproliferation Policy Director Alliance for Nuclear Accountability

Alliance for Nuclear Accountability

A national network of organizations working to address issues of nuclear weapons production and waste cleanup

Comments by Tom Clements, Alliance for Nuclear Accountability

Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement

DOE Hearing in Chattanooga, TN – September 11, 2012 - and Tanner, AL – September 13, 2012

In addition to a host of technical, cost and public relations challenges, the Tennessee Valley Authority faces a host of difficulties in meeting the criteria that it has outlined that it must meet for considering the testing and use of experimental MOX fuel.

MOX made from weapons-grade plutonium has never been used commercially in any reactor worldwide and never been tested in any "boiling water reactor" (BWR) such as Browns Ferry. MOX was tested in a "pressurized water reactor" owned by Duke Energy for a period of time but the test was halted before its completion. Claims by TVA, DOE or the plutonium company AREVA that weapons-grade MOX have been used and can be licensed without lengthy testing are simply false. *114-1*

TVA has stated that:

"TVA is willing to consider using mixed oxide fuel if it meets three criteria: operationally and environmentally safe; economically beneficial to TVA customers; licensed by the Nuclear Regulatory Commission (NRC)." (TVA fact sheet on MOX, July 24, 2012)

Meeting these criteria poses a series of hurdles for those in TVA who are interested in MOX fuel. TVA management and the TVA board should exercise sound judgment and reject further consideration of experimental MOX fuel.

TVA Must Choose as its "Preferred Alternative" the "No-MOX Option"

In the draft environmental document before us, it is stated that "*The TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose.* " (Summary, page S-iv) This is in conflict with DOE's "preferred alternative" to provide MOX fuel for testing and use in TVA reactors. But how under the National Environmental Policy Act (NEPA) can one U.S. Government agency legally dictate to another what to do? This simply can't comport with the law and must not be allowed.

TVA must not bow to pressure by internal MOX advocates or to the DOE and be forced to make a decision before the final SEIS is issued in January 2013 that it will pursue MOX. Too much is at stake for TVA to come to a hasty decision that could have a host of negative ramifications for both TVA and its customers. *114-2*

TVA must stick with the "preferred alternative" presented in the draft SEIS and not decide to test or use MOX fuel.

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114-1 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

It is important to note that, whether using reactor- or weapons-grade plutonium, the total quantity of fissile plutonium within a fuel element is adjusted so that it represents only a small fraction of the material within the fuel rod (currently planned to be approximately 4 to 5 percent fissile plutonium within each MOX fuel rod).

As summarized in Chapter 5, Section 5.3.3, of this *SPD Supplemental EIS*, use of MOX fuel in TVA or other reactors would require an amendment to the reactor's operating license in accordance with 10 CFR Part 50.

114-2 The disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts as required by NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors, including, but not limited to five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants. These reactors are explicitly considered because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Section I.1). However, the MOX Alternative also analyzes irradiation in generic commercial nuclear reactors including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2), and is not dependent on TVA participation.

Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In the *Draft SPD Supplemental EIS*, the MOX Fuel Alternative was DOE's Preferred Alternative for surplus plutonium disposition. DOE's preferred option for disposition of surplus non-pit plutonium that is not suitable for MOX fuel fabrication was disposal at WIPP. DOE's preferred option for pit disassembly and conversion of surplus plutonium metal, regardless of its origins, was to use some combination of facilities at TA-55 at LANL and K-Area, H-Canyon/HB-Line, and MFFF at SRS, rather than to construct a new stand-alone facility.

Commentor No. 114 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

Likewise, DOE, if it is able to issue a final SEIS, must not then go on and issues a "Record of Decision" (ROD) establishing the policy of MOX use by TVA. Issuance of a ROD in the winter of 2013 will be at best premature and to be questioned under NEPA.

114-2 cont'd

MOX Will Require Lengthy Testing in Browns Ferry, Constrained in Sequoyah

In an August 8, 2012 presentation to the Nuclear Regulatory Commission (NRC), Global Nuclear Fuel (GNF) – the company based in Wilmington, NC, which provides uranium fuel to Browns Ferry – outlined the testing needed to certify MOX in a "boiling water reactor" (BWR).

Under the initial GNF plan, the company indicated that a test of MOX would begin in 2019 and end in 2025, which would mean a test for the regular three fueling cycles of two years each, or 6 years. GNF would supply fuel assembly hardware to AREVA, which would operate the MOX plant (IF it can obtain a license and operate as designed), and the MOX assemblies would e made to GNF specifications for its BWR customer – Browns Ferry.

The Draft SEIS totally ignores the necessity of this test of what the NRC calls a "new fuel form."

Such a lengthy test of "lead use assemblies" has severe impacts on the operational schedule of the MOX plant at DOE's Savannah River Site and will drive costs considerably higher.

114-3

For the Sequoyah "pressurized water reactors," the draft SEIS essentially admits that MOX use may well be constrained, if licensed by the NRC, to a maximum of only two 18-month cycles and not the usual three 18-months cycles for uranium fuel. (See page J-5) This is because an unsuccessful test of MOX in Duke Energy's Catawba reactor was halted after two cycles and the burn-up reached for three cycles was not achieved. A repeat of the test could be required, which would have more cost and schedule impacts on the overall program.

MOX Will Pose Storage Problems Due to Higher Thermal Outputs

Spent MOX fuel is thermally hotter than spent uranium fuel and will thus pose problems in on-site storage and in any repository, especially given that the draft document says that 2-16% more spent fuel would be created due to MOX use. These problems will increase handling issues and possibly have a significant cost impact.

For example, in a September 2011 presentation to the Nuclear Waste Technical Review Board (NWTRB) entitled *TVA's Consideration of the Use of MOX to Fuel its Nuclear Reactors*, the TVA presenter, Dan Stout, stated that *"Used MOX would need to be kept in dry cask storage an additional 56 years longer than UOX to have the same thermal impact on a repository at the time of emplacement."*

114-4

This is an indication of how much hotter MOX fuel is, both in and out of a reactor. Particularly if the spent MOX fuel is stored on site, it could bring additional cost and storage challenges. In a repository, MOX would add additional heat that must be considered in the design of the facility and would likely have a cost impact.

2

In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose. TVA, as a cooperating agency, may adopt this *Final SPD Supplemental EIS* after independently reviewing the EIS and determining its comments and suggestions have been satisfied (40 CFR 1506.3(c)).

114-3 Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) considered numerous alternatives for disposition of surplus plutonium, including immobilization and direct disposal of the entire surplus plutonium inventory as waste. DOE selected an approach for disposition of some of the plutonium declared surplus (68 FR 20134). As discussed in Section 2.2, Topic A, of this CRD, DOE's prior disposition decisions are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of an additional 13.1 metric tons (14.4 tons) of surplus plutonium, including use of the surplus plutonium as MOX fuel or its conversion into waste forms suitable for disposal. For further discussion, refer to Section 2.2, Topic A, of this CRD. When licensed to operate, the production schedule for MFFF would depend on factors such as the requirements of its customers, as will the types of fuel that will be produced. MFFF would not produce MOX fuel on a commercial scale unless contracts or other arrangements are in place for its use.

Cost and schedule are among the factors that both DOE and TVA may consider in their respective decisionmaking processes. For further discussion, refer to Section 2.1, Topic B, and 2.2, Topic A, of this CRD.

Commentor No. 114 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

Would DOE Pay TVA to Use MOX and Reimburse for All Cost and Risks….or Not?

If the way DOE treated TVA in its production of tritium for the US nuclear weapons program is an indication, TVA may well be right in expecting to be stiffed for additional costs and risks and associated with MOX. Though DOE may provide MOX at far below its production cost, in order to claim that it costs about the same as uranium fuel, TVA will be expected to be paid to irradiate the experimental fuel and for reactor modifications and perhaps for increased risk to reactor operation.

In a 2011 TVA inspector general report entitled *TVA'S TRITIUM PROGRAM UNDER DOE/TVA INTERAGENCY AGREEMENT DE-A102-00DP00315*, the IG stated that "We were unable to determine if tritium production costs were accurately identified and invoiced or if any negative impacts on plant operation from tritium production were reimbursed by DOE due to inadequate documentation."

The report goes on to document irregularities in reimbursement to TVA for services rendered and inadequacies in TVA's own bookkeeping, so it is unclear if TVA was letting DOE rip it off or if DOE was simply taking advantage of another US Government agency. In any event, the rate payers suffered.

Given that DOE proved itself not to be a reliable partner in the tritium production program, at least through 2010, caution is urged in expecting full payment for all costs incurred by using MOX.

114-5

Spiraling Costs of the MOX Program: Reject the Most Costly Option

While a claim is made that MOX would be purchased at the same cost as uranium fuel, production of MOX is far more expensive that uranium fuel and the tax payer will pick up the tab.

By the calculations of the Alliance for Nuclear Accountability, there is around $17.5 billion left to be spent on the overall MOX program. The MOX plant alone could cost more than $6 billion just to construct. On the other hand, we calculate that disposing of 34 metric tons of plutonium as nuclear waste would cost less than $4 billion.

The questions begs: in these days of growing pressure on the federal budget, why would anyone chose the highest—cost option for plutonium disposition? You know the answer: big-government politicians are protecting special interests which are profiting off the MOX program at the DOE's Savannah River Site in South Carolina. What once had a noble goal – to put weapons plutonium into a form that isn't reusable – has now evolved into a costly and inefficient jobs program for South Carolina.

We call on TVA to step away from the MOX boondoggle and not be a party to a rip-off of the taxpayer. TVA must reject this program whose cost are out of control and join those calling for the more practical and cheaper approach to the plutonium dilemma – secure storage of plutonium, isolated from the environment, and then its disposal as a dangerous nuclear waste.

3

114-4 The nuclear reactor operator, with oversight by NRC, is responsible for used fuel storage at the reactor. As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel, by storing it in the reactor's used fuel storage pool or placing it in dry storage. Neither the amount of additional used fuel nor the increased thermal load is expected to have a major effect on used fuel management at the reactor sites. The used MOX fuel can be managed in both the used fuel pool and dry cask storage to maintain the necessary criticality and thermal safety margins so that MOX fuel could be stored just as safely as LEU fuel. Irradiated MOX fuel initially produces about 4 percent less decay heat than equivalent LEU fuel. However, decay heat production in MOX fuel declines at a slower rate than LEU fuel due to isotopic differences in the irradiated MOX fuel. As a result, irradiated MOX fuel continues to produce slightly more decay heat than irradiated LEU fuel, about 16 percent more after 5 years. Initially, used MOX fuel would be discharged to the reactor's used fuel storage pool, where it would be stored with existing used LEU fuel. After about 5 years, the decay heat load from both fuel types would be low enough to allow the fuel to be transferred to dry storage casks (ANS 2011). After about 30 years of cooling, the decay heat difference would be equivalent to the heat produced by a few incandescent light bulbs. The differences in the decay heat rates of equivalently cooled used MOX fuel and used LEU fuel would not be an appreciable consideration for long-term storage 30 to 50 years after fuel discharge. DOE is developing a new strategy for management and disposition of used nuclear fuel (and HLW). This strategy will include MOX fuel in the used fuel inventory. For further discussion, refer to Section 2.5, Topic B, of this CRD.

114-5 TVA is a cooperating agency for this *SPD Supplemental EIS* and, as such, is not required to declare a preferred alternative. TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose. TVA, as a cooperating agency, may adopt this *Final SPD Supplemental EIS* after independently reviewing the EIS and determining that its comments and suggestions have been satisfied (40 CFR 1506.3(c)). Examining issues related to cost reimbursement for the MOX fuel program or the cost of tritium production is not within the scope of this *SPD Supplemental EIS*.

See the response to comment 114-2 regarding TVA's involvement with this *SPD Supplemental EIS*.

Cost is among the factors that TVA may consider in reaching a decision about whether to pursue the use of MOX fuel in its reactors, subject to the NRC licensing process. For further discussion, refer to Section 2.1, Topic B, of this CRD.

Commentor No. 115: Gretel Johnston, Co-founder Mothers Against Tennessee River Radiation

September 13, 2012
Tanner, AL

Public Comments to the
Department of Energy

re: Surplus Plutonium Disposition

Tom Clements said the other day that we need to remember how really wonderful this program is. This is so great that DOE is disposing of nuclear weapons, that you are removing this horrible plutonium poison from warheads pointed at Russia. It speaks to the intelligence and greatness of America and Russia that both nations are big enough to admit their mistakes and are actually working to reverse this mistake. Tom is absolutely right about that, and future generations will be grateful for this amazing reversal of a major means of mass-destruction.

Well, they will be grateful, if we find a way to secure the plutonium so that it can never be made into bombs again, and if we find a way to protect the future from the destructive isotopes of this man-made radiation that will continue to remain dangerous for more than 100,000 years.

This Draft Environmental Impact Statement is a very nicely prepared document with massive amounts of well presented information, but the more I read about this issue, the less adequate the four Action Alternatives in this Draft SEIS appear to be, in terms of actions for fulfilling the stated goals. And I am wondering why there is such a push to make this decision now, before more adequate options become available.

From what I understand, storing this plutonium as high level radioactive waste will cost tax-payers about 4 billion dollars, compared to these Plutonium MOX fuel options that will cost us some 17 billion dollars. That is a lot of money, so it is not surprising that Areva, the nuclear fuel company that will be getting our taxpayers' money, is pushing to make this MOX sale. They want DOE and TVA to sign on the dotted line, but we taxpayers are the folks actually paying, so I think we need to take a good look at what we really are buying here. *115-1*

I'm concerned that the cure may be worse than the disease, if we allow this weapons-grade plutonium to be used as MOX fuel in commercial nuclear reactors. Public health should be the number one concern for any U.S. government agency, and the risks with Plutonium MOX fuel seem to far outweigh the public benefits. *115-2*

On this 11th anniversary of September 11th, 2001, let's remember how completely blind-sided America was by that horrific day of terrorism. The most brilliant minds in our country could not have imagined what actually occurred that day. 9/11 is a humbling reminder that we cannot foresee the dangers ahead of us. We can study probabilities and make informed choices to try to prevent harm to the public, but we cannot predict the future. That's why human beings must make the decisions – not machines and not a company who wants a lucrative contract.

115-1 The actions being considered in this *SPD Supplemental EIS* involve rendering the surplus plutonium into a form that is not readily usable for nuclear weapons so that it is no longer considered a proliferation threat. Long-term storage of surplus plutonium was previously considered in the *Storage and Disposition PEIS* (DOE 1996), and it was decided in the ROD associated with that document to pursue disposition of the plutonium as an example for other nations and to encourage them to take similar actions (62 FR 3014). For further discussion, refer to Section 2.1, Topic B, of this CRD.

115-2 There are some minor differences between MOX fuel and LEU fuel, such as the amount of actinides in used MOX fuel rods would be higher than in used LEU fuel rods. These differences, however, are not expected to affect reactor safety or meaningfully increase the environmental consequences or risks associated with the use of a partial MOX fuel core. As summarized in Chapter 4 and described in detail in Appendices I and J of this *SPD Supplemental EIS*, the impacts associated with using a partial MOX fuel core versus a full LEU fuel core in commercial nuclear power reactors are expected to be similar. The risks associated with postulated accidents would be small. For further discussion, refer to Section 2.5, Topic B, of this CRD.

Commentor No. 115 (cont'd): Gretel Johnston, Co-founder Mothers Against Tennessee River Radiation

I'm really concerned about the prospect of using this experimental Weapons-grade Plutonium MOX fuel in the aging Browns Ferry reactors, that were not designed for this hotter fuel, and that have had more than enough problems without adding additional stress factors. *115-3*

I have read that the Weapons-grade MOX fuel is harder to control in the reactor, and that it tends to produce hot spots that could compromise the fuel rod claddings, risking fires. I have also read that this Weapons-grade Plutonium MOX fuel is far more toxic when released than uranium fuel.

Have the number of unplanned partial and full shut-downs been determined for each of the three Mark I reactors during their service lives, and have the corresponding risk factor increases for each reactor been calculated? *115-4*

Has a program been implemented to replace Mark I parts and components in a timely matter, according to the manufacturer's recommendations?

Will Browns Ferry finally, after 37 years of non-compliance, be required to meet the industry wide fire safety standards implemented after its candle fire in 1975?

Has a program been implemented to remove spent fuel from cooling pools in a timely manner? *115-5*

Have calculations been made regarding the higher temperatures the MOX spent fuel will impose on the cooling pools as well as the reactors? *115-6*

Again remembering the shock of the collapse of the World Trade Center Towers, and remembering Chernobyl and Fukushima, we urge you not to accept adding to the risk of nuclear power by experimenting with our commercial reactors. A study titled "Public Health Risks of Substituting Mixed-Oxide For Uranium Fuel," found a MOX Plutonium fuel release would result in significantly more Latent Cancer Fatalities per accident compared to a uranium core accident, and concludes, "The Department of Energy's plan to dispose of ex-warhead plutonium by using it in MOX fuel in four existing commercial nuclear reactors . . . will impose a significant risk on the public." [1] We must always remember that the public are husbands and wives, mothers and fathers, brothers and sisters, sons and daughters and friends. Let's not fail them by making a profit-driven, risky decision regarding a solution to this 100,000 year problem. *115-7*

Thank you,

Gretel Johnston, co-founder
Mothers Against Tennessee River Radiation

MATRR.org – Because It Matters

[1] Lyman, Edwin S., "Public Health Risks of Substituting Mixed-Oxide For Uranium Fuel," *Science & Global Security, 2001, Volume 9 pg. 61.*

115-3 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

As summarized in Chapter 5, Section 5.3.3, use of MOX fuel in TVA or other reactors would require an amendment to the reactor's operating license. Such a license amendment would need to be approved by NRC based on a review, pursuant to 10 CFR Part 50, that must demonstrate that the proposed change would not involve an unreviewed environmental or safety question.

115-4 TVA subject matter experts have examined this comment letter and provided collaborative support to DOE in providing the following responses (115-4 through 115-7):

As at all nuclear power reactors, every automatic or manual reactor shutdown that occurs is documented in plant operating records. Shutdowns are monitored, tracked, and evaluated by both NRC and TVA to ensure there is no increase in safety risk (see the Reactor Oversight Process described at www.nrc.gov/reactors/operator-licensing/oversight-programs.html).

Nuclear power reactors, including the Browns Ferry Nuclear Plant, have extensive preventive maintenance programs that continually monitor the condition and performance of all safety-related components. Parts are maintained and replaced according to a prescribed maintenance program that is continuously evaluated and improved. Safety-related equipment and components at Browns Ferry are regularly inspected and monitored in accordance with procedures and vendor recommendations to ensure they can perform their safety function. In 2006, NRC issued a license renewal safety evaluation report (NRC 2006a, 2006b) that documented an in-depth review of Browns Ferry, including its 10 CFR 50.65 maintenance rule compliance, and concluded that TVA should be granted a 20-year

Commentor No. 115 (cont'd): Gretel Johnston, Co-founder Mothers Against Tennessee River Radiation

operating license renewal for Browns Ferry in accordance with 10 CFR Part 54. NRC approved the Browns Ferry license renewal request on May 4, 2006.

Browns Ferry Nuclear Plant upgraded its fire protection program in response to NRC requirements defined in 10 CFR 50 Appendix R, which was issued in 1980. However, the fire protection program relied upon a substantial number of operator manual actions (OMAs) to assure safe shutdown of the reactors in the event of a design-basis fire. As industry experience with nuclear plant fire protection evolved, these previously allowable OMAs were disallowed, resulting in Notices of Violation to Browns Ferry for the fire protection program. To address these Notices of Violation, TVA initiated actions to reduce the reliance upon OMAs and change the fire protection program to voluntarily comply with the 2001 National Fire Protection Association (NFPA) Standard 805. A number of changes have already been completed, reducing the risk of damage due to a fire. When all of the NFPA 805 changes are complete, the risk of core damage due to fire will be reduced to a level consistent with other design-basis accident risks (see TVA presentation to NRC from a public meeting on December 8, 2011, entitled *BFN Fire Risk Reduction and NFPA 805 Transition*, available at http://pbadupws.nrc.gov/docs/ML1135/ML11353A319.pdf).

115-5 Consistent with all other operators of LWRs in the United States, TVA utilizes water-filled pools to safely store used nuclear fuel after it is discharged from the reactor. To address the space limitations in water-filled pools until a decision is made for disposal of used nuclear fuel, TVA has initiated the use of dry storage casks, which require no electricity or water to cool the used fuel. NRC has determined that dry cask storage is a safe method for the long-term storage of used fuel.

The Sequoyah and Browns Ferry Independent Spent Fuel Storage Installations (ISFSIs) were granted NRC licenses on July 13, 2004, and August 21, 2005, respectively, to use Holtec HI-Storm 100S dry storage casks (NRC 2012c). As of January 2013, 40 dry used fuel storage casks, each containing 68 BWR fuel assemblies, have been filled and placed at the Browns Ferry ISFSI. Similarly, 32 dry used fuel storage casks, each containing 32 PWR fuel assemblies, have been filled and placed at the Sequoyah ISFSI, with each cask containing 32 Sequoyah PWR fuel assemblies. Plans for future transfer of used fuel to ISFSI casks have been formulated for the operating lives of the Sequoyah and Browns Ferry Nuclear Plants (TVA 2013a). TVA will continue to place the older used fuel into dry cask storage, which requires no electricity or water to cool the used fuel. As part of the lessons learned from the Fukushima Dai-ichi Nuclear Power Station accident, TVA

Commentor No. 115 (cont'd): Gretel Johnston, Co-founder Mothers Against Tennessee River Radiation

is evaluating the potential to transfer more used fuel from the storage pools into dry cask storage (see Appendix B, Section B.4, of this *SPD Supplemental EIS*).

115-6 As addressed in Section 2.5, Topic B, of this CRD and discussed in Appendix J of this *SPD Supplemental EIS*, calculations have been performed to determine and evaluate the different heat levels given off by MOX fuel and LEU fuel following irradiation in reactors (ORNL 2013). The heat levels of MOX fuel do not pose a risk to plant safety or operations.

115-7 Since the publication of the report cited by the commentor, a number of additional technical studies and analyses related to reactor accidents and the use of MOX fuel have been released (NRC 2012a; ORNL 2013; SNL 2010, 2011). The results reported in this *Final SPD Supplemental EIS* are consistent with this more recent information and the application of later versions of the advanced computer codes used in the report cited by the commentor. The analysis included in this *Final SPD Supplemental EIS* uses updated nuclear cross sections and fuel and reactor design parameters for the Browns Ferry and Sequoyah Nuclear Plants (ORNL 2013). As indicated in Appendix J, Section J.4, of this *SPD Supplemental EIS*, a 2011 study by Sandia National Laboratories found that the highest consequence accident scenarios release fractions from a partial MOX fuel core are similar to those of a full LEU fuel core. For further discussion, refer to Section 2.5, Topic B, of this CRD.

As addressed in Chapter 4 and Appendix I, operation of reactors using a partial MOX fuel core is not expected to change substantively from operations using a full LEU fuel core. Under both normal operating and postulated accident conditions, the impacts of operating reactors using a partial MOX fuel core are not expected to change appreciably from those associated with use of full LEU fuel cores. This assessment is consistent with the analysis performed for the *SPD EIS* (DOE 1999).

Commentor No. 116: Garry Morgan

THE INSANITY OF USING PLUTONIUM MIXED OXIDE FUEL IN COMMERCIAL NUCLEAR POWER REACTORS.

By: Garry Morgan, U.S. Army Medical Department, Retired [redacted]

September 13, 2012

I am Garry Morgan, Retired from the United States Army Medical Department. My experience and training within the United States Army included Nuclear, Biological and Chemical Weapons Protection. I was also involved in Personnel Reliability Programs related to Nuclear Surety and military facility physical security. My experience and education includes risk management as it relates to health care and health care organizations. I received a Bachelor of Science degree from Baylor University in 1979.

Plutonium is one of the most dangerous substances known to human kind and is a critical element of nuclear weapons.

There is one important message that needs to be conveyed concerning the utilization of weapons grade Plutonium MOX fuel in commercial nuclear reactors: The commercialization of nuclear weapons Plutonium as a fuel for commercial nuclear reactors is compounded insanity.

--Plutonium fuel weakens the reactor pressure vessel due to embrittlement of the metal in the primary containment as a result of a high neutron flux. http://www.nirs.org/factsheets/basicmoxinfo.htm and http://www-pub.iaea.org/books/iaeabooks/1264/Neutron-Irradiation-Embrittlement-of-Reactor-Pressure-Vessel-Steels

116-1

--At Cabri France, testing demonstrated Plutonium MOX Fuel has a higher failure potential than Uranium Oxide fuel and there is a potential for fuel rod rupture at comparable burn up. http://www.princeton.edu/sgs/publications/sgs/pdf/9_1lyman.pdf

--The use of Plutonium as a commercial nuclear reactor fuel increases the risk of theft and diversion of nuclear materials. The threat of terrorism and nuclear weapons proliferation is greatly increased. http://www.nci.org/b/berlin.htm & http://www.psr.org/nuclear-bailout/resources/nuclear-power-in-france-setting.pdf

116-2

--Plutonium reactor fuel can be utilized to fabricate a nuclear weapon. http://www.fas.org/rlg/980826-pu.htm

--Utilization of Plutonium as a commercial nuclear reactor fuel serves one purpose, the financial benefit of the commercial nuclear power industry. Tax payers are paying for the construction of the Plutonium-MOX fuel facilities to benefit the nuclear power industry. http://www.moxproject.com/ & http://www.moxproject.com/about/factsheets.html (Encl2)

116-3

-- The use of Plutonium fuel at Browns Ferry, Alabama or Sequoya, Tennessee compounds the insanity of utilizing this dangerous high risk nuclear fuel. Both reactors are old, and in the case of Browns Ferry the reactors are the defective GE Mark 1 reactors which are under increased scrutiny by the Nuclear Regulatory Commission. The nuclear reactors at Fukushima which exploded and "melted down" are the GE Mark 1 series of reactors.

116-4

(PS1)

116-1 As summarized in Appendix J, Section J.2, of this *SPD Supplemental EIS*, use of MOX fuel within nuclear reactors could require some modifications to core design, reactivity control systems, fuel management procedures, and technical specifications. For example, concerns that the higher neutron flux in MOX fuel can lead to pressure vessel embrittlement can be addressed through fuel management procedures. The referenced tests at the French CABRI reactor are among a number of tests that have been performed in specialized test reactors in support of the definition of safety limits at high burnup. Other reactors performing similar tests include the NSRR test reactors in Japan and the IGR and BIGR reactors in the Russian Federation. A 2007 report providing a review and interpretation of reactivity-induced accident experiments addressed the subject CABRI tests as well as numerous others and concluded there is no evidence that MOX fuel behaves differently than LEU fuel in terms of failure propensity (Vitanza 2007). This *SPD Supplemental EIS* does, however, analyze the risks associated with the use of a partial MOX fuel core under various accident scenarios including failures that could lead to a core meltdown and concludes that the risks are comparable to those associated with the use of full LEU cores (see Chapter 4, Section 4.1.2.4, and Appendix J, Section J.3.2). Notwithstanding this conclusion, as summarized in Chapter 5, Section 5.3.3, of this *SPD Supplemental EIS*, use of MOX fuel in TVA or other reactors would require an amendment to the reactor's operating license, in accordance with 10 CFR Part 50, that must demonstrate that the proposed change would not involve an unreviewed environmental or safety question.

116-2 The purpose of the Surplus Plutonium Disposition Program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally sound manner to ensure that it can never again be readily used in nuclear weapons. Although unirradiated (fresh) MOX fuel may not be sufficiently radioactive to be self-protecting, fresh MOX fuel is not an attractive target because it is not readily usable for a nuclear device or dirty bomb. As indicated in footnote 3 in Chapter 2 of this *SPD Supplemental EIS*, plutonium-239 may make up only 4 percent of a fuel assembly. Plutonium in MOX fuel is blended with approximately 20 times as much depleted uranium as plutonium and is formed into ceramic pellets encased in metal cladding. Moreover, the MOX fuel is contained in large, heavy fuel assembly structures that would make theft extremely challenging. Without substantial physical dismantling and chemical separation, the plutonium in the MOX fuel cannot be used in a nuclear bomb. Once the fuel has been irradiated in a reactor, it would be highly radioactive, and recovering the residual plutonium would be impossible without highly specialized equipment.

Commentor No. 116 (cont'd): Garry Morgan

--Weapons Grade Plutonium Mixed Oxide Fuel is high risk and has failed in previous testing at civilian nuclear power reactors. http://www.ucsusa.org/news/press_release/nuclear-fuel-test-failure0140.html

--The use of ex-warhead Plutonium imposes a significant increased health risk to the public if an accident occurs. http://www.princeton.edu/sgs/publications/sgs/pdf/9_1lyman.pdf

116-4 cont'd

SOLUTIONS

There is a solution which is recommended for all Plutonium waste materials as indicated in the National Nuclear Security Administration (NNSA) Draft Environmental Impact Statement (EIS) regarding Plutonium weapons material and waste. Glass vitrification of all Plutonium weapons materials and wastes as indicated in appendix G, page G-1 of the NNSA's July 2012 Draft Supplemental Environmental Impact Statement. http://www.tva.com/environment/reports/mixed_oxide/vol2/AppendixG.pdf (Encl 1)

The Solution as National Policy: "Two separate initiatives should be developed for dealing with military and civilian Plutonium, to proceed on separate tracks but eventually be brought together into a unified international regime. On the military track, the U.S. should move assertively to strike a deal with the Russians to pursue vitrification in a joint venture underwritten by the United States. The U.S. should make clear that no U.S. funds will be made available for using plutonium in reactors or for reprocessing spent fuel. Instead, a reciprocal approach to joint construction, operation and inspection of vitrification plants in Russia and the U.S. should be proposed." http://www.nci.org/b/berlin.htm (NCI-Nuclear Control Institute)

116-5

SUMMARY

The experimentation of Nuclear Weapons Plutonium MOX Fuel in any civilian nuclear reactor is not a smart or safe alternative for the disposal of Weapons Grade Plutonium materials. Your job ladies and gentleman of the NNSA, the NRC, and the TVA is to protect and to provide services to the citizens of our great nation. None of your jobs include providing for the financial enrichment of multinational nuclear power construction corporations or the various contractors involved in the nuclear fuels processes (Encl2). The preferred-safe method of disposal of Plutonium weapons and waste materials is glass vitrification as indicated in Appendix G, page G-1 of the NNSA's July 2012 Draft Supplemental Environmental Impact Statement (Encl 1) as a viable disposal methodology for Plutonium waste materials.

Thank You,

GARRY MORGAN; [redacted]

Encl 1- NNSA preferred versus insane options for Plutonium waste disposal - Appendix G, page G-1.

Encl 2- MOX Fuel Fab. Document-NNSA & SHAW-AREVA propaganda-mischaracterization of program

(pg 2)

Central to the purpose of the Surplus Plutonium Disposition Program is protecting plutonium from terrorists, so appropriate safeguards and security measures are taken at facilities and during transportation to protect against unauthorized access to materials. Current security systems and procedures at SRS, LANL, and the Pantex Plant are designed to protect plutonium inventories and prevent access by unauthorized personnel (e.g., terrorists). Current nuclear power reactor security provides protection from terrorists and groups seeking access to nuclear material in accordance with NRC regulations. By converting weapons-grade plutonium metal into MOX fuel and using it in a reactor, the threat of terrorism and nuclear weapons proliferation is greatly reduced.

116-3 The United States remains committed to the PMDA (USA and Russia 2000) with the Russian Federation, under which both countries have agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. It is important that DOE begin plutonium disposition operations to demonstrate progress to the Russian government, meet U.S. legislative requirements, and reduce the quantity of surplus plutonium and the concomitant cost of secure storage. Use of MOX fuel in commercial nuclear power reactors would render surplus plutonium into a used fuel form that is not readily usable for nuclear weapons.

Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. CEQ and DOE NEPA regulations do not require that costs be included in an EIS. For further discussion, refer to Section 2.1, Topic B, of this CRD.

116-4 If TVA were to make a decision to use MOX fuel, it would be the joint responsibility of TVA and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely.

Appendix J, Section J.3.3.3, of this *SPD Supplemental EIS* describes the NRC recommendations developed in response to the March 11, 2011, accident at the Fukushima Dai-ichi Nuclear Power Station in Japan and the subsequent actions TVA has taken to further reduce the likelihood and severity of accidents at its nuclear plants. For further discussion, refer to Section 2.5, Topic C, of this CRD.

As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the

Commentor No. 116 (cont'd): Garry Morgan

Enclosure 1: NNSA preferred versus insane options for Plutonium waste disposal - Appendix G, page G-1.
http://www.tva.com/environment/reports/mixed_oxide/vol2/AppendixG.pdf

Appendix G, page G-1 of the NNSA's July 2012 Draft Supplemental Environmental Impact Statement

PREFERED - Safe, inexpensive Glass Vitrification Options

--"Immobilization and DWPF Option – Surplus plutonium would be immobilized at an immobilization capability constructed at the K-Area Complex, and can-in-canisters containing immobilized plutonium would be transferred to the Defense Waste Processing Facility (DWPF) at S-Area to be filled with vitrified high-level radioactive waste (HLW) and stored within Glass Waste Storage Buildings (GWSBs)."

--"H-Canyon/HB-Line and DWPF Option – Surplus non-pit plutonium would be dissolved at H-Canyon/HB-Line in H-Area, with the resulting plutonium solution transferred to DWPF in S-Area for vitrification with HLW within canisters that would be stored within the GWSBs".

INSANE - Dangerous and Expensive Plutonium MOX Fuel and Oxide Options

--MOX Fuel Option – Surplus plutonium would be fabricated into mixed oxide (MOX) fuel at the Mixed Oxide Fuel Fabrication Facility (MFFF) at F-Area.

--WIPP Disposal Option – Surplus non-pit plutonium would be prepared at H-Canyon/HB-Line for disposal as transuranic (TRU) waste at the Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico. At H-Canyon/HB-Line, surplus plutonium would be oxidized as necessary, mixed with inert materials, placed in appropriate containers, and transferred to E-Area at SRS for staging pending shipment to WIPP for disposal as TRU waste.

ENCLOSURE 1

use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

Since the publication of the report cited by the commentor, a number of additional technical studies and analyses related to reactor accidents and the use of MOX fuel have been released (NRC 2012a; ORNL 2013; SNL 2010, 2011). The results reported in this *Final SPD Supplemental EIS* are consistent with this more recent information and the application of later versions of the advanced computer codes used in the report cited by the commentor. The analysis included in this *Final SPD Supplemental EIS* uses updated nuclear cross sections and fuel and reactor design parameters for the Browns Ferry and Sequoyah Nuclear Plants (ORNL 2013). As indicated in Appendix J, Section J.4, of this *SPD Supplemental EIS*, a 2011 study by Sandia National Laboratories found that the highest consequence accident scenarios release fractions from a partial MOX fuel core are similar to those of a full LEU fuel core. For further discussion, refer to Section 2.5, Topic B, of this CRD.

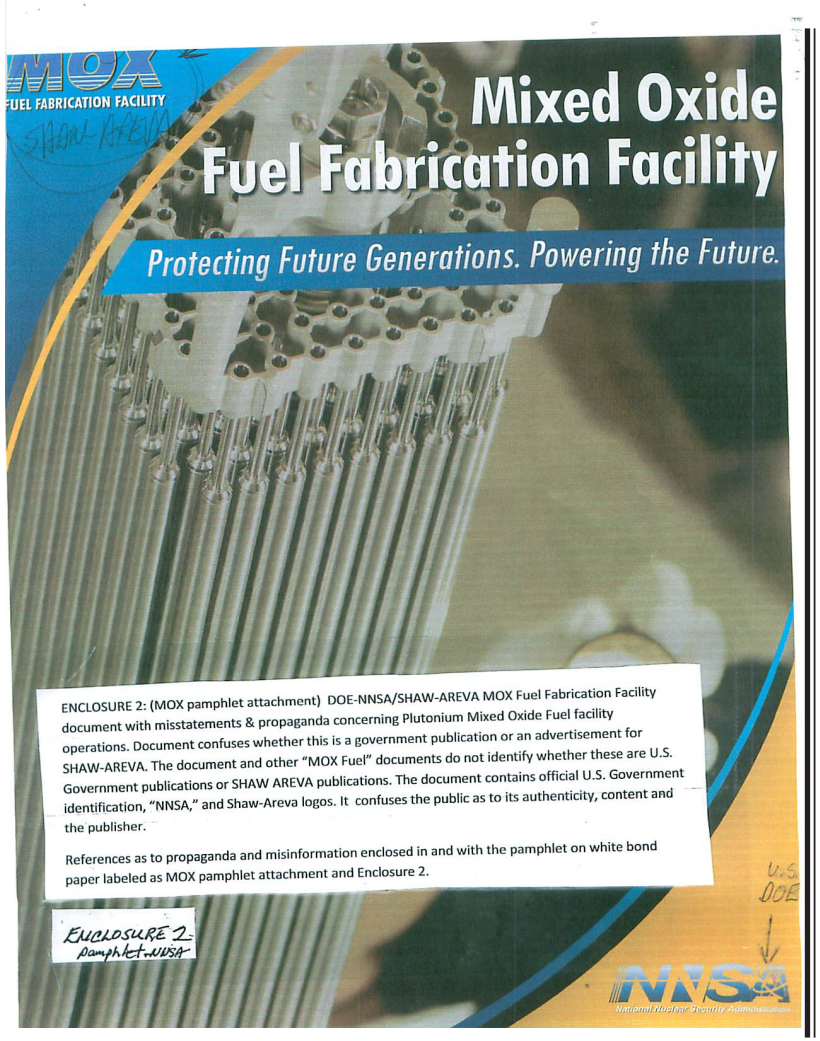
As addressed in Chapter 4 and Appendix I of this *SPD Supplemental EIS*, normal operation of reactors using a partial MOX fuel core is not expected to change substantively from operations using a full LEU fuel core. Under both normal operating and postulated accident conditions, the impacts of operating reactors using a partial MOX fuel core are not expected to change appreciably from those associated with use of full LEU fuel cores. This assessment is consistent with the analysis performed for the *SPD EIS* (DOE 1999). For further discussion, refer to Section 2.5, Topic B, of this CRD.

116-5 DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

As noted in the response to comment 116-3, the United States remains committed to the PMDA (USA and Russia 2000) with the Russian Federation.

As summarized in Chapter 4, Section 4.1.2, and described in detail in Appendices I and J of this *SPD Supplemental EIS*, the risks associated with both normal operations and accidents for a partial MOX fuel core and full LEU fuel core are expected to be comparable. For further discussion, refer to Section 2.5, Topic B, of this CRD.

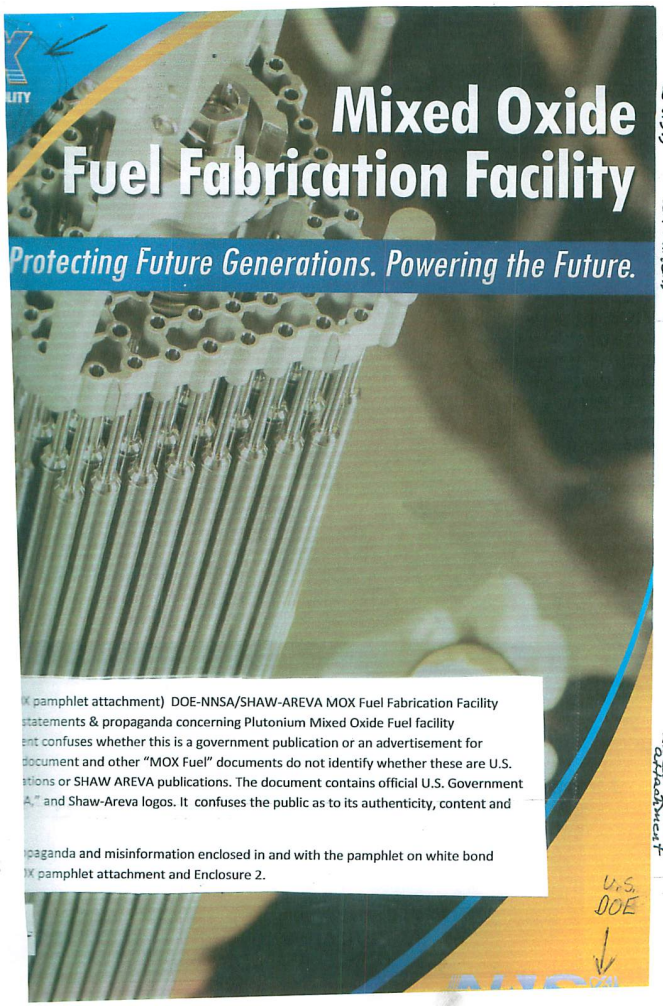
Commentor No. 116 (cont'd): Garry Morgan



116-6

116-6 Shaw AREVA MOX Services is under contract to DOE to construct and operate MFFF, which is currently under construction at SRS. DOE's work with Shaw AREVA MOX Services on MFFF is subject to the requirements of Federal contracting regulations and other applicable requirements. DOE contracting strategies for surplus plutonium disposition activities are outside the scope of this *SPD Supplemental EIS*. Details of operations at AREVA's facilities in France are outside the scope of this *SPD Supplemental EIS*.

Commentor No. 116 (cont'd): Garry Morgan



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116-6 cont'd

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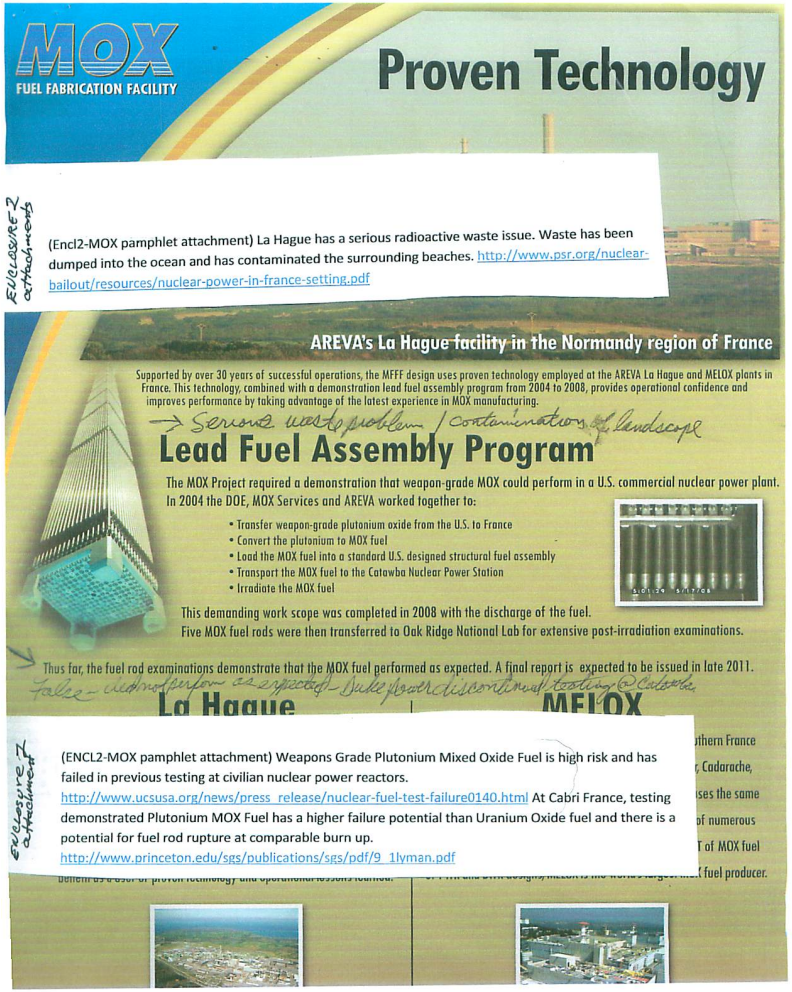
Commentor No. 116 (cont'd): Garry Morgan



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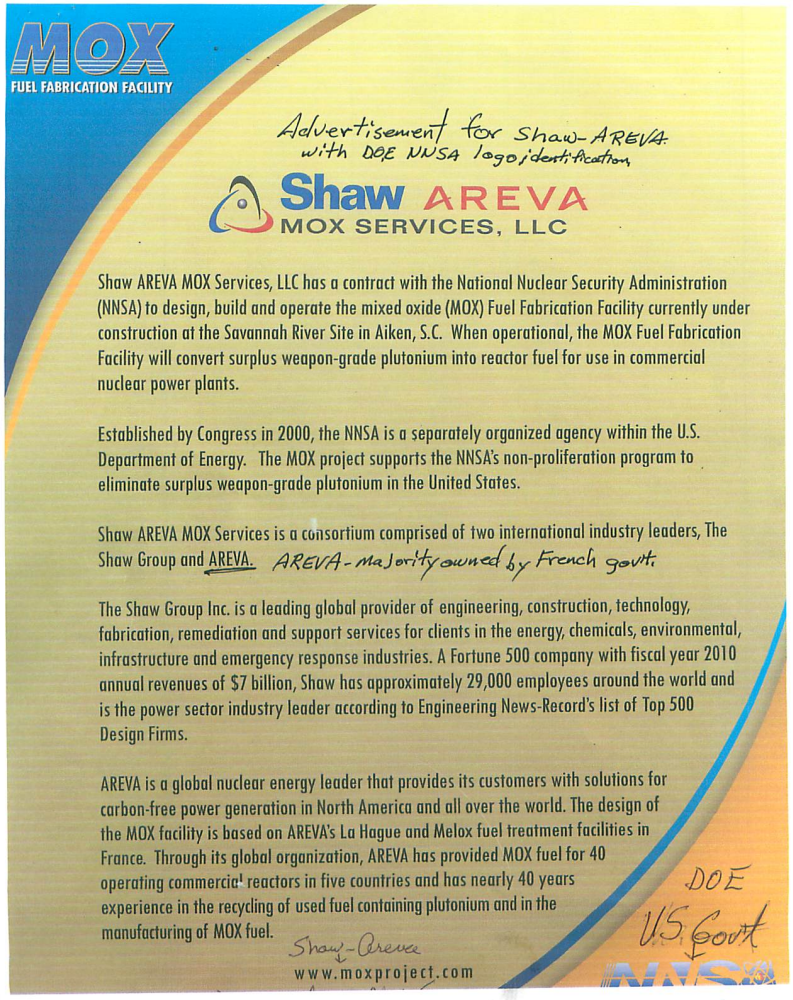
Commentor No. 116 (cont'd): Garry Morgan



116-6 cont'd

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Commentor No. 116 (cont'd): Garry Morgan

ENCLOSURE 2 (pg1)

CONTRADICTIONS TO PAMPHLET'S INFORMATION-PROPAGANDA/MISINFORMATION POINTS CONTRADICTING THE AREVA-SHAW/NNSA PAMPHLET with References

•France reprocesses irradiated reactor fuel by soaking it in acid to extract plutonium and slightly enriched uranium. This results in massive releases of radioactive gases and liquids and the creation of solid wastes that place people and the environment at great risk. Reprocessing operations release larger volumes of radioactivity – typically by factors of several thousand – compared to radioactivereleases from nuclear reactors.(1)

• France reprocesses reactor fuel at the vast La Hague facility on the Normandy coast. The so-called low-level liquid wastes from reprocessing are discharged into the English Channel and into the air. However, these "low-level" wastes still contain highly radioactive and often long-lived isotopes. Dumping these same wastes into the sea in containers would violate the1970 London Dumping Convention.(2)

• The liquid discharges from La Hague (and the UK. reprocessing plant at Sellafield) have resulted in contamination of area beaches and of seas as far as away as the Arctic Circle and are considered among the ten main anthropogenic sources of radioactive pollution of the world's oceans.(3)

• Two independent medical studies found elevated rates of leukemia in young people living around La Hague. (Similar leukemia clusters have also been recorded around the British reprocessing site at Sellafield which has turned the Irish Sea into one of the most radioactively contaminated bodies of water in the world).(4)

• The nuclear waste pumped into the sea from La Hague has been measured as 17 million times more radioactive than normal sea water according to an analysis by an independent French radiological laboratory.(5)

• La Hague routinely releases a radioactive cloud that is highly toxic. Concentrations of krypton-85 above the plant were found to register 90,000 times higher than natural radiation levels according to research by a Belgian laboratory. La Hague also releases all of its carbon-14 emissions into the air, identified by the French Nuclear Safety Center as the isotope in reprocessing discharges that is most damaging to human health.(6)

• France extracts plutonium through reprocessing to use as mixed-oxide (MOX) reactor fuel. For safety reasons, only 30% of a reactor core that can use MOX fuel is loaded with MOX. MOX reactors consume the plutonium fuel but the uranium-238 component of the fuel produces plutonium. Consequently, there is no net reduction of plutonium using MOX reactors. Waste fuel from MOX reactors is not reprocessed.(7)

ENCLOSURE 2 (pg1)

116-6 cont'd

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Commentor No. 116 (cont'd): Garry Morgan

ENCLOSURE 2 (pg2)

- Ninety-five percent of the mass of spent reactor fuel is uranium, contaminated with traces of fission products, plutonium and other radioactive materials. This contamination makes re-enrichment complex and costly. Therefore it is not re-used as fuel. Instead, France sends this contaminated uranium to Russia.(9)
- France has exported civilian nuclear technology and training to, or has engaged in nuclear cooperation with Pakistan, Israel, India and South Africa, all of which developed nuclear weapons.(14)
- France also exported nuclear technology to Iran, which had an active nuclear weapons program at least until 2003 according to U.S. intelligence reports.(15)
- France has actively exported reprocessing technologies to nations regardless of the proliferation impact (including to Israel and Iraq).(17)

116-6 cont'd

REFERENCES: http://www.psr.org/nuclear-bailout/resources/nuclear-power-in-france-setting.pdf

(1) Possible Toxic Effects from the Nuclear Reprocessing Plants at Sellafield (UK) and Cap de la Hague(France.) Scientific and Technological Options Assessment (STOA). European Parliament. November 2001.And at: http://www.europarl.europa.eu/stoa/publications/studies/20001701_en.pdf

(2) Save our Seas. Greenpeace. And at: http://archive.greenpeace.org/odumping/oceanmain.html

(3) Arctic Adaptability, SEPA View, magazine of the Scottish Environment Protection Agency, Autumn 1999, pps 18-19. And at: http://www.sepa.org.uk/pdf/publications/sepaview/sepa_view_1_autumn1999.pdf

(4) Dominique Pobel, Jean-Francois Viel: "Case-control study of leukemia among young people near La Hague nuclear reprocessing plant: the environmental hypothesis revisited." British Medical Journal, No. 7074 Vol. 314, January 11, 1997. And at: http//www.,bmj.com/archive/7074pr.htm. And: A-V Guizard, O. Boutou, D.Pottier, X. Troussard, D. Pheby, G. Launoy, R. Slama, A. Spira and ARKM; "The incidence of childhood leukemia around the La Hague nuclear waste reprocessing plant (France): a survey for years 1978-1998, Journal of Epidemiology and Community Health, July 2001, Vol. 55, pp. 49-474. And at: http://jech.bmjjournals.com

(5) Greenpeace press releases June 20, 1997 and May 27, 1999. And at: http://archive.greenpeace.org/comms/97/nuclear/press/reprojune20.html

ENCLOSURE 2 (pg2)

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Commentor No. 116 (cont'd): Garry Morgan

ENCLOSURE 2 (pg3)

(6) La Hague radioactive air 90,000 times higher than background. Greenpeace, November 9, 1998 and at: http://archive.greenpeace.org/pressreleases/nucreprocess/1998nov9.html . And High levels of carbon contamination around La Hague and at: http://archive.greenpeace.org/majordomo/index-pressreleases/1998/msg00321.html

(7) The Nuclear Alchemy Gamble: An Assessment of Transmutation as a Nuclear Waste Management Strategy. Hisham Zerriffi and Annie Makhijani, IEER, August 25, 2000. And see: http://www.ieer.org/reports/transm/report.pdf pages 55-56 (77-78 on PDF). And also, according to Dr. Arjun Makhijani, by email, president of Institute for Energy and Environmental Research at www.ieer.org

(9) France's Nuclear Fix? page 5. Science for Democratic Action, Vol. 15. No. 2., January 2008. And at:

http://www.ieer.org/sdafiles/15-2.pdf

(14) Israel's Nuclear Weapons Program, December 1997 at: http://nuclearweaponarchive.org/Israel/Isrhist.html and Pakistan Nuclear Weapons at: http://www.fas.org/nuke/guide/pakistan/nuke/index.html and Nuclear Power in France, Australia Uranium Association, December 2007 and at: http://www.fas.org/nuke/guide/pakistan/nuke/index.html and France bets on Indian non-alignment to sell arms and reactors, Agence France Presse, January 27, 2008 and at: http://afp.google.com/article/ALeqM5g-E_B56S5xYfz3cCqlA4HLgy_9QA

(15) Iran: Nuclear Intentions and Capabilities. National Intelligence Estimate. November 2007. And at:http://i.a.cnn.net/cnn/2007/images/12/03/iran.nie.pdf

(17) WMD Around the World-Osiraq/Tammuz http://www.fas.org/nuke/guide/iraq/facility/osiraq.htm And On This Day: 1981: Israel bombs Baghdad nuclear reactor. BBC News. And at: http://news.bbc.co.uk/onthisday/hi/dates/stories/june/7/newsid_3014000/3014623.stm Shaun Burnie.

ENCLOSURE 2 (pg3)

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Commentor No. 117: Stewart Horn

DOE
Comments to the ~~NRC~~ September 13, 2012 Meeting in Tanner, Alabama, Concerning the use of Plutonium Based MOX Fuel in TVA Brown's Ferry Reactors

My name is Stewart Horn. I live approximately 30 miles down-wind of Brown's Ferry Nuclear Plant in north Alabama. I am a retired aero-optical scientist.

I was extremely upset to learn that the NRC and the Tennessee Valley Authority (TVA) are planning to put deadly, weapon's grade Plutonium (MOX) fuel into all three reactors at Brown's Ferry, and to ship the fuel through many communities between the MOX fuel plant in Georgia and Brown's Ferry in north Alabama. *117-1*

There are many excellent reasons why the NRC should not permit TVA do use this fuel some of which follow:

1. The three reactors at Brown's Ferry have all had very poor operational track records since they started operations. A former TVA nuclear scientist reported that Unit 1 had the poorest performance record of all the reactors in the United States including a horrible fire where the operators totally lost control of the reactor. As a result of the fire, in 1980 the NRC created fire regulations for all reactors in the USA, and now 32 years later Brown's Ferry is still not in compliance with these regulations that were issued because of the Browns Ferry fire 32 years ago. That the NRC and the TVA have allowed this issue to remain unresolved is beyond belief. All three reactors at Brown's Ferry have a long history of many automatic shutdowns that have prematurely weakened the containment structures due to the thermal shocks and stresses caused by the much more rapid cooling that occurs in automatic shutdowns. The boiling water reactors of Brown's Ferry and Fukashima reportedly have a poorly designed, fragile containment structure along with a defective hardened vent design. Three of the hardened vents at Fukashima failed causing three reactor buildings to explode and spew deadly radiation across the globe. Recently, the Brown's Ferry reactors have been licensed by NRC to operate an additional 20 years beyond the lifetime for which they were designed . *117-2*

2. Plutonium fuel has never been used before in a Boiling Water Reactor (BMW). This will make using it at Brown's Ferry an experiment. It is hard to believe that the NRC would allow TVA (or any other public utility) to experiment in any commercial reactor where even a minor accident could bring great harm to many of their customers. Experiments in nuclear reactors should be conducted far from any population centers and not in commercial operating nuclear power plants. Experiments that could negatively affect customers and their communities should not be allowed in commercial reactors. *117-3*

3. Scientists have estimated that a reactor accident in a Plutonium fueled plant could cause up to 50% more injuries and deaths than an accident in a typical uranium fuel based plant. Not only is this increased risk unacceptable to myself and local residents, it would instantly make this plant more of a prime target for terrorists than all of the regular commercial reactors in the country because of the increased potential harm to the *117-4*

117-1 DOE and TVA acknowledge the comment.

117-2 It is NRC's responsibility to regulate the operation of nuclear power reactors in the United States. However, as a courtesy to commentors, TVA provides the following discussion of safety issues at the Browns Ferry and Sequoyah Nuclear Plants.

The Browns Ferry Nuclear Plant is designed and maintained to meet stringent NRC safety requirements for nuclear power reactors. Safety-related equipment is regularly inspected, maintained, and monitored in accordance with procedures and vendor recommendations and replaced well before the end of its scheduled operating life. As discussed in Appendix J, Sections J.1 and J.2, of this *SPD Supplemental EIS*, continued assurance of the safe operation of these plants is the responsibility of the plant operator which operates under the independent regulatory oversight of NRC, including NRC regulations and license conditions. If the plant operator were to make a decision to use MOX fuel, it would be the joint responsibility of the plant operator and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely. For further discussion, refer to Section 2.5, Topics A and B, of this CRD.

Browns Ferry Nuclear Plant upgraded its fire protection program in response to NRC requirements defined in 10 CFR 50 Appendix R, which was issued in 1980. However, the fire protection program relied upon a substantial number of OMAs to assure safe shutdown of the reactors in the event of a design-basis fire. As industry experience with nuclear plant fire protection evolved, these previously allowable OMAs were disallowed, resulting in Notices of Violation to Browns Ferry for the fire protection program. To address these Notices of Violation, TVA initiated actions to reduce the reliance upon OMAs and transition the fire protection program to voluntarily comply with the 2001 NFPA Standard 805. A number of transition actions have already been completed, reducing the risk of damage due to a fire. When the NFPA 805 transition is complete, the risk of core damage due to fire will be reduced to a level consistent with other design-basis accident risks (TVA 2011).

As at all nuclear power reactors, every automatic or manual reactor shutdown that occurs is documented in plant operating records. Shutdowns are monitored, tracked, and evaluated by both NRC and TVA to ensure there is no increase in safety risk (see the Reactor Oversight Process described at www.nrc.gov/reactors/operator-licensing/oversight-programs.html).

These shutdowns have not affected the ability of the containments or safety-related equipment to perform their safety functions. In 2006, NRC issued a license renewal

Commentor No. 117 (cont'd): Stewart Horn

populace and the place. This alone is reason enough to not conduct this experiment which would put all downwind residents in North Alabama and Tennessee at increased risk of losing everything including their health. *117-4 cont'd*

4. Three of the Mark I reactors at Fukushima exploded when hydrogen built up in the secondary containment structures and blew the reactors apart. The secondary containment was insufficient in both size and strength. The controversial "hardened vent" modification added to all Mark I reactors after their construction apparently all failed at Fukushima allowing the pressure to rise and blow up the reactors containment structures and their spent fuel pools. If this should happen at Brown's Ferry, the consequences to us local residents would be catastrophic. In addition, all of these vents are unfiltered and thus if they did work in an overpressure situation, the radiation would be released to the air with disastrous results for all of us down-wind. *117-5*

5. Duke Energy has already experimented with MOX fuel in one of their commercial reactors. They installed plutonium rods that were supposed to go through 3 fuel cycles. After only two fuel cycles, the outer cladding expanded by more than ½ inch indicating that the protective outer shell was coming apart inside the reactor. Duke Energy put their reactor and all the local residents at risk by conducting this experiment. The NRC was highly negligent in permitting this kind of experiment, and should not allow this to be done at the aging Brown's Ferry reactors that have now wrongly been allowed to operate 50% longer than their design-to-lifetime. *117-6*

6. Since Fukashima, it has become widely known that boiling water reactors have a very dangerous spent fuel pool design that resides above the reactor. It is especially dangerous if it loses either primary power or water. These fuel pools have been allowed to be condensed in spacing between rods beyond their "designed-to-density" to allow for the storage of more fuel than they were designed to hold. At Brown's Ferry these pools have only a metal roof above them that is not tornado safe. These reactors reside in a very dangerous Tornado Alley. In the vastly destructive tornados that came through the Tennessee Valley in 2010, an EF-5 tornado passed within 5 miles of Brown's Ferry, demolishing everything in it's long continuous path on the ground and causing massive destruction all around the plant. If the tornado had hit the reactors there could have been horrible consequences for all of us living down-wind. Residents do not want to add to this danger by the use of Plutonium based fuel. *117-5 cont'd*

7. I believe the NRC and TVA have been talked into use of this fuel by the Department of Energy (DOE) and the French consultant AREVA. AREVA not only has a large consulting contract with TVA, but also has a very large vested interest in the MOX fuel program and in convincing TVA to experiment with MOX fuel. They have already received millions of dollars working on the MOX fuel program and are in position to receive up to billions in the future if the program continues. AREVA has a definite conflict of interest in advising TVA about the use of this fuel, and they should not be allowed to do this. *117-7*

safety evaluation report (NRC 2006a, 2006b) that documented an in-depth review of the Browns Ferry Nuclear Plant and concluded that TVA should be granted a 20-year operating license renewal for Browns Ferry in accordance with 10 CFR Part 54. NRC approved the Browns Ferry license renewal request on May 4, 2006.

The reactors at Browns Ferry have GE Mark-I type containments. From what is known from the 2011 accident in Japan, the GE Mark-I type containment remained intact and undamaged from the immediate impacts of the earthquake and tsunami. The operators were unable to successfully operate the containment venting system in a timely manner, which resulted in a buildup of pressure that precluded early injection of coolant into the reactor vessel. The lack of coolant, in turn, resulted in extensive core damage, high radiation levels, hydrogen production, and leakage of radioactive gases and hydrogen. The leakage of hydrogen gas into the reactor buildings resulted in explosions in the secondary containment buildings of Units 1, 3, and 4, and the ensuing damage to the facility contributed to the release of radioactive material to the environment (NRC 2013). The design of the Browns Ferry reactors is being evaluated to determine whether changes may make it better able to ameliorate the consequences of an unlikely severe accident. NRC has mandated implementation of requirements for reliable hardened containment vents capable of operation under severe accident conditions for Browns Ferry and other reactors with Mark I or Mark II containments (NRC 2013).

117-3 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. As summarized in Chapter 5, Section 5.3.3, of this *SPD Supplemental EIS*, use of MOX fuel in TVA or other reactors would require an amendment to the reactor's operating license in accordance with 10 CFR Part 50. The need for additional testing of MOX fuel to support its use in United States commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

117-4 The reactor accident analyses presented in this *Final SPD Supplemental EIS* are based on current state-of-the-art calculations of realistic MOX and LEU fuel radioisotope source terms, as well as accident releases. As discussed in Appendix J, Section J.3, the analysis in this *SPD Supplemental EIS* compares the accident results for partial MOX fuel and full LEU fuel cores to determine whether the use of MOX

Commentor No. 117 (cont'd): Stewart Horn

In summary, I am convinced that utilizing Plutonium based MOX fuel in any commercial power generating nuclear reactor is a horrible idea, and that the NRC will be highly negligent if this is allowed or permitted. This is especially true in the aging, already dangerous, poorly designed Brown's Ferry reactors. I am also concerned that MOX fuel shipments will be traveling on America's highways through many communities and passing very close to my house and land. An accident during transportation could release deadly plutonium into neighborhoods or over lands and contaminate the people present and the lands permanently. The TVA should not be allowed to increase the risk and danger to local residents by the use of this fuel. No other utility is interested in this and TVA should not be the location of this potentially deadly experiment, especially since it will become a more desirable terrorist target than all the other reactors in the country. *117-8*

Below are questions I would like for the NRC to answer in writing if possible.

A. What are the known facts about what happened to the spent fuel pools of the three reactors at Fukashima, (the same design as Brown's Ferry reactors) that exploded, especially the one containing MOX fuel? *117-9*

B. If an over-pressure situation occurs at Brown's Ferry and the hardened vent doesn't work what are the potential consequences to the people living down-wind?

C. If an over-pressure situation occurs at Brown's Ferry and the hardened vent does work, what are the potential consequences to the people living down-wind?

Sincerely,

Stewart Horn

[redacted]

fuel in these TVA reactors would make any substantive difference in the potential risks associated with the accidents analyzed. The results show that the consequences of such an accident, should it occur, would be comparable, regardless of whether the reactor was using a partial MOX fuel core or a full LEU core. For further discussion, refer to Section 2.5, Topics B, of this CRD.

The purpose of the Surplus Plutonium Disposition Program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally sound manner to ensure that it can never again be readily used in nuclear weapons. Current nuclear power reactor security provides protection from terrorists and groups seeking access to nuclear material, including nuclear fuel, in accordance with NRC regulations. Central to the purpose of the Surplus Plutonium Disposition Program is protecting plutonium from terrorists, so appropriate safeguards and security measures are taken at facilities and during transportation to protect against unauthorized access to materials.

117-5 Appendix J, Section J.3.3.3, of this *SPD Supplemental EIS* describes the NRC recommendations developed in response to the March 11, 2011, accident at the Fukushima Dai-ichi Nuclear Power Station in Japan and the subsequent actions TVA has taken to further reduce the likelihood and severity of accidents at its nuclear plants.

Accident analyses for U.S. nuclear power reactors already consider the radiological impacts of accidents like the Fukushima accident in that the safety evaluations include evaluation of beyond-design-basis accidents. As discussed in Appendix J, Section J.3, the analysis in this *SPD Supplemental EIS* compares the accident results for partial MOX fuel and full LEU fuel cores to determine whether the use of MOX fuel in these TVA reactors would make any substantive difference in the potential risks associated with the accidents analyzed. The beyond-design-basis accidents include severe accidents with a subsequent loss of containment similar to the accident at Fukushima. The results show that the consequences of such an accident, should it occur, would not be meaningfully different, regardless of whether the reactor was using a partial MOX fuel core or a full LEU core. For further discussion, refer to Section 2.5, Topic B, of this CRD. For information regarding the safety of the GE Mark-I type containment at the Browns Ferry Nuclear Plant, see Section 2.5, Topic A, of this CRD.

117-6 See the response to comment 117-2 regarding the safety of the Browns Ferry Nuclear Plant.

Commentor No. 117 (cont'd): Stewart Horn

Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

117-7 DOE's work with AREVA on MFFF is subject to the requirements of Federal contracting regulations and other applicable requirements, and MFFF and any reactors using MOX fuel must be licensed by NRC. DOE and TVA contracting strategies for surplus plutonium disposition activities are outside the scope of this *SPD Supplemental EIS*.

117-8 Transportation risks are analyzed for all alternatives proposed in this *SPD Supplemental EIS*, including the threat of theft and diversion of radioactive materials. Chapter 4, Table 4–23, of this *SPD Supplemental EIS* presents the potential impacts on the transportation crew and the general public from transportation of MOX fuel from SRS to TVA or other domestic reactors. This table shows that, over the life of the project, the transportation risks associated with incident-free operations and accidents are low. Whereas the radiological risk from the accidents shown in Table 4–23 includes all of the MOX fuel shipments and takes into account the probability of an accident, Appendix E, Table E–12, presents the consequences if a maximum reasonably foreseeable accident were to occur. Table E–12 shows that, if such an accident were to occur during the shipment of MOX fuel (a probability of less than 1 chance in 300,000), the increased risk of a single LCF among the exposed population would be about 0.002 (1 chance in 500). Although a severe accident that would result in land contamination is unlikely, if it were to occur, cleanup actions would be implemented to reduce the levels of contamination below risk-based levels.

See the response to comment 117-4 regarding risks associated with using MOX fuel in TVA reactors.

117-9 See the response to comment 117-5 regarding reactor accidents.

Commentor No. 118: Andrea T. Guajardo, Director Conejos County Clean Water, Inc.

Delivered via email to spdsupplementaleis@saic.com

Sachiko McAlhany
SPD Supplemental EIS Document Manager
P.O. Box 2324
Germantown, MD 20874-2324

October 10, 2012

Dear Ms. McAlhany:

Please accept this as a formal public comment from Conejos County Clean Water, Inc. (CCCW) related to the Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SPD SEIS). CCCW is a 501(c)(3) non-profit citizens' group, based in Antonito, Colorado that is incorporated under the laws in the State of Colorado.

Background of CCCW and Relationship to the Affected Environment

In June of 2010, concerned citizens incorporated into a Colorado non-profit organization, called CCCW. CCCW incorporated to promote awareness around health and environmental health issues that affect residents of Conejos County. In particular, to build awareness surrounding the transfer from truck to rail of radioactive, hazardous and toxic waste from Los Alamos National Laboratory (LANL) within 250 feet of the Rio San Antonio (River), a headwaters tributary to the Rio Grande (River).

CCCW is comprised of ranchers, teachers, small business owners, and concerned citizens. CCCW has a thirteen board member steering committee, and 402 general members.

The San Luis Valley (SLV) in south central Colorado is one of the largest sub-alpine valleys in the world, encompassing over 8,100 square miles. Hemmed in on the west by the San Juan Mountains, and on the east by the Sangre de Cristo Mountains, the SLV ranges in elevation from 7,000 to over 14,000 feet, and contains the headwaters of the Rio Grande. The Rio Grande rises in the San Juan Mountains to the west of the SLV, flows south into New Mexico and Texas, and empties into the Gulf of Mexico.

The SLV has many unique biological features, including areas identified as Natural Heritage areas, and is home to six endemic insect species.

The SLV is 122 miles long and 74 miles wide. This largely agrarian and ranching community is a relatively stable population. Many residents are eighth-generation. The oldest parish in Colorado, Nuestra Señora de Guadalupe, Our Lady of Guadalupe, lies at the southern end of Conejos County. Conejos County is part of the Sangre de Cristo National Heritage Area. About sixty percent (60%) of Conejos County's population is minority, and pride in the Hispano heritage is evident in

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everything from the names of rivers, mountains, and towns, to the local Spanish/English radio station. The median household income is less than half the national average at $24,744, and 38 percent of the children live in poverty (US Census 2000).

The SLV is known for its potatoes and alfalfa, and also grows barley, lettuce, wheat, peas, and spring grains. It has been a farm and ranching community for over 150 years, and many of the residents work in agriculture, following in the footsteps of their parents and grandparents. Many of the farmers and ranchers still practice traditional methods. It is the highest irrigated mountain plateau in the world, with about 7000 high-capacity wells – over half of which are irrigation wells.

The SLV contains over 5 million acres, of which 3.1 million acres – about 59 percent – are publicly owned (Forest Service, BLM, Fish & Wildlife Service, National Park Service, or state). Conejos County contains over 825,000 acres, of which 528,000 acres – about 64 percent – are publicly owned (Forest Service, BLM, Fish & Wildlife Service, National Park Service, or state). This creates an important relationship between the public and private sectors in dealing with air and water quality issues in the SLV and Conejos County.

There are 18 incorporated towns in the SLV, many of which are located along the Rio Grande or its many tributaries. Six counties lie within this large geographical boundary. They are Alamosa, Rio Grande, Saguache, Mineral, Costilla, and Conejos. There are 21 villages and five incorporated towns in Conejos County. Conejos County is among the poorest counties in the country, and unemployment levels run above the state and national averages (Conejos County 10.5%; as of 2008-not including the chronically unemployed).

Conejos County is a populated area within the SLV where the proposed actions in the SPD SEIS could potentially be impacted by waste transportation.

Draft SPD SEIS Document

The Department of Energy (DOE) opened the Waste Isolation Pilot Plant (WIPP) in 1999 when "Remote-Handled" (RH) transuranic (TRU-plutonium-contaminated) waste was prohibited. Since RH waste has been permitted, DOE still has not shipped RH waste at a rate to use the available capacity. Consequently, about one-half of the planned RH space in the walls of the underground rooms cannot be used because contact-handled (CH) waste has been emplaced.

CCCW understands that the DOE now wants to bring more RH waste than fits in the remaining designated space.

January 31, 2012, the New Mexico Environment Department (NMED) denied a similar request, DOE has submitted a subsequent Permit Modification Request – Addition of a Shielded Container so that it can transport and dispose of RH waste in lead shielded containers. In addition, RH waste would continue to be shipped and disposed in large canisters; as has been done since January 2007. If NMED approves the modification request, RH waste in shielded containers could be trucked to WIPP and emplaced in the underground rooms along with the CH waste.

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Commentor No. 118 (cont'd): Andrea T. Guajardo, Director Conejos County Clean Water, Inc.

Conejos County Clean Water Inc.

Many of Conejos County members speak Spanish only or Spanish as their first language, and it would be helpful to provide project information to them in the regional colloquial Spanish. We respectfully request public meetings in Conejos County with a local Conejos County Spanish translator should the proposed action in the SPD SEIS impact our environment via transportation or transfer of RH waste from truck to rail or rail to truck. The document is very large and expensive to print out. CCCW would like to respectfully request a summary document be created, comparative tables summarizing proposal and impacts for SLV impacts only be created and both documents be available for the public to review and understand at public meetings. Of our 402 members only 70 have access to email and Internet, so CCCW would like to respectfully request that project documents be placed in libraries and post offices in Conejos County.

Purpose and Need

Shielded containers have never been used. While DOE says that they could be handled as CH waste at WIPP, that is not completely true. For example, if a CH waste container is damaged or leaking, it can be overpacked into a larger container in the CH Bay and emplaced underground. If a shielded container is damaged or leaking, DOE says it will be overpacked in the CH Bay, but in case of a severe leak that might not be possible without substantial radiation doses to workers. The modification request states that shielded containers could be overpacked, but neither the Standard Waste Box nor the Ten Drum Overpack is big enough for a three-pack.

The entire Waste Handling Building, both CH and RH Bays, is permitted for 194.1 cubic meters of TRU waste, of which 11 cubic meters can be RH waste. The modification request includes no limits on the number of RH shielded containers that could be in the CH Bay, effectively substantially increasing the amount of RH waste allowed.

Because of DOE shipping and disposal practices over the past 13 years, the amount of underground space for RH waste at WIPP has substantially reduced. DOE does not know how much RH waste it has to bring to WIPP, when the waste would be ready to be shipped, whether more than the remaining capacity is needed, among other issues. DOE has estimated that more than 25 percent of the RH waste could come in shielded containers. Shielded containers would use CH space and could create a shortage of CH space in the future, as at least 6 percent of the CH space could be used for shielded containers.

DOE also has stated that it would use shielded containers to bring commercial waste, much of which is more radioactive than RH waste, to WIPP in its Greater-Than-Class C waste environmental impact statement. Furthering, DOE's plans to use shielded containers as a way to expand WIPP beyond its legal mission of disposal of up to 175,564 cubic meters of defense TRU waste, the limit set by the WIPP Land Withdrawal Act of 1992.

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118-1

118-1 DOE held three public meetings related to this *SPD Supplemental EIS* in the areas most likely to be affected by the proposed surplus plutonium disposition activities at LANL: Los Alamos, Santa Fe, and Española. As described in Appendix E, Section E.4.1, of this *SPD Supplemental EIS*, none of the CH-TRU waste generated under the proposed action or alternatives would be shipped through Conejos County; therefore, DOE does not consider Conejos County to be an affected area. Because Conejos County is not considered an affected area, no copies of the *Draft SPD Supplemental EIS* or related documents were placed in libraries in Conejos County. Copies of the Summary, as well as this entire *Final SPD Supplemental EIS*, are available upon request at: *SPD Supplemental EIS*, U.S. Department of Energy, PO Box 2324, Germantown, Maryland, 20874-2324. In addition, the Summary and *Final SPD Supplemental EIS* are available on the project website at http://www.nnsa.energy.gov/aboutus/ouroperations/generalcounsel/nepaoverview/nepa/spdsupplementaleis.

118-2

118-2 Remote-handled TRU waste would not be generated under the alternatives evaluated in this *SPD Supplemental EIS*. Chapter 4, Section 4.5.3.6.3, discusses the amount of CH-TRU waste that is projected for disposal at WIPP, as published in the *Annual Transuranic Waste Inventory Report – 2012* (DOE 2012a), as well as the amount of unsubscribed CH-TRU waste disposal capacity that would be necessary to support the alternatives analyzed in this *Final SPD Supplemental EIS*. DOE has not completed the *Final Environmental Impact Statement for the Disposal of Greater-Than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste* (DOE/EIS-0375) or identified a preferred alternative for the disposal of GTCC and GTCC-like waste. For further discussion, refer to Section 2.2, Topic B, of this CRD.

Commentor No. 118 (cont'd): Andrea T. Guajardo, Director Conejos County Clean Water, Inc.

Conejos County Clean Water Inc.

Public Health

All TRU waste is dangerous to humans and the environment for thousands of generations because plutonium is radioactive for hundreds of thousands of years and in very small amounts will cause lung cancer and other diseases if it is inhaled or ingested. By law, TWU waste must be disposed deep underground to try to prevent humans from contacting it. RH TRU waste also contains radionuclides that are thermally hot and release gamma rays that must be shielded to protect humans. At the surface of containers, RH TRU waste dose rate is more than 200 millirem per hour and can be up to 1,000 rem per hour.

CCCW would like to request that any RH TRU disposal adequately address the health impacts from the exposure to radioactive, hazardous, and toxic waste; including materials incidents, and transportation.

118-3

Recommendations

We are very concerned about the Department of Energy plans for surplus plutonium. No additional plutonium should be brought to LANL, which has a cleanup mission and cannot meet seismic standards in the case of a severe earthquake. The WIP has a limited mission and does not have the capacity for all surplus plutonium. Please stop the Mixed Oxide Fuel (MOX) Plutonium Fuel Program and immobilize the plutonium for disposal as a waste, and safely store plutonium until technically sound, suitable disposition facilities are available.

118-4

We are also concerned about the shielded containers at WIPP will allow more RH waste that is dangerous to transport, store, and dispose. CCCW would like to request additional public hearings on the shielded containers, which should be a class 3 modification to allow additional public comment and hearing.

118-5

CCCW would like to request that a representative from the Town of Antonito and the Conejos County Board of Commissioners be added as cooperating agency officials for further NEPA analysis for Surplus Plutonium Disposition should the transportation impact Conejos County. Thank you for your careful consideration of CCCW's comments. Please keep us informed of any upcoming public meetings in the SLV and Conejos County. We can be reached via email at info@conejoscountycleanwater.org.

118-6

Respectfully submitted,

Andrea T. Guajardo, Director

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118-3 All alternatives evaluated in this *SPD Supplemental EIS* include the generation of CH-TRU waste; under one alternative, 13.1 metric tons (14.4 tons) of surplus plutonium would be processed for disposal as CH-TRU waste. None of these TRU wastes are expected to be remote-handled. In all cases, the CH-TRU waste would be disposed of at WIPP, which is authorized in accordance with the regulations of 40 CFR Part 191. This *SPD Supplemental EIS* evaluates the potential impacts from normal operations, postulated facility accidents, and transportation that are associated with the handling and disposal of CH-TRU waste. For further discussion, refer to Section 2.2, Topic B, of this CRD.

118-4 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

See the response to comment 118-2 regarding WIPP capacity.

118-5 As described in Appendix E, Section E.4.1, of this *SPD Supplemental EIS*, none of the CH-TRU waste generated under the proposed action or alternatives would be shipped through Conejos County; therefore, DOE does not consider Conejos County to be an affected area. In addition, as described in Chapter 4, Section 4.1.4, all TRU

Commentor No. 118 (cont'd): Andrea T. Guajardo, Director Conejos County Clean Water, Inc.

Cc:
Gail Schwartz – State Senator
Ed Vigil – State Representative
Erin Minks – Representative for U.S. Senator Mark Udall
Brenda Felmlee – Representative for U.S. Congressman Scott Tipton
Charlotte Bobicki – Representative for U.S. Senator Michael Bennet
Steve McCarroll – Conejos County Commissioner Board Chair
Mike Trujillo – Antonito Town Mayor

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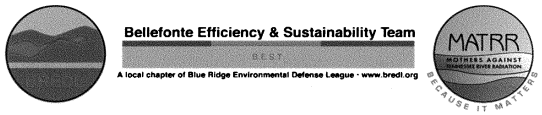
waste generated under alternatives for surplus plutonium disposition would be CH-TRU waste.

In response to multiple requests for more time to review and comment on the *Draft SPD Supplemental EIS*, DOE extended the originally scheduled comment period by an additional 15 days through October 10, 2012.

118-6 As noted in the response to comment 118-5, DOE does not expect CH-TRU waste shipments to pass through Conejos County. Therefore, DOE does not consider Conejos County to be an affected area.

Commentor No. 119: Sandra Kurtz
Bellefonte Efficiency and Sustainability Team
Mothers Against Tennessee River Radiation



Public Hearing Comments
Draft Surplus Plutonium Disposition Supplement Environmental Impact Statement
September 11, 2012, Chattanooga Convention Center, Chattanooga, Tennessee

I am Sandra Kurtz, a member of Bellefonte Efficiency & Sustainability Team, a chapter of the Blue Ridge Environmental Defense League. I live in Chattanooga about 17 miles away from Sequoyah Nuclear Plant. I have 5 grandchildren who also live here.

TVA has stated in a July 24, 2012 fact sheet that it is willing to consider using mixed oxide fuel if it meets three criteria:

1. Operationally and environmentally safe;
2. Economically beneficial to TVA customers;
3. Licensed by the Nuclear Regulatory Commission (NRC)

We would hope that NRC would never approve a license if the first two criteria weren't met and, in my opinion, the first two cannot be satisfied.

First criteria:
Is this fuel operationally and environmentally safe?
An honest assessment will show that the use of radioactive plutonium---that's mixed oxide fuel/MOX-- is not safe at all for these reasons:

In TVA's existing nuclear reactors, the fuel rods must be made of a material that allows nuclear fission to take place. These rods are clad with a zirconium alloy the thickness of tin foil in order for nuclear fission to occur as it does. The Duke Energy experiments showed warping of the rods with the use of this plutonium fuel. These test trials were discontinued. Duke said they were discontinued because they found out the technical information they needed to know. Indeed, they must have found out that this radioactive plutonium fuel is not suitable for their reactors because they no longer have interest in using it. Now TVA is being asked, or is it pressured, by DOE to consider using this never before used, even more radioactive then uranium fuel in our aging Sequoyah ice-condenser reactors and our Browns Ferry's GE Mark 1 reactors, neither of which is designed for this fuel. An accident with broken/opened up fuel rods is unacceptable and unnecessary. At least, send it to a research lab and learn from Fukushima before subjecting its use to TVA citizens.

119-1

Second Criteria:
Is the use of this fuel economically beneficial to TVA customers?

Well, someone is making some money somewhere or this plan wouldn't even be considered. It is certainly not beneficial to TVA customers. Our rates won't be

119-2

119-1 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. As addressed in Chapter 4 and Appendix I, the impacts of reactor operations using a partial MOX fuel core are not expected to change substantively from operations using a full LEU fuel core. As summarized in Section J.2.1, tests performed by Duke Energy demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. As summarized in Chapter 5, Section 5.3.3, of this *SPD Supplemental EIS*, use of MOX fuel in TVA or other reactors would require an amendment to the reactor's operating license in accordance with 10 CFR Part 50. DOE is not pressuring TVA to use MOX fuel in its reactors. TVA would only use MOX fuel if it is safe and favorably priced relative to commercially available fuel. For further discussion, refer to Section 2.4, Topic A, and Section 2.5, Topic B, of this CRD.

Based on lessons learned from the March 11, 2011 accident at the Fukushima Dai-ichi Nuclear Power Station in Japan, NRC is implementing changes to improve the safety of U.S. commercial nuclear power reactors. For further discussion, refer to Section 2.5, Topics B and C, of this CRD.

119-2 TVA is a cooperating agency for this *SPD Supplemental EIS* and, as such, is not required to declare a preferred alternative. TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose. TVA, as a cooperating agency, may adopt this *Final SPD Supplemental EIS* after independently reviewing the EIS and determining that its comments and suggestions have been satisfied (40 CFR 1506.3(c)). Cost is among the factors that may be considered by TVA in reaching a decision on the Surplus Plutonium Disposition Program.

Commentor No. 119 (cont'd): Sandra Kurtz
Bellefonte Efficiency and Sustainability Team
Mothers Against Tennessee River Radiation

going down because of the use of this plutonium blend. It won't be more reliable or environmentally friendlier. In fact, the cost of the fuel will be much more expensive than what is used now. The argument used by proponents is that with rising costs for nuclear fuel, MOX will be price competitive. However, with improved extraction methods, the price for uranium has actually not changed since 1948.

119-2 cont'd

The only reason I can think of that might satisfy this stated criteria is a national peace one. It's good to get rid of old Russian Cold War weapons and we made a deal to take them. We can pull out the plutonium, mix it with uranium, use it in our nuclear reactors, reduce the amount of nuclear weapons, and bring peace to the world. Sounds good. Peace is certainly beneficial to TVA customers, but this won't get us there. For the plutonium contained in the weapons to get to a high enough concentration for use in nuclear reactors requires extensive processing with resulting radioactive waste. What do we do with that waste? Further, plutonium does not go away even after it is used in the reactor meaning it remains radioactive waste that has to be stored. Why not bypass the reactor step and choose the vitrification method where all is placed in a permanent glass casing and put forever out of reach?

119-3

Time does not permit me to list all the other reasons why this alternative should not be chosen for getting rid of old nuclear weapons. Don't make us Tennessee Valley inhabitants guinea pigs for an untried, unproven, expensive radioactive fuel just so we can boil water to make electricity. Radiation at any level is not good for you. We don't need to make more. Radioactive waste leaves a legacy both we and future generations shouldn't have to endure. Let's put our eggs in efficiency, conservation and Earth-friendly energy baskets.

Thank you.

Sandra Kurtz
[redacted]

119-3 DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS,* but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. The action alternatives evaluated for the 13.1 metric tons (14.4 tons) of surplus plutonium are the Immobilization to DWPF Alternative, MOX Fuel Alternative, H-Canyon/HB-Line to DWPF Alternative, and WIPP Alternative.

Commentor No. 120: Remy Devoe

Hi, my name is Remy Devoe. I am a senior at the University of Tennessee Knoxville majoring in Nuclear Engineering. I am also the Secretary of the UTK Student Section of the American Nuclear Society. Our society members are engineers and scientists that are dedicated to furthering nuclear science and technology. I am here today to speak on this issue of surplus Plutonium disposition and provide evidence in support of the use of MOX fuels in nuclear reactors.

This hearing is to determine what to do with surplus weapons-grade Plutonium. There are 34 tons of Plutonium that must be disposed of as per the agreement between Russia and the U.S. We should not dispose of the weapons-grade Plutonium indefinitely in a geological repository. This stockpile should be viewed as a resource that can be used to provide energy. If instead we use Plutonium in MOX fuels, we can generate electricity for homes and businesses and make our country more energy independent while disposing of this potentially dangerous material. Once the fuel has been used in a reactor, the Plutonium is ~~no longer at risk~~ very difficult for weapons diversion. The highly radioactive fuel rods protect the Plutonium and the composition is not desirable for use as a weapon. This makes MOX fuels the safest way to dispose of Plutonium. Nuclear energy has not always been accepted, this is primarily due to the association with nuclear weapons, but in this case, nuclear energy would be used to reduce the amount of weapons material in existence. This is why I believe that the most effective and economical way to dispense of excess Plutonium is to implement use of MOX fuel.

and impractical

(Look Up)

Thank you again for listening to me today.

120-1

120-1 DOE acknowledges the commentor's opinion.

Commentor No. 121: Gretel Johnston, Co-founder Mothers Against Tennessee River Radiation

MOX Plutonium Comment Notes:

Einstein once said that insanity is repeating the same behavior but expecting different results.

The nuclear power experiment is failing for a second time, is far too expensive, and in 50 years no solution has been found for this 100,000 year radioactive trash problem that you are leaving the future.

But you just keep making more of it – making even more Plutonium, supposedly for the purpose of disposing of it. I think Einstein would say this qualifies as 2-fold insanity.

You are actually considering an experiment with 40 year old reactors that have had repeated problems. You propose putting experimental Plutonium fuel in them, fuel they were not designed to use when they were young, much less when old and over-stressed. You propose this, even though this weapons-grade MOX Plutonium fuel burns hotter and is more difficult to control than Uranium – which Fukushima and Chernobyl have shown is difficult enough. Would say this qualifies for Einstein's definition. *121-1*

Let's see, this weapons-grade MOX Plutonium Fuel would be used in aging reactors that have had untold numbers of unplanned SCRAMs, which are known to weaken the reactor parts and containment structure. Yep, that qualifies.

These aging reactors are not designed for the hotter fuel, so your experiment puts over 1 million people at risk, who live within 50 miles of TVA's Sequoyah Nuclear Power Plant. After Fukushima & Chernobyl, that certainly qualifies. *121-2*

The MOX Plutonium Fuel also creates even more plutonium waste and spreads it around with inadequate security – *121-3*

121-1 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. There are differences in nuclear reactor core physics between MOX and LEU fuel cores, but these differences are understood and can be addressed using measures such as modifications to reactivity control systems and core fuel management procedures. Presently available information and analysis indicate that, with minor modifications, commercial nuclear power reactors in the United States have the capability to safely utilize MOX fuel. For further discussion, refer to Section 2.4, Topic A, and Section 2.5, Topic B, of this CRD.

As at all nuclear power reactors, every automatic or manual reactor shutdown that occurs is documented in plant operating records. Shutdowns are monitored, tracked, and evaluated by both NRC and TVA to ensure there is no increase in safety risk (see the Reactor Oversight Process described at www.nrc.gov/reactors/operator-licensing/oversight-programs.html).

These shutdowns have not affected the ability of the containments or safety-related equipment to perform their safety functions. In 2006, NRC issued a license renewal safety evaluation report (NRC 2006a, 2006b) that documented an in-depth review of the Browns Ferry Nuclear Plant, including its 10 CFR 50.65 maintenance rule compliance, and concluded that TVA should be granted a 20-year operating license renewal for Browns Ferry in accordance with 10 CFR Part 54. NRC approved the Browns Ferry license renewal request on May 4, 2006.

121-2 NRC is continually inspecting and assessing the safety of the Nation's nuclear power reactors and issuing findings to help assure these plants continue to operate safely. If TVA were to make a decision to use MOX fuel, it would be the joint responsibility of TVA and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely.

There are some minor differences between MOX fuel and LEU fuel, such as the amount of actinides in used MOX fuel rods would be higher than in used LEU fuel rods. These differences, however, are not expected to affect reactor safety or meaningfully increase the environmental consequences or risks associated with the use of a partial MOX fuel core. As summarized in Chapter 4 and described in detail in Appendices I and J of this *SPD Supplemental EIS*, the impacts associated with

Commentor No. 121 (cont'd): Gretel Johnston, Co-founder Mothers Against Tennessee River Radiation

hardly a way to fulfill the stated DOE purpose of non-proliferation. Can't you just see Einstein rolling his eyes right now? *121-3 cont'd*

Yep, this is certifiable insanity by just about anyone's definition.

Although the DOD seems to want to keep this 2010 PMDA deal with Russia, which appears to only benefit the nuclear power contractors, it is only sane and reasonable to modify that agreement to recommend what the DOE identifies as the number 1 action option, which is Glass Vitrification, and this option should be used for all weapons-grade Plutonium – to render it secure and permanently unusable for weapons. The purpose of this program after all, is it not? (DOE calls this Immobilization to DWPF Alternative or glass can-in-canister immobilization.) *121-4*

We call on you to step back from the lobbying pressures and use your plain and sane common sense.

Can you truthfully justify:

1. Risking 2 million U.S. citizens with this experiment in old commercial nuclear reactors *121-5*
2. Producing even more plutonium
3. Spreading the plutonium waste around to non-military commercial sites with inadequate security *121-6*
4. And doing all this in the name of the Disposition of Dangerous Nuclear Weapons MATERIAL

Can you give me one good reason why all weapons-grade Plutonium should not be Vitrified? THAT IS NOT DOING NOTHING IT WOULD SECURE THOSE FOR THE FUTURE. *121-7*

Thank you,

Gretel Johnston
FOR MOTHERS AGAINST TENNESSEE RIVER RADIATION
MATER

using a partial MOX fuel core versus a full LEU fuel core in commercial nuclear power reactors are expected to be similar. The risks associated with postulated accidents would be small. For further discussion, refer to Section 2.5, Topic B, of this CRD.

Appendix J, Section J.3.3.3, of this *SPD Supplemental EIS* describes the NRC recommendations developed in response to the March 11, 2011, accident at the Fukushima Dai-ichi Nuclear Power Station in Japan and the subsequent actions TVA has taken to further reduce the likelihood and severity of accidents at its nuclear plants. For further discussion, refer to Section 2.5, Topics B and C, of this CRD.

121-3 As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel, by storing it in the reactor's used fuel storage pool or placing it in dry storage. The use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would displace LEU fuel that otherwise would have been used to power the nuclear power reactor. Use of MOX fuel could increase used nuclear fuel generation by 8 to 10 percent for TVA's Browns Ferry and Sequoyah Nuclear Plants, and from 2 to 16 percent for generic reactors during the period MOX fuel could be used at a reactor. It is expected that increases of this magnitude would be managed within the reactor's normal planning for storage of its used fuel. DOE is evaluating various options for the post-reactor management of used fuel and HLW; however, it is expected that there would be little difference in environmental impacts and risks if used MOX fuel were managed instead of used LEU fuel.

Substantial security exists at commercial nuclear power reactors, although details of the security measures are withheld from the public to avoid assisting potential adversaries. In addition, MOX fuel is not an attractive target for terrorist attack because it is not readily usable for a nuclear device or a dirty bomb. The plutonium in MOX fuel is blended with approximately 20 times as much depleted uranium as plutonium and formed into ceramic pellets encased in metal cladding. Moreover, the MOX fuel is contained in large, heavy fuel assembly structures that would make theft extremely challenging. Without substantial physical dismantling and chemical separation, the plutonium in the MOX fuel cannot be used in a nuclear bomb. Once the fuel has been irradiated in a reactor, it would be highly radioactive, and recovering the plutonium would be impossible without highly specialized equipment. The use of MOX fuel is consistent with U.S. nonproliferation policy and international nonproliferation agreements. Use of MOX fuel in commercial

Commentor No. 121 (cont'd): Gretel Johnston, Co-founder Mothers Against Tennessee River Radiation

nuclear power reactors would render surplus plutonium into a used fuel form that is not readily usable for nuclear weapons. For further discussion, refer to Section 2.4, Topic A, of this CRD.

121-4 DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative. As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. The action alternatives evaluated for the 13.1 metric tons (14.4 tons) of surplus plutonium are the Immobilization to DWPF Alternative, MOX Fuel Alternative, H-Canyon/HB-Line to DWPF Alternative, and WIPP Alternative. All of the action alternatives evaluated in this *SPD Supplemental EIS* are considered to render surplus plutonium into a proliferation-resistant form or result in proliferation-resistant disposal.

The United States remains committed to the PMDA (USA and Russia 2000) with the Russian Federation, under which both countries have agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. Use of MOX fuel in commercial nuclear power reactors would render surplus plutonium into a used fuel form that is not readily usable for nuclear weapons.

121-5 See the response to comment 121-2 regarding safety concerns.

121-6 See the response to comment 121-3 regarding security measures.

121-7 See the response to comment 121-4 regarding previous decisions.

Commentor No. 122: Garry Morgan
BREDL/BEST

Surplus Plutonium Disposition
Supplemental Environmental Impact Statement
(SPD Supplemental EIS)

Comment Form

Date: Sep 11, 2012

Name GARRY MORGAN

Organization BREDL/BEST

Address [redacted]

City, State, Zip Code [redacted]

E-mail [redacted]

Your comments on the Draft SPD Supplemental EIS

Concerning the "ALTERNATIVES" presentation Board presented by the NNSA Documents Manager. The presentation board displayed the words "Immobilization" but does not specifically state "glass vitrification" as an option. The public information display-presentation board does state "MOX Fuel." The "glass vitrification" methodology should be stated specifically as a viable alternative.

PLEASE RETURN THIS FORM TO THE REGISTRATION DESK OR SUBMIT BY SEPTEMBER 25, 2012 TO:
U.S. Mail: Sachiko McAlhany, NEPA Document Manager, U.S. Department of Energy, P.O. Box 2324, Germantown, MD 20874-2324
Toll-Free Fax: 1-877-865-0277
E-mail: **spdsupplementaleis@saic.com**

122-1

122-1 This *SPD Supplemental EIS* uses the term "immobilization" in part to distinguish plutonium immobilization from ongoing vitrification of HLW at DWPF at SRS. Appendix B, Section B.1.2.1, of this *SPD Supplemental EIS* explains that the plutonium immobilization process under consideration is a glass vitrification process.

Commentor No. 123: Audrey Mercer

From: Audrey Mercer
Sent: Friday, September 21, 2012 9:48 PM
To: spdsupplementaleis@saic.com
Subject: Draft SEIS Comments to DOE

SPD Supplemental EIS
US Department of Energy
PO Box 2324
Germantown, MD 20874-0277

By Email: spdsupplementaleis@saic.com

Comments to DOE concerning Draft SEIS
DATE: September 21, 2012

Planning to use plutonium as fuel to produce electricity is dangerous no matter where you choose to do it. But being a neighbor to Tennessee makes me especially concerned because MOX is harder to control than uranium, burns hotter than uranium fuel and can result in more cancer deaths in a severe accident. *123-1*

There is no mention of upgrading the Sequoyah nuclear plant to handle the "new fuel form". *123-2*

Even though the DOE claims we are reducing our nuclear stockpile, it is obvious we are making more destructive plutonium by producing more waste from a nuclear reactor. MOX waste is even more dangerous than other irradiated fuel waste and needs to be buried forever. What are the plans for the waste? Will it remain onsite at each reactor or will it be shipped to New Mexico or elsewhere? *123-3*

Please treat the nuclear weapons and plutonium as waste, NOT FUEL to make electricity and more waste. We must end this deadly, dangerous cycle.

As of today there is no customer for the MOX program, and we are wasting tax payer money. *123-4*

Sincerely,

Audrey Mercer

123-1 As summarized in Chapter 4, Section 4.1.2, and described in detail in Appendices I and J of this *SPD Supplemental EIS*, the risks associated with both normal operations and accidents for a partial MOX fuel core and full LEU fuel core are expected to be comparable. The risks associated with postulated accidents would be small. The MOX fuel core would be designed and licensed to the same operating and safety criteria as a full LEU fuel core (e.g., same operating temperature, electrical output, etc.). The MOX fuel core may require enhanced reactivity controls (increased soluble boron in the reactor coolant for pressurized water reactors and/or additional control rods) to meet the licensed operating conditions. For further discussion, refer to Section 2.5, Topic B, of this CRD.

123-2 As summarized in Appendix I, Section I.1.1, of this *SPD Supplemental EIS*, no new construction would likely be needed on undeveloped areas of the reactor site to support the irradiation of MOX fuel. Although the use of MOX fuel may require some changes to safety systems, such as the number of control rods, it is expected to require only minor modifications at the reactor site itself. Minor changes may be needed to existing facilities for security upgrades and to provide adequate room to receive MOX fuel assemblies.

123-3 As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel, by storing it in the reactor's used fuel storage pool or placing it in dry storage. The use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would displace LEU fuel that otherwise would have been used to power the nuclear power reactor. Use of MOX fuel could increase used nuclear fuel generation by 8 to 10 percent for TVA's Browns Ferry and Sequoyah Nuclear Plants, and from 2 to 16 percent for generic reactors during the period MOX fuel could be used at a reactor. It is expected that increases of this magnitude would be managed within the reactor's normal planning for storage of its used fuel.

DOE has terminated the program for a geologic repository for used nuclear fuel and HLW at Yucca Mountain, Nevada. Notwithstanding the decision to terminate the Yucca Mountain program, DOE remains committed to meeting its obligations to manage and ultimately dispose of used nuclear fuel and HLW. For further discussion, refer to Section 2.7, Topic A, of this CRD.

In this *SPD Supplemental EIS*, three of the four disposition options include disposal of some or all of the 13.1 metric tons (14.4 tons) of surplus plutonium as waste: (1) immobilization (see Chapter 2, Section 2.2.1); (2) vitrification with HLW (see

Section 2.2.3); and (3) disposal as CH-TRU waste at WIPP (see Section 2.2.4). See Chapter 2, Section 2.2, for a discussion of all the disposition options under consideration. All of these options are considered reasonable for dispositioning the surplus plutonium.

123-4 Disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts per NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors (see Appendix I, Section I.2).

Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD. Funding decisions and appropriations for specific Federal programs and projects are outside the scope of this *SPD Supplemental EIS*.

Commentor No. 124: Nancy Herman

From: Nancy Herman
Sent: Saturday, September 22, 2012 12:09 PM
To: spdsupplementaleis@saic.com
Subject: Comment on Draft SPDS Environmental Impact Statement

September 21 2012

To Whom It May Concern:

Comment on Draft SPDS Environmental Impact Statement:

Volume 1 Section 2.22 Page 2.8 reads as follows:

"When the MOX fuel completes its time within the reactor core, it would be withdrawn from the reactor in accordance with the plant's standard refueling procedures and placed in the plant's used fuel pool for cooling among other used fuel. (also known as spent fuel). MOX used fuel has a slightly greater heat content than low-enriched uranium (LEU) used fuel, but this would have no meaningful impacts on fuel pool operation. No major changes are expected in the plant's used fuel storage plans to accommodate the MOX used fuel." *124-1*

The above statement lacks the evidence to support such claims. I found no chart comparing actual temperatures of the two fuels. Please explain why putting hotter fuel rods in the existing fuel pool would not change the pool operation.

The safety of adding MOX fuel to pool storage made only for LEU is being questioned here.

Also, due to lack of a federal repository for spent fuel rods, most reactor sights have over-stocked fuel pools which is a violation and could cause harm. What plans have the DOE made for this issue. *124-2*

Thank you for your consideration. Your response can be sent to e-mail above.

Nancy Herman

124-1 The nuclear reactor operator, with oversight by NRC, is responsible for used fuel storage at the reactor. As stated in the cited section, DOE expects that used MOX fuel would have no meaningful impacts on fuel pool operation. The temperature difference between used MOX fuel and used LEU fuel is not substantial. At the time the fuel is withdrawn from the reactor, irradiated MOX fuel produces about 4 percent less decay heat than equivalent LEU fuel. Decay heat production falls off very rapidly for both fuel types. For further discussion, refer to Section 2.5, Topic B, of this CRD.

124-2 Examining the disposition of used nuclear fuel is not within the scope of this *SPD Supplemental EIS*. As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel, by storing it in the reactor's used fuel storage pool or placing it in dry storage. The use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would displace LEU fuel that otherwise would have been used to power the nuclear power reactor. Use of MOX fuel could increase used nuclear fuel generation by 8 to 10 percent for TVA's Browns Ferry and Sequoyah Nuclear Plants, and from 2 to 16 percent for generic reactors during the period MOX fuel could be used at a reactor. DOE expects that increases of this magnitude would be managed within the reactor's normal planning for storage of its used fuel.

Commentor No. 125: Floyd Archuleta, President Consortium of Major LANL Subcontractors

REGIONAL DEVELOPMENT CORPORATION | Los Alamos NATIONAL LABORATORY Sub-Contractors Consortium

Sachiko McAlhany, NEPA Document Manager
SPD Supplemental EIS
U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324

September 19, 2012

Mr. McAlhany,

I am writing you on behalf of the Consortium of Major LANL Subcontractors, an organization made up of the 33 largest subcontractors doing work at Los Alamos National Laboratory (*See the attached information page detailing the nature and size of our organization*). On August 19th, 2012 our organization met and voted to send this letter to you regarding the proposed Advanced Recovery and Integration Extraction System (ARIES) proposal for plutonium pit disposition.

As citizens of Northern New Mexico, we want to express our strong support for the National Nuclear Security Administrations (NNSA) plan to convert excess Plutonium used in nuclear weapons to non-weapons applications. We believe this is good for our national security and is a reasonable path toward the ultimate disposition of this material.

We would also like to communicate our strong support for efforts to allow Los Alamos National Laboratory (LANL) to render unused nuclear weapons Plutonium into forms that would be easier to store and ultimately be reused for peaceful purposes. As professionals familiar with the strengths and capacities of Los Alamos National Laboratory we jointly believe that LANL is best positioned to handle this activity since they have the expertise and facilities to securely and safely manage nuclear material.

As a member of the Northern New Mexico business community, we want to state our strong support for the NNSA plan to allow LANL to process excess Plutonium into a weapons form. It is our opinion that this activity will bring in additional revenue to New Mexico and will increase high paying jobs at the Laboratory.

On behalf of the Consortium of Major LANL Subcontractors I would like to voice my support for the Department of Energy's efforts to turn excess Plutonium into sources for energy. This is a great example of the nonproliferation work that Los Alamos undertakes. I believe that this work will be beneficial to the Lab and the Nation.

Respectfully

Floyd Archuleta,
President, Consortium of Major LANL Subcontractors

Consortium of Major LANL Subcontractors – P.O. Box 2698, Espanola, NM 87532 – 505.989.8004

125-1

125-1 DOE acknowledges the commentor's opinion.

Commentor No. 125 (cont'd): Floyd Archuleta, President Consortium of Major LANL Subcontractors

REGIONAL DEVELOPMENT CORPORATION

Los Alamos NATIONAL LABORATORY Sub-Contractors Consortium

Synopsis of Consortium Mission & Membership

The Consortium of Major LANL Subcontractors was created in April, 2004 for the purpose of making Northern New Mexico a better place to live and work by facilitating cooperative, strategic, and leveraged economic development investments in the region by Consortium members. All LANL subcontractors awarded contracts valued at five million dollars or more are members of the Consortium. As of August 2012 there are thirty-three member companies.

A January 2012 voluntary survey of Consortium members reported numbers of employees directly employed by member contractors and gross annual revenues and expenditures in northern New Mexico. Results of the survey indicate that the Consortium members jointly employee over 1,800 workers in northern New Mexico, and twelve member companies which volunteered to report revenues jointly generate over $266 million in New Mexico annually, with $177 million of this economic activity located in northern New Mexico.

Below is a complete list of our membership as of August 2012.

Abba Technologies	Adelante Consulting Inc.	CNSI
Compa Industries	Eberline	EDI
Energy Solutions	Engineering Resources LLC	Excel
Frank's Supply Company, Inc.	Hacienda Home Centers	HDR Constructors, Inc.
Holman's	Intermech, Inc.	Kiewit
Lopez Engineering	Merrick & Company	Navarro Research & Engineering, Inc.
Northwind	Plan B Networks, Inc.	Portage
SAV Associated Services, LLC	Sigma Science, Inc.	SOC Day & Zimmerman
Team Technologies Corporation	Technology Integration Group	Technology Management Consulting Services, Inc.
Terranear PMC	Tsay Corporation	Vector Resources
Verizon Wireless	Vigil Enterprises	Weidliner Associates

Consortium of Major LANL Subcontractors – P.O. Box 2698, Espanola, NM 87532 – 505.989.8004

Response side of this page intentionally left blank.

Commentor No. 126: Gary McMath

From: GARY MCMATH
Sent: Monday, September 24, 2012 1:01 PM
To: spdsupplementaleis@saic.com
Subject: Pu Disposition

I support the removal of weapons grade plutonium-239 from both the US and Russian inventories. The idea of creating a MOX fuel to convert these materials is both desirable from a security perspective and will produce electrical resources for the nation. I also support doing the work at Los Alamos for the economic benefits for the area as well as the efficiencies gained from using an existing facility designed to handle Pu. *126-1*

Thanks,

Gary McMath

126-1 DOE acknowledges the commentor's opinion.

Commentor No. 127: Khalil J. Spencer, Ph.D.

From: Khalil Spencer
Sent: Tuesday, September 25, 2012 9:53 AM
To: spdsupplementaleis@saic.com
Cc: khalil Spencer
Subject: Surplus Plutonium Disposition Project

To Whom It May Concern

I am Khalil J. Spencer. I am a Los Alamos National Laboratory analytical chemist, but speaking here as a private citizen on my own time. I advise you to support the preferred alternative for the Surplus Plutonium Disposition Project and therefore, direct some of this work to be done in existing facilities at Los Alamos National Laboratory.

LANL has both the facilities and expert personnel to perform this work in a safe and secure manner, without endangering people or the environment. Furthermore the mission itself, to render surplus Plutonium from retired pits to a form that cannot be used in a weapon, is a critical one if the United States is to continue to work with other nations to reduce the number of nuclear weapons in the world's inventory. Converting Plutonium to MOX fuel and burning it in a reactor is the most effective, if not the only way to ensure that this material will never again end up as a bomb.

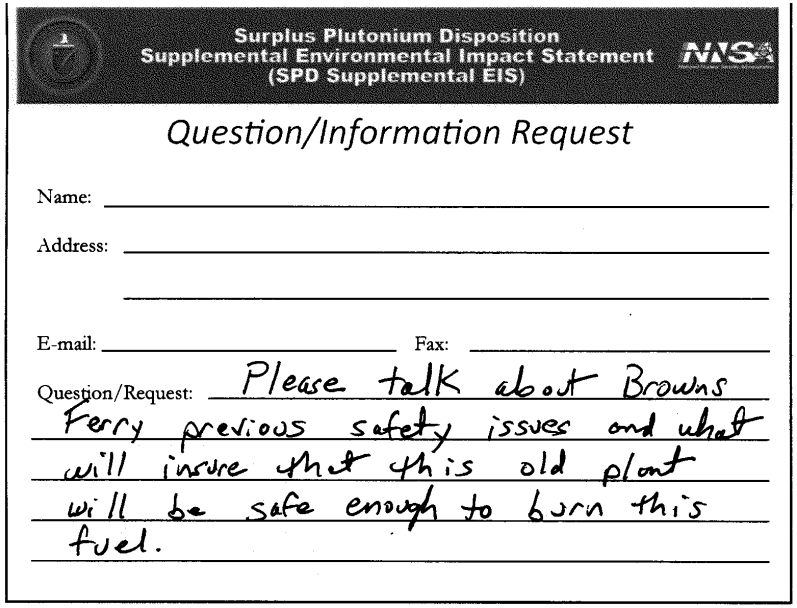
Thank you for your consideration.

Khalil J Spencer, Ph.D.

127-1

127-1 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

Commentor No. 128: Anonymous



Surplus Plutonium Disposition
Supplemental Environmental Impact Statement
(SPD Supplemental EIS)
NNSA

Question/Information Request

Name: _____

Address: _____

_____

E-mail: _____ Fax: _____

Question/Request: Please talk about Browns Ferry previous safety issues and what will insure that this old plant will be safe enough to burn this fuel.

128-1

128-1 The Browns Ferry Nuclear Plant is designed and maintained to meet stringent NRC safety requirements for nuclear power reactors. Safety-related equipment is regularly inspected, maintained, and monitored in accordance with procedures and vendor recommendations and replaced well before the end of its scheduled operating life. As discussed in Appendix J, Sections J.1 and J.2, of this *SPD Supplemental EIS*, continued assurance of the safe operation of these plants is the responsibility of the plant operator which operates under the independent regulatory oversight of NRC, including NRC regulations and license conditions. If the plant operator were to make a decision to use MOX fuel, it would be the joint responsibility of the plant operator and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely. For further discussion, refer to Section 2.5, Topics A and B, of this CRD.

As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. There are differences in nuclear reactor core physics between MOX and LEU fuel cores, but these differences are understood and can be addressed using measures such as modifications to reactivity control systems and core fuel management procedures. Presently available information and analysis indicate that, with minor modifications, the Browns Ferry Nuclear Plant has the capability to safely utilize MOX fuel. For further discussion, refer to Section 2.5, Topic A, of this CRD.

Commentor No. 129: Jan Boyer

Dear Sachicko McAlhany:

I am very concerned about Department of Energy plans for surplus plutonium. No additional plutonium should be brought to Los Alamos National Lab (LANL), which has a cleanup mission and cannot meet seismic standards in the case of a severe earthquake. WIPP has a limited mission and does not have the capacity for all surplus plutonium. Stop MOX and immobilize and safely store plutonium until technically sound, suitable disposition facilities are available. ***129-1***

Name Jan Boyer

Address [redacted]

[redacted]

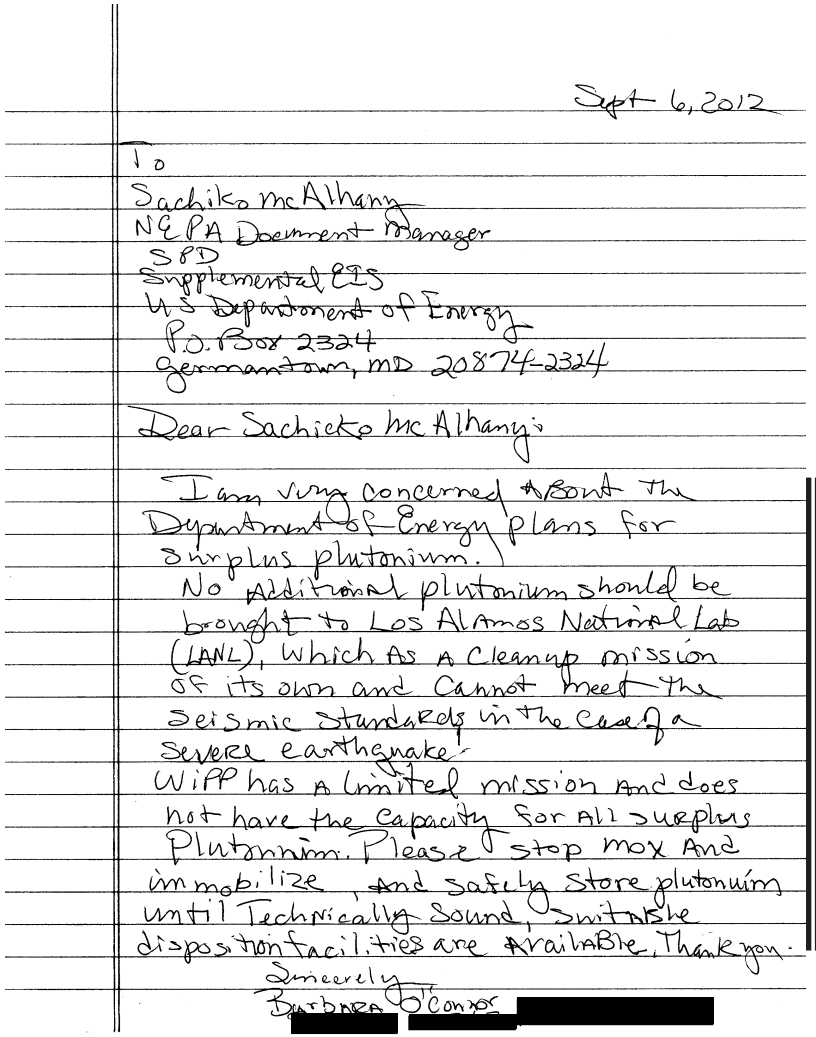
129-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

DOE expects that the proposed activities at LANL would not negatively impact the site's environmental restoration program. As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

Commentor No. 130: Barbara O'Connor



Sept 6, 2012

To
Sachiko mc Alhany
NEPA Document Manager
SPD
Supplemental EIS
U.S Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324

Dear Sachicko mc Alhany:

I am very concerned about the Department of Energy plans for surplus plutonium.
No additional plutonium should be brought to Los Alamos National Lab (LANL), which as a cleanup mission of its own and cannot meet the seismic standards in the case of a severe earthquake.
WIPP has a limited mission and does not have the capacity for all surplus Plutonium. Please stop mox and immobilize, and safely store plutonium until Technically Sound, Suitable disposition facilities are available. Thank you.

Sincerely
Barbara O'Connor [redacted]

130-1

130-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

DOE expects that the proposed activities at LANL would not negatively impact the site's environmental restoration program. As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

Commentor No. 131: Anne Craig

Sachiko McAlhany, NEPA Document Manager
SPD Supplemental EIS
U.S. Dept. of Energy
P.O. Box 2324
Germantown, MD 20874

RE:Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement

The idea of taking plutonium from nuclear weapons and 'recycling' it into fuel for nuclear power reactors is INSANE. To process and re-use one of the most dangerous substances in existence to power our light bulbs and appliances is a devil's bargain. *131-1*

Man has unleashed power and substances that he is ill equipped to handle or control. New and dangerous technologies to utilize the plutonium in bombs should not be devised or used. We must end this Dr. Strangelove mentality. Other people who are much more eloquent and scientifically knowledgeable have commented to you about the MOX proposal including Ellen Thomas, Tom Clements of Alliance for Nuclear Accountability, Charles Utley of Blue Ridge Environmental Defense League, Mel Jenkins and Ruth Thomas of Environmentalists, Inc., Laura Sorenson of SAFE Carolinas and Mary Olson of Nuclear Information and Resource Service. I agree with all their concerns and the reasons for their concerns. I am approaching my comments from a psychological/social standpoint. Most Americans don't even know that there is money, research and time going into looking for a way to use weapons grade plutonium. They don't know of the relationship between nuclear power and nuclear weapons and the dangers these pose to our planet and our species. Thus, it is up to those few of us who are paying attention to challenge your plans.

The radioactive parts of a nuclear warhead need to be isolated from our environment. We need to deal with the poisons we have already created by isolating them from our environment as much as possible and NOT create any more. Instead of finding new ways of fueling nuclear power plants, we need to be SHUTTING THEM DOWN! NOW! *131-2*

After Chernobyl, Three Mile Island, Fukushima and all the under and unreported accidents at nuclear power plants in our country and in others, after all the poisons that have been released into our air, water and soil, after all the increases in cancers, it is past time to end this folly. *131-3*

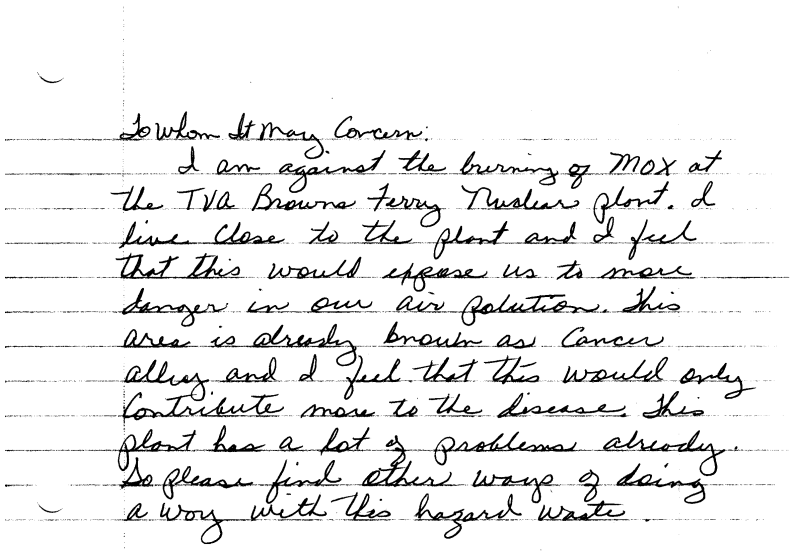
Sincerely,
Anne Craig
Anne Craig
[redacted]

131-1 As described in Appendix I, Section I.1, of this *SPD Supplemental EIS*, the impacts of using a partial MOX fuel core are not expected to be meaningfully different from the impacts of reactor operation using a conventional full LEU fuel core. For further discussion, refer to Section 2.5, Topic B, of this CRD.

131-2 None of the plutonium disposition alternatives would produce more plutonium. As described in Chapter 2 of this *SPD Supplemental EIS*, the use of MOX fuel in commercial nuclear power reactors would reduce the quantity of weapons-usable plutonium-239 and render the remaining plutonium into a form that is not readily usable for nuclear weapons. The United States' policy on the continued use of nuclear energy is not within the scope of this *SPD Supplemental EIS*. For further discussion, refer to Section 2.4, Topic A, of this CRD.

131-3 As discussed in Appendix J, Sections J.1 and J.2, of this *SPD Supplemental EIS*, continued assurance of the safe operation of these plants is the responsibility of the plant operator which operates under the independent regulatory oversight of NRC, including NRC regulations and license conditions. If the plant operator were to make a decision to use MOX fuel, it would be the joint responsibility of the plant operator and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely. For further discussion, refer to Section 2.5, Topic B, of this CRD.

Commentor No. 132: Christine Hughes



To Whom It May Concern:

I am against the burning of MOX at the TVA Browns Ferry Nuclear plant. I live close to the plant and I feel that this would expose us to more danger in our air polution. This area is already known as Cancer alley and I feel that this would only contribute more to the disease. This plant has a lot of problems already. So please find other ways of doing a way with this hazard waste.

Sincerely,

Christine Hughes

P.S.

I already have a lot of allergy and lung problems and I feel like this could make me worse.

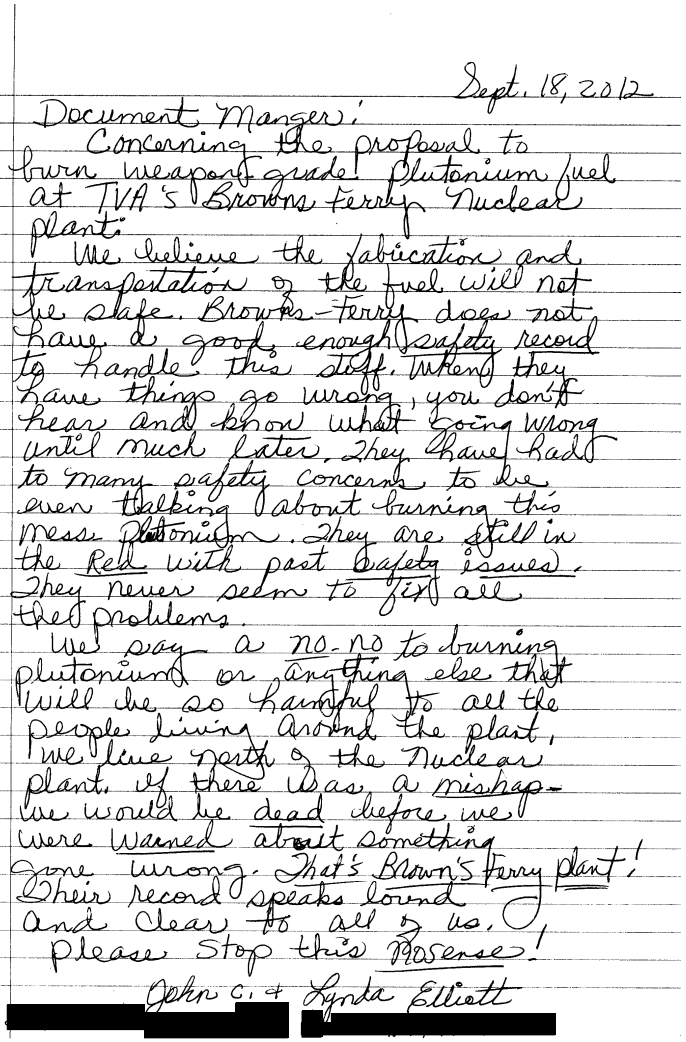
132-1

132-1 MOX fuel could be irradiated at the Browns Ferry Nuclear Plant. There are some minor differences between MOX fuel and LEU fuel, such as the amount of actinides in used MOX fuel rods would be higher than in used LEU fuel rods. These differences, however, are not expected to affect reactor safety or meaningfully increase the environmental consequences or risks associated with the use of a partial MOX fuel core. As summarized in Chapter 4 and described in detail in Appendices I and J of this *SPD Supplemental EIS*, the impacts associated with using a partial MOX fuel core versus a full LEU fuel core in commercial nuclear power reactors are expected to be similar. The risks associated with postulated accidents would be small. For further discussion, refer to Section 2.5, Topic B, of this CRD.

As addressed in Appendix I, Section I.1.2.1, of this *SPD Supplemental EIS*, nonradioactive air pollutant emissions from use of a partial MOX fuel core at the Browns Ferry Nuclear Plant are not expected to differ from those from use of an LEU core. Similarly, the projected radiation doses and risks received by the public from use of a partial MOX fuel core are not expected to appreciably differ from those from use of an LEU core (see Section I.1.2.2).

As described in Chapter 3, Section 3.3.1.2, of this *SPD Supplemental EIS*, in 2008, Browns Ferry Nuclear Plant operations resulted in a dose to the MEI of 0.043 millirem, well below regulatory limits, as well as the 318 millirem annual average dose potentially received by every person living in the area from natural background radiation. Using a risk estimator of 0.0006 LCFs per rem or person-rem, the LCF risk to the MEI from Browns Ferry Nuclear Plant operations in 2008 was estimated to be 3×10^{-8}. That is, the estimated probability of this person developing a fatal cancer sometime in the future as a result of normal plant operations in 2008 was approximately 1 chance in 33 million. Section 3.3.1.2 also provides U.S., state, and county cancer incidence statistics from the National Cancer Institute. The statistics are presented for information only and do not establish a link between any activity or facility operation and increased cancer rates. For additional information, see the National Cancer Institute website at http://statecancerprofiles.cancer.gov/index.html. A study by the National Cancer Institute that included the Browns Ferry and Sequoyah Nuclear Plants did not detect excess mortality due to leukemia or other cancers in counties near domestic commercial nuclear power reactors (NCI 2011).

Commentor No. 133: John C. and Lynda Elliott



Sept. 18, 2012

Document Manger:

Concerning the proposal to burn weapon grade Plutonium fuel at TVA's Browns Ferry Nuclear plant.

We believe the fabrication and transportation of the fuel will not be safe. Browns Ferry does not have a good enough safety record to handle this stuff. When they have things go wrong, you don't hear and know what going wrong until much later. They have had to many safety concerns to be even talking about burning this mess Plutonium. They are still in the Red with past safety issues. They never seem to fix all the problems.

We say a no-no to burning plutonium or anything else that will be so harmful to all the people living around the plant. We live north of the Nuclear plant. If there was a mishap- we would be dead before we were warned about something gone wrong. That's Brown's Ferry plant! Their record speaks loud and clear to all of us. Please Stop this Nonsense!

John C. & Lynda Elliott

[redacted]

133-1

133-2

133-1 Fabrication of the MOX fuel would occur in MFFF, which is being constructed at SRS. Once fabricated, MOX fuel would be transported from SRS to a domestic reactor for use. This *SPD Supplemental EIS* presents the potential human health impacts of plutonium preparation and disposition, including fabricating MOX fuel, in Chapter 4, Section 4.1.2, as well as the potential impacts from transportation in Section 4.1.5. Details more specific to MOX fuel fabrication and fuel transport are included in Appendices C, D, and E. The results show a low risk to the public from fabrication and transportation activities, regardless of the proposed alternative.

133-2 The Browns Ferry Nuclear Plant is designed and maintained to meet stringent NRC safety requirements for nuclear power reactors. Safety-related equipment is regularly inspected, maintained, and replaced well before the end of its scheduled operating life. As discussed in Appendix J, Sections J.1 and J.2, of this *SPD Supplemental EIS*, continued assurance of the safe operation of these plants is the responsibility of the plant operator which operates under the independent regulatory oversight of NRC, including NRC regulations and license conditions. If the plant operator were to make a decision to use MOX fuel, it would be the joint responsibility of the plant operator and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely. For further discussion, refer to Section 2.5, Topics A and B, of this CRD.

As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. There are differences in nuclear reactor core physics between MOX and LEU fuel cores, but these differences are understood and can be addressed using measures such as modifications to reactivity control systems and core fuel management procedures. As summarized in Chapter 4, Section 4.1.2, and described in detail in Appendices I and J, the risks associated with both normal operations and accidents for a partial MOX fuel core and full LEU fuel core are expected to be comparable. The risks associated with the postulated accidents would be small.

Commentor No. 134: Michael H. Reynolds, Fire Chief
City of Carlsbad Fire Department

CARLSBAD
Carlsbad Fire Department

409 S. Halagueno St.
Carlsbad, NM 88220
Phone (575) 885-3125
Fax (575) 885-3124
www.cityofcarlsbadnm.com

DALE JANWAY
MAYOR

JON R. TULLY
CITY ADMINISTRATOR

MICHAEL H. REYNOLDS
FIRE CHIEF

28 August 2012

To whom it may concern:

Some have come here to Carlsbad from other parts of the state or from other states to protest the proposed handling, transportation, and storage of surplus plutonium at the existing WIPP site. A few are sincerely concerned for safety, or for the ability of the WIPP site to accommodate the additional volume of material. Many others, however, are simply anesthetized by the comfortable ideology of the almost religious aspect of any protest movement. So they join in and come to Carlsbad.

For those concerned about safety, the proof is in the pudding, so to say. WIPP has written the ultimate safety lesson for the world in how to handle and store radioactive waste. The question of safety has already been answered repeatedly. For those "not-in-my-backyard" folks, I say that when it comes to high level radioactive waste, the tundra of Siberia is our backyard; therefore, let's put it in the proven safest place in existence. That is WIPP.

For those concerned about the ability to store all the remaining low level waste targeted for the WIPP site, in addition to this new volume of high level waste, their concerns can only be put to bed by the facts; facts that describe available above ground acreage and the volume that is available under that acreage for storage at and adjacent to the current site. The facts describe a more than ample volume of identical geology for any needed expansion of the WIPP storage mission regardless of the level of the waste.

The objections to this proposed expansion of the WIPP mission are not sustainable by fact; they are fiction and fallacy.

Michael H. Reynolds, Fire Chief
City of Carlsbad Fire Department

134-1 **134-1** DOE acknowledges the commentor's opinion.

Commentor No. 135: Richard G. Robinson

From: Richard Robinson
Sent: Friday, September 28, 2012 12:26 PM
To: spdsupplementaleis@saic.com
Subject: Airies Study Comment

As a concerned citizen of northern New Mexico, I want to express my strong support for the National Nuclear Security Administration (NNSA) plan to convert excess plutonium used in nuclear weapons to non-weapons applications. I believe this is good for our national security and is a reasonable path toward the ultimate disposition of this material. *135-1*

Richard G. Robinson, CPA

135-1 DOE acknowledges the commentor's opinion.

Commentor No. 136: James W. Hall, State Representative State of New Mexico House of Representatives

From: Jim Hall
Sent: Friday, September 28, 2012 4:43 PM
To: spdsupplementaleis@saic.com
Subject: Please See My Comment Below

From Weapons to Power Plant Fuel

For several weeks, citizens in New Mexico have had the opportunity to comment on a Department of Energy plan that would take plutonium from decommissioned U.S. nuclear weapons and convert it to material that would generate electricity in nuclear reactors.

A key element of this plan would take place at the world's most capable and secure facility for plutonium, Los Alamos National Laboratory.

Scientists at Los Alamos have been proving that this process works for years. Last year, the program, called ARIES, successfully converted plutonium from weapons into 240 kilograms of plutonium oxide. That material can no longer be used for nuclear weapons.

Under current arms treaties, the U.S. is decommissioning and taking apart nuclear weapons. Many more will be disassembled in the coming years. The plutonium from these weapons does not go away. The nation has a responsibility to safely and securely dispose of it. Over time, this process of converting weapons-grade plutonium to low grade plutonium oxide that can be used in nuclear reactors will greatly reduce the amount of plutonium.

Los Alamos has the expertise and facilities to safely complete this mission. It is already occurring here on a smaller scale. The responsibility is not all on Los Alamos–other DOE facilities play a role in using the oxide to make fuel for reactors. An American company and Areva (a French Company with considerable experience in converting low grade plutonium to reactor fuel) are building a $5B plant at Savannah River to make such fuel rods from a mixture of Uranium and low-grade plutonium (MOX). *136-1*

Note that every credible scientific and technical organization in the world that has closely examined this issue has endorsed the use of MOX fuel technologies for this purpose and MOX fuel is widely used in nuclear reactors around the world.

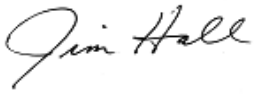
The DOE's Draft Supplemental Environmental Impact Statement says environmental and public health impacts of this plan are non-existent or miniscule. Many elements of the ARIES process at Los Alamos are robotic, and the product that is produced meets the demanding requirements of the Nuclear Regulatory Commission. Meanwhile, during a time when any job is precious, the plan could

136-1 DOE acknowledges the commentor's opinion.

Commentor No. 136 (cont'd): James W. Hall, State Representative
State of New Mexico House of Representatives

bring between 120 and 300 jobs, including construction and operations positions. The document estimates further positive indirect economic impacts in the region.

I encourage you to read the document and submit comments at http://nnsa.energy.gov/aboutus/ouroperations/generalcounsel/nepaoverview/nepa/spdsupplementaleis . This plan achieves two goals: it takes weapons grade plutonium "off the table" and uses it in power plants that emit no greenhouse gases.



James (Jim) W. Hall

District 43 State Representative
Los Alamos, Sandoval, and Santa Fe
129 Monte Rey Drive
Los Alamos, NM 87544
jhall@newmexico.com
505-672-6404 (h)
505-672-6404 (f)
505-412-3091 (c)

Response side of this page intentionally left blank.

Commentor No. 137: Susan E. Bromm, Director, Office of Federal Activities, U.S. Environmental Protection Agency

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OCT 3 2012

OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

Sachiko McAlhany
SPD Supplemental EIS
U.S. Department of Energy
NEPA Document Manager
U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324

Dear Ms. McAlhany:

In accordance with our responsibilities under Section 309 of the Clean Air Act and the National Environmental Policy Act, the Environmental Protection Agency (EPA) has reviewed the Department of Energy's (DOE) Surplus Plutonium Disposition Draft Supplemental Environmental Impact Statement (SEIS) (CEQ # 20120244). DOE is engaged in a program to dispose of U.S. surplus, weapons-usable plutonium in a safe, secure, and environmentally sound manner, by converting such plutonium into proliferation-resistant forms. DOE has determined disposition paths for most of this surplus plutonium based on the following NEPA analyses: 1) 1996 Storage and Disposition of Weapons- Usable Fissile Materials Programmatic EIS; 2) 1998 Supplement Analysis for Storing Plutonium in the Actinide Packaging and Storage Facility and Building 105-K at the Savannah River Site; 3) 1999 Surplus Plutonium Disposition EIS; and 4) the Supplement analysis Storage of Surplus Plutonium Materials in the K-Area Material Storage Facility at the Savannah River Site. This supplemental EIS updates the previous analyses and evaluates four alternative pathways to dispose of 13.1 metric tons of surplus plutonium for which DOE has not yet made a disposition decision.

Based on our review of the document and the above information, EPA does not object to the proposed action and has rated the draft SEIS as "Lack of Objections" (LO).

We appreciate the opportunity to review the draft SEIS. The staff contact for the review is Marthea Rountree and she can be reached at (202) 564-7141.

Sincerely,

Susan E Bromm

Susan E. Bromm
Director
Office of Federal Activities

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137-1

137-1 DOE acknowledges the commentor's opinion.

Commentor No. 138: Dwight G. Rickel

From: Rickel, Dwight G
Sent: Tuesday, October 09, 2012 2:19 PM
To: spdsupplementaleis@saic.com
Subject: MOX fuel

I agree with the National Nuclear Security Administration's program to disposition surplus plutonium. Considering the time and money spent on accumulating the Pu and the need for future power in this country and the world, I consider it reckless to not use this resource in a beneficial manner. I had my training in nuclear physics and have carefully watch the debates about nuclear power over the years and feel fully confident that the benefit for using this fuel far outweighs any risks. *138-1*

Dwight Rickel

138-1 DOE acknowledges the commentor's opinion.

Commentor No. 139: Scott Kovac, Operations and Research Director Nuclear Watch New Mexico

From: Scott Kovac
Sent: Tuesday, October 09, 2012 2:45 PM
To: Joni Arends; spdsupplementaleis
Subject: Re: [Bananas] "DOE is in the process of posting the references on the **SPD** Supplemental EIS website"

Dear SPD SEIS Team,

The reference documents are probably not available in Santa Fe, and are certainly not at the Main Library. *139-1*

Scott

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Please note our new mailing address!

Scott Kovac
Operations and Research Director
Nuclear Watch New Mexico
903 W. Alameda #325
Santa Fe, NM, 87501
505.989.7342 office & fax
www.nukewatch.org

On 10/9/12 12:10 PM, "Joni Arends" wrote:

-------- Original Message --------
Subject: RE: reference documents
Date: Tue, 9 Oct 2012 13:46:37 -0400
From: spdsupplementaleis <spdsupplementaleis@saic.com>
<mailto:spdsupplementaleis@saic.com>
To: Joni Arends

Hello,

The Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (Draft SPD Supplemental EIS) and cited references are available in the reading rooms and libraries listed on pages S-56 and S-57 of the Draft SPD Supplemental EIS Summary. As a convenience to the public, DOE is in the process of posting the references on the SPD Supplemental EIS website at http://nnsa.energy.gov/aboutus/ouroperations/generalcounsel/nepaoverview/nepa/spdsupplementaleis.

Thank you.

SPD SEIS Team

139-1 The *Draft SPD Supplemental EIS* and the cited references (on DVDs) were available in the reading rooms and libraries listed in the Summary, Section S.13, of the *Draft SPD Supplemental EIS* for the duration of the public comment period. Reference disks were available in the following three libraries in Santa Fe, New Mexico:

New Mexico State Library
1209 Camino Carlos Rey
Santa Fe, NM 87507
(505) 476-9700

Santa Fe Main Public Library
145 Washington Avenue
Santa Fe, NM 87501
(505) 955-6780

Santa Fe Public Library/Oliver La Farge Branch
1730 Llano Street
Santa Fe, NM 87505
(505) 955-4862
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Commentor No. 140: Paul J. Martinez

From: Martinez, Paul J
Sent: Tuesday, October 09, 2012 2:55 PM
To: spdsupplementaleis@saic.com
Subject: agree

Paul J. Martinez

140-1

140-1 DOE acknowledges the commentor's opinion.

Commentor No. 141: L. Dale Sivils, Ph.D.

From: Dale Sivils
Sent: Wednesday, October 10, 2012 7:12 PM
To: spdsupplementaleis@saic.com
Subject: Surplus Plutonium Disposition Supplemental Environmental Impact Statement

To Whom It May Concern:

As a PhD Chemist who has worked with plutonium I understand the risk vs benefit of converting 34 tons of surplus weapons-grade plutonium into mixed oxide fuel for use in domestic nuclear power reactors. I've personally have worked in LANL's PF-4 in the past and I have no concern about the MOX mission taking place less than 10 miles from my home in White Rock, NM. This is because I have first hand knowledge of the formality of operations and the professionalism of the personnel working in PF-4.

I agree with DOE's preferred alternative for surplus plutonium disposition. *141-1*

L. Dale Sivils, PhD

141-1 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

Commentor No. 142: Jon Block

From: Jon Block
Sent: Wednesday, October 10, 2012 7:17 PM
To: spdsupplementaleis@saic.com
Subject: Comments on Draft Surplus Plutonium Disposition Supplemental **Environmental** Impact Statement (DOE/EIS-0283-S2, July 2012)
Attachments: lyman-mox-sgs.pdf.f8047546-8acf-466d-9704-9e35dd233353

Herewith my comments on why the Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (DOE/EIS-0283-S2, July 2012) is deficient and in violation of the National Environmental Policy Act ("NEPA"):

DOE has failed to identify utilities committed to testing and use of experimental plutonium fuel (MOX) made from weapons-grade plutonium;

DOE's pro-MOX "preferred alternative" is flawed as the Tennessee Valley Authority has not agreed to test or use MOX; the "preferred alternative" must be reconsidered; ***142-1***

DOE has failed to evaluate all the risks involved with MOX use in commercial reactors;

DOE has failed to analyze the required testing of weapons-grade MOX, never before used on a commercial scale and never tested in boiling water reactors (BWRs); ***142-2***

DOE has failed to evaluate all the risks associated with processing plutonium for MOX; DOE has failed to outline the operational schedule of the MOX plant and what type of MOX fuel would be fabricated; ***142-3***

DOE has failed to thoroughly evaluate options to dispose of plutonium as waste; The Tennessee Valley Authority has not evaluated MOX testing and use and has no "preferred alternative" to use MOX; ***142-4***

TVA must stick with the no-MOX option; A full discussion of revisions of facilities at SRS and Los Alamos to process plutonium from nuclear weapons "triggers" must be included; ***142-5***

Costs for the MOX program are out of control and cheaper options should be the focus; Around $17.5 billion is yet to be spent on MOX, the highest-cost option for plutonium management;

Costs for the MOX program and other costly and poorly-managed DOE projects are putting budgetary strain on key DOE clean-up and non-proliferation programs; ***142-6***

Given legal issues under NEPA, DOE is compelled to not issue a Final Supplemental EIS and must prepare a new Programmatic EIS on plutonium storage and disposition; ***142-7***

142-1 The disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts as required by NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors, including, but not limited to five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants. These reactors are explicitly considered because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Section I.1). However, the MOX Alternative also analyzes irradiation in generic commercial nuclear reactors including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2), and is not dependent on TVA participation.

Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In the *Draft SPD Supplemental EIS*, the MOX Fuel Alternative was DOE's Preferred Alternative for surplus plutonium disposition. DOE's preferred option for disposition of surplus non-pit plutonium that is not suitable for MOX fuel fabrication was disposal at WIPP. DOE's preferred option for pit disassembly and conversion of surplus plutonium metal, regardless of its origins, was to use some combination of facilities at TA-55 at LANL and K-Area, H-Canyon/HB-Line, and MFFF at SRS, rather than to construct a new stand-alone facility.

In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose. TVA, as a cooperating agency, may adopt this *Final SPD Supplemental EIS* after independently reviewing the EIS and determining its comments and suggestions have been satisfied (40 CFR 1506.3(c)).

In this *SPD Supplemental EIS*, DOE evaluated the potential environmental impacts of a range of reasonable alternatives for the disposition of 13.1 metric tons (14.4 tons) of surplus plutonium, in accordance with the requirements of NEPA. As described in Chapter 2, Section 2.4, additional alternatives were considered but

Commentor No. 142 (cont'd): Jon Block

DOE has no "Plan B" to pursue for plutonium management when the MOX program fails due to cost, technical and scheduling challenges and must pursue non-MOX options. ***142-8***

In addition, I incorporate herein by reference the findings and conclusions of Dr. Edwin Lyman in the attached article on the serious public health risks involved in utilizing so-called MOX fuel in commercial nuclear power reactors.

For the reasons stated above, the Supplemental EIS is so deficient as to warrant complete revision. The DOE's decision to go forward with MOX production was not taken utilizing the proper NEPA process and is, therefore, illegal and needs to be withdrawn and redone using a proper, i.e., under Council on Environmental Quality rules, process.

Jon Block

dismissed from detailed evaluation. This *Final SPD Supplemental EIS* supplements the *SPD EIS* (DOE 1999) which tiers from the *Storage and Disposition PEIS* (DOE 1996). These parent documents considered additional alternatives that do not need to be considered in this *SPD Supplemental EIS*.

142-2 As described in Chapter 4, Section 4.1.2, and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, risks to the public are expected to be minor at the evaluated plutonium disposition facilities and commercial nuclear reactors under any proposed alternative. As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

It is important to note that, whether using reactor- or weapons-grade plutonium, the total quantity of fissile plutonium within a fuel element is adjusted so that it represents only a small fraction of the material within the fuel rod (currently planned to be approximately 4 to 5 percent fissile plutonium within each MOX fuel rod).

142-3 A detailed program schedule is not required to perform the environmental impacts analysis in this *SPD Supplemental EIS*. The actual production schedule for MFFF would depend on factors such as license conditions and the specific contracts received from customers to manufacture specific types of MOX fuel. As shown in Appendix B, Table B–2, MFFF is estimated to operate for 21 to 24 years depending on the amount of surplus plutonium to be fabricated into MOX fuel. As described in Appendix B, Section B.1.1.2, and analyzed in the *Interim Action Determination, Flexible Manufacturing Capability for the Mixed Fuel Fabrication Facility* (DOE 2011a) signed on April 1, 2011, MOX fuel could be fabricated for use in boiling-water reactors (BWRs), pressurized-water reactors (PWRs), or next-generation LWRs. There are currently no plans to fabricate fuel for other types of reactors. Use of MOX fuel in other types of nuclear reactors would require the preparation of additional NEPA documentation.

Commentor No. 142 (cont'd): Jon Block

142-4 As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) considered numerous alternatives for disposition of surplus plutonium, including immobilization and direct disposal of the entire surplus plutonium inventory as waste. DOE selected an approach for disposition of some of the plutonium declared surplus (68 FR 20134). As discussed in Section 2.2, Topic A, of this CRD, DOE's prior disposition decisions are not addressed in this *SPD Supplemental EIS,* but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium, including use of the surplus plutonium as MOX fuel or its conversion into waste forms suitable for disposal. The action alternatives evaluated for the 13.1 metric tons (14.4 tons) of surplus plutonium are the Immobilization to DWPF Alternative, MOX Fuel Alternative, H-Canyon/HB-Line to DWPF Alternative, and WIPP Alternative.

As discussed in the response to comment 142-1, TVA is a cooperating agency for this *SPD Supplemental EIS* and is not required to declare a preferred alternative. TVA does not have a preferred alternative in this *Final SPD Supplemental EIS*. See the response to comment 142-2 regarding MOX fuel testing.

142-5 In this *SPD Supplemental EIS*, DOE considers a variety of options for plutonium pit disassembly and conversion, including construction of a new stand-alone facility at SRS, modification of facilities at SRS that either already exist (H-Canyon/HB-Line and K-Area Complex) or are already under construction (MFFF), and modification of existing facilities at LANL. Appendix B provides a description of the facilities and construction and modification activities that would occur under the surplus plutonium disposition alternatives. Environmental impacts and risks from facility construction and operation are evaluated in Appendix F and summarized in Chapter 4 and Chapter 2, Section 2.6, Table 2–3.

142-6 Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation.

Examining issues related to cleanup and remediation and congressional budget decisions is not within the scope of this *SPD Supplemental EIS*. As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.1, Topic B, and Section 2.3, Topic C, of this CRD.

Commentor No. 142 (cont'd): Jon Block

142-7 In this *SPD Supplemental EIS*, DOE evaluated the potential environmental impacts of a range of reasonable alternatives for the disposition of 13.1 metric tons (14.4 tons) of surplus plutonium, in accordance with the requirements of NEPA. As described in Chapter 2, Section 2.4, this *SPD Supplemental EIS* supplements the *SPD EIS* (DOE 1999) which tiers from the *Storage and Disposition PEIS* (DOE 1996). These parent documents considered additional alternatives. The *Storage and Disposition PEIS*, *SPD EIS*, supporting supplement analyses, and the decisions announced in the related RODs remain valid and, in accordance with CEQ and DOE NEPA regulations, do not need to be updated before this *SPD Supplemental EIS* can be issued. For further discussion, refer to Section 2.1, Topic A, of this CRD.

142-8 As stated in the response to comment 142-4, DOE's prior disposition decisions are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. These alternatives address continued storage of this plutonium, use of this plutonium as MOX fuel, and preparation of this plutonium for disposal as waste. As stated in the response to comment 142-6, cost is among the factors that may be considered in reaching a decision on the Surplus Plutonium Disposition Program.

Commentor No. 143: Laura Watchempino

From: Laura Watchempino
Sent: Tuesday, October 09, 2012 3:47 PM
To: spdsupplementaleis@saic.com
Subject: Draft Surplus Plutonium Disposition SEIS

Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (DOE/EIS-0283-S2, July 2012

October 9, 2012

Please accept my comments for the record on this subject. They echo those of the Alliance for Nuclear Accountability on the Department of Energy's (DOE) Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement.

The Department of Energy's (DOE) current Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement is inadequate for many reasons, which are briefly summarized below:

DOE has failed to identify utilities committed to testing and use of experimental plutonium fuel (MOX) made from weapons-grade plutonium;

DOE's pro-MOX "preferred alternative" is flawed as the Tennessee Valley Authority has not agreed to test or use MOX; the "preferred alternative" must be reconsidered; ***143-1***

DOE has failed to evaluate all the risks involved with MOX use in commercial reactors;

DOE has failed to analyze the required testing of weapons-grade MOX, never before used on a commercial scale and never tested in boiling water reactors (BWRs); ***143-2***

DOE has failed to evaluate all the risks associated with processing plutonium for MOX; DOE has failed to outline the operational schedule of the MOX plant and what type of MOX fuel would be fabricated; ***143-3***

DOE has failed to thoroughly evaluate options to dispose of plutonium as waste; The Tennessee Valley Authority has not evaluated MOX testing and use and has no "preferred alternative" to use MOX; ***143-4***

A full discussion of revisions of facilities at SRS and Los Alamos to process plutonium from nuclear weapons "triggers" must be included; ***143-5***

Costs for the MOX program are out of control and cheaper options should be the focus; Around $17.5 billion is yet to be spent on MOX, the highest-cost option for plutonium management; ***143-6***

143-1 The disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts as required by NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors, including, but not limited to five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants. These reactors are explicitly considered because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Section I.1). However, the MOX Alternative also analyzes irradiation in generic commercial nuclear reactors including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2), and is not dependent on TVA participation.

Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In the *Draft SPD Supplemental EIS*, the MOX Fuel Alternative was DOE's Preferred Alternative for surplus plutonium disposition. DOE's preferred option for disposition of surplus non-pit plutonium that is not suitable for MOX fuel fabrication was disposal at WIPP. DOE's preferred option for pit disassembly and conversion of surplus plutonium metal, regardless of its origins, was to use some combination of facilities at TA-55 at LANL and K-Area, H-Canyon/HB-Line, and MFFF at SRS, rather than to construct a new stand-alone facility.

In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose. TVA, as a cooperating agency, may adopt this *Final SPD Supplemental EIS* after independently reviewing the EIS and determining its comments and suggestions have been satisfied (40 CFR 1506.3(c)).

In this *SPD Supplemental EIS*, DOE evaluated the potential environmental impacts of a range of reasonable alternatives for the disposition of 13.1 metric tons (14.4 tons) of surplus plutonium, in accordance with the requirements of NEPA.

Commentor No. 143 (cont'd): Laura Watchempino

Costs for the MOX program and other costly and poorly-managed DOE projects are putting budgetary strain on key DOE clean-up and non-proliferation programs; ***143-6 cont'd***

Given legal issues under NEPA, DOE is compelled to not issue a Final Supplemental EIS and must prepare a new Programmatic EIS on plutonium storage and disposition; ***143-7***

DOE has no "Plan B" to pursue for plutonium management when the MOX program fails due to cost, technical and scheduling challenges and must pursue non-MOX options. ***143-8***

Thank you for the opportunity top comment on the DOE's Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement.

Laura Watchempino

As described in Chapter 2, Section 2.4, additional alternatives were considered but dismissed from detailed evaluation. This *Final SPD Supplemental EIS* supplements the *SPD EIS* (DOE 1999) which tiers from the *Storage and Disposition PEIS* (DOE 1996). These parent documents considered additional alternatives that do not need to be considered in this *SPD Supplemental EIS*.

143-2 As described in Chapter 4, Section 4.1.2, and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, risks to the public are expected to be minor at the evaluated plutonium disposition facilities and commercial nuclear reactors under any proposed alternative. As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

It is important to note that, whether using reactor- or weapons-grade plutonium, the total quantity of fissile plutonium within a fuel element is adjusted so that it represents only a small fraction of the material within the fuel rod (currently planned to be approximately 4 to 5 percent fissile plutonium within each MOX fuel rod).

143-3 A detailed program schedule is not required to perform the environmental impacts analysis in this *SPD Supplemental EIS*. The actual production schedule for MFFF would depend on factors such as license conditions and the specific contracts received from customers to manufacture specific types of MOX fuel. As shown in Appendix B, Table B–2, MFFF is estimated to operate for 21 to 24 years depending on the amount of surplus plutonium to be fabricated into MOX fuel. As described in Appendix B, Section B.1.1.2, and analyzed in the *Interim Action Determination, Flexible Manufacturing Capability for the Mixed Fuel Fabrication Facility* (DOE 2011a) signed on April 1, 2011, MOX fuel could be fabricated for use in boiling-water reactors (BWRs), pressurized-water reactors (PWRs), or next-generation LWRs. There are currently no plans to fabricate fuel for other types

Commentor No. 143 (cont'd): Laura Watchempino

of reactors. Use of MOX fuel in other types of nuclear reactors would require the preparation of additional NEPA documentation.

143-4 As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) considered numerous alternatives for disposition of surplus plutonium, including immobilization and direct disposal of the entire surplus plutonium inventory as waste. DOE selected an approach for disposition of some of the plutonium declared surplus (68 FR 20134). As discussed in Section 2.2, Topic A, of this CRD, DOE's prior disposition decisions are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of an additional 13.1 metric tons (14.4 tons) of surplus plutonium, including use of the surplus plutonium as MOX fuel or its conversion into waste forms suitable for disposal. The action alternatives evaluated for the 13.1 metric tons (14.4 tons) of surplus plutonium are the Immobilization to DWPF Alternative, MOX Fuel Alternative, H-Canyon/HB-Line to DWPF Alternative, and WIPP Alternative.

As discussed in the response to comment 143-1, TVA is a cooperating agency for this *SPD Supplemental EIS* and is not required to declare a preferred alternative. TVA does not have a preferred alternative in this *Final SPD Supplemental EIS*. See the response comment 143-2 regarding MOX fuel testing.

143-5 In this *SPD Supplemental EIS*, DOE considers a variety of options for plutonium pit disassembly and conversion, including construction of a new stand-alone facility at SRS, modification of facilities at SRS that either already exist (H-Canyon/HB-Line and K-Area Complex) or are already under construction (MFFF), and modification of existing facilities at LANL. Appendix B provides a description of the facilities and construction and modification activities that would occur under the surplus plutonium disposition alternatives. Environmental impacts and risks from facility construction and operation are evaluated in Appendix F and summarized in Chapter 4 and Chapter 2, Section 2.6, Table 2–3.

143-6 Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation.

Examining issues related to cleanup and remediation and congressional budget decisions is not within the scope of this *SPD Supplemental EIS*. As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration

programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.1, Topic B, and Section 2.3, Topic C, of this CRD.

143-7 DOE does not agree with the commentor's opinion about the need for a new programmatic EIS on plutonium storage and disposition. In this *SPD Supplemental EIS*, DOE evaluated the potential environmental impacts of a range of reasonable alternatives for the disposition of 13.1 metric tons (14.4 tons) of surplus plutonium, in accordance with the requirements of NEPA. As described in Chapter 2, Section 2.4, this *SPD Supplemental EIS* supplements the *SPD EIS* (DOE 1999) which tiers from the *Storage and Disposition PEIS* (DOE 1996). These parent documents considered additional alternatives. The *Storage and Disposition PEIS*, *SPD EIS*, supporting supplement analyses, and the decisions announced in the related RODs remain valid and, in accordance with CEQ and DOE NEPA regulations, do not need to be updated before this *Final SPD Supplemental EIS* can be issued. For further discussion, refer to Section 2.1, Topic A, of this CRD.

143-8 As stated in the response to comment 142-4, DOE's prior disposition decisions are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. These alternatives address continued storage of this plutonium, use of this plutonium as MOX fuel, and preparation of this plutonium for disposal as waste. As stated in the response to comment 143-6, cost is among the factors that may be considered in reaching a decision on the Surplus Plutonium Disposition Program.

Commentor No. 144: Alex R. Romero

From: Romero, Alexander R
Sent: Tuesday, October 09, 2012 4:27 PM
To: spdsupplementaleis@saic.com
Subject: surplus plutonium plans (I AGREE)

I agree with DOE's preferred disposition option. LANL and other DOE sites should be involved in this important work. *144-1*

Alex R. Romero

144-1 DOE acknowledges the commentor's opinion.

Commentor No. 145: Kevin Holsapple, Executive Director
Los Alamos Chamber of Commerce

LOS ALAMOS
CHAMBER OF COMMERCE

October 9, 2012

Sachiko McAlhany, NEPA Document Manager
SPD Supplemental EIS
U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324

SUBJECT: Input Regarding the Surplus Plutonium Disposition Supplemental Environmental Impact Statement

The Los Alamos Chamber of Commerce supports the MOX Fuel Alternative as described in the draft EIS. The MOX Fuel Alternative, the Department of Energy's (DOE's) preferred alternative, makes the most sense for the approach to the important task of safe disposal of surplus plutonium.

The Los Alamos Chamber and its more than 300 member businesses and organizations employ thousands of citizens throughout Northern New Mexico. Our constituents take the goal of safely removing nuclear materials from potential use in weapons and support of the nation's nonproliferation commitments as important, serious needs. The DOE has conducted a comprehensive review of options for addressing this important matter and we support their conclusion that the MOX Fuel Alternative will be the safest and most effective approach to addressing the need.

Please enter this comment into the record of the EIS process.

If you have questions about our request or would like to discuss our comment, please contact Executive Director Kevin Holsapple at 661-4806.

Sincerely,

Kevin Holsapple
Executive Director

145-1

145-1 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

Commentor No. 146: Simon Brackley, President and CEO
Santa Fe Chamber of Commerce

SANTA FE CHAMBER
OF COMMERCE

September 28, 2012

Sachiko McAlhany, NEPA Document Manager
SPD Supplemental EIS
U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324

As a concerned citizen of northern New Mexico, I want to express my strong support for the National Nuclear Security Administration (NNSA) plan to convert excess plutonium used in nuclear weapons to non-weapons applications. I believe this is good for our national security and is a reasonable path toward the ultimate disposition of this material.

I would like to communicate my strong support for efforts to allow Los Alamos National Laboratory (LANL) to render unused nuclear weapons plutonium into forms that would be easier to store and ultimately be reused for peaceful purposes. I also believe that LANL is best positioned to handle this activity since they have the expertise and facilities to securely and safely manage nuclear material.

As a member of the northern New Mexico business community, I want to state my strong support for the NNSA plan to allow LANL to process excess plutonium into a weapons form. I believe this activity will bring in additional revenue to New Mexico and will increase high paying jobs at the Laboratory.

I would like to voice my support for the Department of Energy's efforts to turn excess Plutonium into sources for energy. This is a great example of the nonproliferation work that Los Alamos undertakes. I believe that this work will be beneficial to the Lab and the Nation.

Simon Brackley

President and CEO, Santa Fe Chamber of Commerce

Phone: 505.988.3279
Fax: 505.984.2205

Post Office Box 1928
Santa Fe, New Mexico 87504
info@santafechamber.com
www.santafechamber.com

146-1 **146-1** DOE acknowledges the commentor's opinion.

Commentor No. 147: Doris G. Welch

[redacted]

Sachiko McAlhany
NEPA Document Manager
SPD Supplemental EIS,
U.S. Department of Energy
P.O. Box 2324
Germantown, Md.
20874-2324

Dear Ms.McAlhany,

I am writing you to express my opposition to the burning of MOX at the Browns Ferry Nuclear plant in Athens, Alabama. *147-1*
I am opposed because of the following:
The plant is unsafe and one step away from being closed for safety reasons.

This is Tornado Alley, another safety hazzard.

This county's surface is composed mostly of Limestone, and we have more underwater caves and rivers than anywhere on Earth(See Planet Earth CD by National Geographic) therefore when water is depleted (the cooling process) these shelves breakdown causing great sink holes. If a sink hole should happen at the Nuclear plant, there are no studies of the permanent harm to our environment. We just had a large sinkhole on Interstate I 65and after being repaired it occurred again months later. *147-2*

We already have two places in Alabama where we are deposing of surplus military weapons, One in Anniston, the other south of Tuscaloosa. We have done our part and NEED NO MORE. We already have enough pollutants in our water and air and our Cotton farmers are still spraying defoliants. *147-3*

We also have one of the highest Cancer rates in the United States. *147-4*

I feel it is unsafe for these pellets to be shipped over our nation's highway, no matter what your experts say. Your experts also told our Native Americans over and over again that if they would give them so much land we would not encroach on the rest of their land. *147-5*

Please do not use our Alabama as a dumping ground we want to preserve a quality and safe environment for our grandchildren.

Thank you,
Doris Welch

[redacted]

Copy to Gov. Robert Bentley

147-1 As summarized in Chapter 5, Section 5.3.3, of this *SPD Supplemental EIS*, use of MOX fuel in TVA or other reactors would require an amendment to the reactor's operating license in accordance with 10 CFR Part 50. Safety assessments for nuclear reactors appropriately consider the risks of natural phenomena including tornadoes. For further discussion, refer to Section 2.5, Topic A, of this CRD.

147-2 The Browns Ferry Nuclear Plant is operating under a license issued by NRC. The NRC licensing process considers the ability of the reactor to operate safely under environmental conditions, including adverse foundation conditions. As described in Appendix J, Section J.3, of this *SPD Supplemental EIS*, reactor accident analyses consider natural phenomena hazards such as floods, tornados, earthquakes, and unstable foundation conditions. For more information see the *Browns Ferry Nuclear Plant Updated Final Safety Analysis Report* (TVA 2009).

The environmental, human health, and socioeconomic impacts of using MOX fuel in TVA's reactors are described in Appendix I, Section I.1, and summarized in Chapter 2, Section 2.6, of this *SPD Supplemental EIS*. The potential impacts of accidents involving the use of MOX fuel in TVA's reactors are not expected to be meaningfully different from the impacts associated with the use of LEU fuel, as described in Section I.1 and summarized in Section 2.6. For further discussion, refer to Section 2.5, Topic B, of this CRD.

147-3 As summarized in Chapter 4 and evaluated in detail in Appendices I and J, of this *SPD Supplemental EIS*, use of MOX fuel at the Browns Ferry Nuclear Plant is not expected to result in increased emissions of radioactive and nonradioactive pollutants to air or water compared to the regulated levels emitted by the plant when using LEU fuel. Examining the disposal of surplus military weapons and defoliant use in Alabama are not within the scope of this *SPD Supplemental EIS*.

147-4 Chapter 3, Table 3–47, of this *SPD Supplemental EIS* shows data from the National Cancer Institute for the United States, Alabama, and counties near the Browns Ferry Nuclear Plant. These data indicate that the occurrence of cancers in the vicinity of Browns Ferry is comparable to those for the state and the nation. As discussed in Section 3.3.1.2, the annual risk of a single latent cancer fatality in the population within 50 miles (80 kilometers) of Browns Ferry is 1 chance in 11,000. As stated in Chapter 2, Section 2.6.1, the impacts of operating reactors using a partial MOX fuel core are not expected to change from the impacts currently being realized during normal operations using full LEU fuel cores.

147-5 Transportation risks are analyzed for all alternatives proposed in this *SPD Supplemental EIS*, including the threat of theft and diversion of radioactive

Commentor No. 147 (cont'd): Doris G. Welch

materials. The packaging and transportation of radiological materials meet NRC and DOT regulations that are designed to ensure the safe transport of radiological materials on the Nation's highways, as described in Appendix E, Section E.3, of this *SPD Supplemental EIS*. As shown in Chapter 4, Table 4–22, under all alternatives, the radiological risks to the public from shipments of radioactive materials would be comparable, with no LCFs expected among the transportation crew or general public along the transportation routes.

Commentor No. 148: Joni Arends, Executive Director Concerned Citizens for Nuclear Safety

From: Joni Arends
Sent: Tuesday, October 09, 2012 5:26 PM
To: carol.borgstrom@hq.doe.gov; spdsupplementaleis@saic.com
Subject: Unavailability of SPD Reference Documents

October 9, 2012

Carol Borgstrom, NEPA Director
Sachiko McAlhany, NEPA Document Manager
SPD Supplemental EIS
U.S. Department of Energy
P. O. Box 2324
Germantown, MD 20874-2324

Re: Unavailability of Reference Documents
Demand for 45 additional days for public comments following the posting of the reference documents on the SPD website

Dear Ms. Borgstrom and Ms. McAlhany:

I am writing to inform you about the unavailability of the reference documents for the Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SPD SEIS). As you know, I emailed Ms. McAlhany on Friday, October 5, 2012 about where the reference documents were posted on the website. I received a response this morning that "DOE is in the process of posting the references on the SPD Supplemental EIS website." This reference availability is arguably still not in compliance.

CEQ regulations require: "No material may be incorporated by reference unless it is reasonably available for inspection by potentially interested persons with the time allowed for comment." 40 CFR §1502.21.

CEQ further explained that requirement: "Care must be taken in all cases to ensure that material incorporated by reference, and the occasional appendix that does not accompany the EIS, are in fact available for the _full minimum public comment period_.46 FR 18034._Emphasis added_. ***148-1***

The reading rooms are not available to "potentially interested persons" nationwide. The minimum public comment period is 45 days, so arguably the comment period should be extended for 45 days from whenever references are available. It will be a waste of resources for ***

Further, the email this morning stated that "cited references are available in the reading rooms and libraries listed on pages S-56 and S-57 of the Draft SPD Supplemental EIS Summary." Because of the unavailability of the reference

148-1 In response to multiple requests for more time to review and comment on the *Draft SPD Supplemental EIS*, DOE extended the originally scheduled comment period by an additional 15 days through October 10, 2012. On the same day, DOE posted the references on the *SPD Supplemental EIS* website at http://nnsa.energy.gov/aboutus/ouroperations/generalcounsel/nepaoverview/nepa/spdsupplementaleis. Nonetheless, the *Draft SPD Supplemental EIS* and the cited resources on which DOE relied to support the analysis in the *Draft SPD Supplemental EIS* were available to the public for the duration of the comment period. Copies of the cited reference materials were sent along with copies of the document to all of the reading rooms and libraries listed in the Summary, Section S.13, of the *Draft SPD Supplemental EIS* prior to the beginning of the public comment period. However, there are certain types of sensitive information that cannot be posted at publicly accessible locations and may be exempt from public release, including UCNI, OUO, PII, and proprietary information. This information was not posted on the project website or provided to the reading rooms and libraries. Despite the stated closing date of the comment period, DOE considered all comments received on the *Draft SPD Supplemental EIS*, including those received after the close of the comment period.

DOE responded to the commentor to help resolve the issues raised with respect to accessing reference materials. What the commentor believed to be damaged or modified documents were actually documents that had been redacted pursuant to Federal law to protect the PII of individuals. DOE sent additional DVDs containing reference material to the commentor as requested.

Commentor No. 148 (cont'd): Joni Arends, Executive Director Concerned Citizens for Nuclear Safety

documents on the SPD website in violation of the CEQ regulations, this afternoon I went to the Santa Fe Public Library, located at 145 Washington Avenue and tried to locate about a dozen of the reference documents. After 20 minutes, the Librarian was able to find the FedEx envelope with two CDs in it. The CDs contain the References (disk 1 of 2) and (disk 2 of 2), Summary, Chapters, Appendices and Data Call. I looked at the CDs and many of the documents were available. However, many documents were damaged or modified and I was unable to open them. For example:

012 AE Response-011212 LA-UR-12-00200.pdf

013 AE Response-103111 LA-UR-11-06207.pdf

014 AE Response-111811 WM capabilities.pdf

016 PF-4 Response-031512_4.xlsx

Even so, the CDs Concerned Citizens for Nuclear Safety (CCNS) received with the paper copies of the SPD SEIS documents did not include the References and Data Call. It doesn't make sense that the References and Data Call were not included on these CDs as well. We have been waiting to look at reference documents in order to provide informed public comments about the SPD SEIS. ***148-1 cont'd***

Again, because the reference documents were not posted on the SPD website in a timely manner and the CDs contained damaged or modified documents, they were not made available.

CCNS respectfully requests, therefore, an extension of time to provide informed public comments about the Surplus Plutonium Disposition Environmental Impact Statement until 45 days following the time the reference documents are made available in a readable form. As this type of error could lead to litigation over the adequacy of notice and lack of compliance with the CEQ regulations, CCNS contends that it is in the best interests of the public and the Department of Energy and the National Nuclear Security Administration to simply issue an extension of the comment deadline. Your prompt response is greatly appreciated.

Sincerely,

Joni Arends, Executive Director
Concerned Citizens for Nuclear Safety
107 Cienega Street
Santa Fe, NM 87501
505 986-1973

Response side of this page intentionally left blank.

Commentor No. 148 (cont'd): Joni Arends, Executive Director Concerned Citizens for Nuclear Safety

On 10/9/12 11:46 AM, spdsupplementaleis wrote:

Hello,

The Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (Draft SPD Supplemental EIS) and cited references are available in the reading rooms and libraries listed on pages S-56 and S-57 of the Draft SPD Supplemental EIS Summary. As a convenience to the public, DOE is in the process of posting the references on the SPD Supplemental EIS website at http://nnsa.energy.gov/aboutus/ouroperations/generalcounsel/nepaoverview/nepa/spdsupplementaleis.

Thank you.

SPD SEIS Team

From: Joni Arends [mailto:jarends@nuclearactive.org]
Sent: Friday, October 05, 2012 12:20 PM
To: spdsupplementaleis@saic.com
Subject: reference documents

Hi,

I am looking for a couple of the reference documents in the SPD draft EIS. Where are they located on the web? Thank you for your assistance.

Joni Arends

CCNS

--

Joni Arends, Executive Director
Concerned Citizens for Nuclear Safety
107 Cienega Street
Santa Fe, NM 87501
505 986 1973
www.nuclearactive.org

Response side of this page intentionally left blank.

Commentor No. 149: Tom Clements, Nonproliferation Policy Director Alliance for Nuclear Accountability

From: tom clements
Sent: Tuesday, October 09, 2012 5:56 PM
To: spdsupplementaleis@saic.com
Cc: drew.grainger@srs.gov
Subject: NEPA issue concering referenced documents & Draft SPD Supplemntal EIS - comment period extension request

Hello Ms. McAlhany, SPD Supplemental EIS NEPA Document Manager:

According to the interpretation given to me, all documents listed as references in the draft SEIS documents must be available publicly. This has been a recurring issue with DOE EIS documents and needs to be promptly addressed. For example, this document is listed as a reference but has not been publicly available during the course of the comment period but must be made available during the comment period: MPR (MPR Associates, Inc.), 2011, Pit Disassembly and Conversion Project-Evaluation of Alternatives, MPR-3651, Rev 0, November. (Page S-59)

40 CFR §1502.21 - COUNCIL ON ENVIRONMENTAL QUALITY regulations - supports the above interpretation and states: "Incorporation by reference. Agencies shall incorporate material into an environmental impact statement by reference when the effect will be to cut down on bulk without impeding agency and public review of the action. The incorporated material shall be cited in the statement and its content briefly described. No material may be incorporated by reference unless it is reasonably available for inspection by potentially interested persons within the time allowed for comment. Material based on proprietary data which is itself not available for review and comment shall not be incorporated by reference."

I was under the impression that at least a reviewed Pit Disassembly and Conversion Project-Evaluation of Alternatives, MPR-3651, Rev 0 document would be released to me after I raised this matter earlier but nothing has as of yet been provided.

I would appreciate a response to this concern as it hasn't been resolved after my request of about two months ago for the document in question.

Also, I am told that other referenced documents are not available.

I request that the comment period be extended beyond October 10 until such time as the document I requested, and all other referenced documents, be made available.

Sincerely,

Tom Clements
Alliance for Nuclear Accountability

149-1

149-1 In response to multiple requests for more time to review and comment on the *Draft SPD Supplemental EIS*, DOE extended the originally scheduled comment period by an additional 15 days through October 10, 2012. On the same day, DOE posted the references on the *SPD Supplemental EIS* website at http://nnsa.energy.gov/aboutus/ouroperations/generalcounsel/nepaoverview/nepa/spdsupplementaleis. Nonetheless, the *Draft SPD Supplemental EIS* and the cited resources on which DOE relied to support the analysis in the *Draft SPD Supplemental EIS* were available to the public for the duration of the comment period. Copies of the cited reference materials were sent along with copies of the document to all of the reading rooms and libraries listed in the Summary, Section S.13, of the *Draft SPD Supplemental EIS* prior to the beginning of the public comment period. However, there are certain types of information that are exempt from public release; in the *Draft SPD Supplemental EIS*, the reference "MPR 2012" contained such protected information. In response to requests for this document, DOE prepared a redacted version, which is now available for public release. Despite the stated closing date of the comment period, DOE considered all comments received on the *Draft SPD Supplemental EIS*, including those received after the close of the comment period.

Commentor No. 150: Paulette Frankl

From: Paulette Frankl
Sent: Tuesday, October 09, 2012 8:33 PM
To: spdsupplementaleis@saic.com
Subject: Re: NNSA's Surplus Plutonium Disposition

Via email to spdsupplementaleis@saic.com

NNSA should not issue a Final Supplemental EIS. Instead, it must prepare a new programmatic environmental impact statement on plutonium storage and disposition that includes analysis of all credible alternatives that could better achieve the nuclear nonproliferation goals of our country and help save taxpayers' money at the same time.

Dear Ms. Sachiko McAlhany:

Thank you for this opportunity to comment on the draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SPD SEIS) issued pursuant to the National Environmental Policy Act (NEPA).

A New Programmatic EIS Is Needed

The National Nuclear Security Administration (NNSA; a semi-autonomous agency within the Department of Energy) is not in compliance with NEPA and should not proceed to a final supplemental environmental impact statement. This is so because the SPD SEIS is "tiered" off the December 1996 Storage and Disposition of Weapons-Usable Fissile Materials Programmatic EIS (emphasis added), using that broader (but now outdated) document as its foundation. But what NNSA now proposes is so fundamentally different from the program and alternatives discussed in the 1996 PEIS: *150-1*

For the first time additional plutonium is to be shipped to the Los Alamos National Laboratory (LANL) instead of shipped out for disposition.

For the first time the Waste Isolation Pilot Plant (WIPP) is proposed to dispose of 6 tons of plutonium.

Mixed Oxide (MOX) is now the preferred alternative

The MOX Alternative Must Be Reconsidered

The U.S. MOX program will inherently undermine its declared national security goal of helping to lessen the Russian plutonium inventory. The future direction in method of the U.S. plutonium disposition program should be decoupled from the Russian method for all the reasons stated in these comments, as long as the overall objective of permanently disposing of 34 metric tons is safely and surely achieved. *150-2*

150-1 DOE does not agree with the commentor's opinion about the need for a new programmatic EIS on storage and disposition of surplus plutonium. DOE believes that the decision to prepare this *SPD Supplemental EIS* complies with CEQ and DOE regulations and guidance. For further discussion, refer to Section 2.1, Topic A, of this CRD.

The use of LANL to support pit disassembly and conversion has been ongoing. In 1998, DOE completed an environmental assessment of a proposed pit disassembly and conversion demonstration project at LANL (DOE 1998a). The *SPD EIS* (DOE 1999) acknowledged these activities, and the *LANL SWEIS* (DOE 2008) included the impacts associated with these ongoing activities. In this *SPD Supplemental EIS,* DOE is now considering an expansion of these activities and has included an evaluation of all of the environmental impacts associated with this proposal (see Appendix F and the various sections in Chapter 4 that include impacts analyses related to LANL).

The direct disposal of 50 metric tons (55 tons) of surplus plutonium was eliminated from further analysis in the *Storage and Disposition PEIS* (DOE 1996:2-13) because it would exceed the capacity of WIPP when added to DOE's inventory of TRU waste. In response to comments on the *Draft SPD Supplemental EIS*, DOE expanded the WIPP Alternative to include potential disposal of all 13.1 metric tons (14.4 tons) of the surplus plutonium for which a disposition path is not assigned. The disposal at WIPP of 13.1 metric tons (14.4 tons) of surplus plutonium, which is approximately 26 percent of the amount considered in the *Storage and Disposition PEIS*, could potentially be accomplished within WIPP's capacity and, therefore, is considered to be a reasonable alternative in this *Final SPD Supplemental EIS* (see Chapter 4, Section 4.5.3.6.3). A description of WIPP's capacity and the process that would be used to dispose of surplus plutonium as CH-TRU waste at WIPP is contained in Appendix B, Sections B.1.3 and B.3; the environmental impacts of shipping waste to WIPP are described in Appendix E. For further discussion, refer to Section 2.2, Topic B, of this CRD.

150-2 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In the *Draft SPD Supplemental EIS*, the MOX Fuel Alternative was DOE's Preferred Alternative for surplus plutonium disposition. DOE's preferred option for disposition of surplus non-pit plutonium that is not suitable for MOX fuel fabrication was disposal at WIPP. DOE's preferred option for pit disassembly and conversion of surplus plutonium metal, regardless of its origins, was to use some combination of facilities at TA-55 at LANL and K-Area, H-Canyon/HB-Line, and MFFF at SRS, rather than to construct a new stand-alone facility.

Commentor No. 150 (cont'd): Paulette Frankl

The SEIS Must Consider The Costs Versus Benefits Of The MOX Program

In budget matters, NNSA and DOE have an increasingly bad reputation for project management and fiscal responsibility, with a number of billion-dollar-plus projects and programs tripling or more in cost. New and/or supplemental programmatic review must consider the costs versus benefits of the MOX program and cheaper alternatives that possibly could have greater benefits. ***150-3***

The SEIS Must Reconsider The Preferred Alternative

TVA has still not agreed to test or use MOX. NNSA has failed to identify any utilities committed to using MOX, thus rendering its "preferred alternative" as near fatally flawed. It seems obvious that this "preferred alternative" must be reconsidered. ***150-4***

Further, NNSA has failed to:

- Evaluate all the risks involved with MOX use in commercial reactors;
- Evaluate all the risks associated with processing plutonium for MOX. Under NNSA's new proposal a full analysis must be included of modifications to facilities at the Savannah River Site and Los Alamos to process plutonium from nuclear weapons "triggers"; ***150-5***
- Outline the operational schedule of the MOX plant and exactly what type of MOX fuel would be fabricated;
- Evaluate options to dispose of plutonium as waste; and
- Prepare a "Plan B" for plutonium management and disposition when there is a good chance that the MOX program will fail due to escalating costs and technical and scheduling problems. ***150-6***

The SEIS Must Re-Evaluate The Disposal Of Plutonium As Waste

NNSA's disposition program should programmatically re-evaluate the disposal of plutonium as waste, immobilized in glass and/or ceramic, rather than used as MOX fuel to subsidize a failing nuclear power industry that can't pull its own weight. Immobilization has the promise of being quicker, cheaper, and safer than MOX, and would unambiguously be a genuine nonproliferation program unlike MOX. ***150-7***

The SEIS Must Evaluate A Dam Failure

This SPD Supplemental EIS says it does not evaluate a dam failure "river tsunami accident." ***150-8***

Proposed Operations At Los Alamos Must Be Explained More Fully

Possible expanded plutonium MOX operations at LANL would occur at Plutonium Facility-4?s (PF-4?s) Advanced Recovery and Integrated Extraction System (ARIES). The SPD SEIS states that plutonium throughput at PF-4 could vary ***150-9***

In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. These decisions are consistent with the PMDA (USA and Russia 2000), which was first signed in 2000 and entered into force in 2011. The United States remains committed to the PMDA with the Russian Federation, under which both countries have agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. For further discussion, refer to Section 2.4, Topic A, of this CRD.

Examining the proposed change to national policy is not within the scope of this *Final SPD Supplemental EIS*.

150-3 Cost and the ability to carry out international agreements are among the factors that the decisionmaker may consider when selecting an alternative for implementation. A cost-benefit analysis is not required to be included in an EIS. Examining congressional budget decisions is not within the scope of this *Final SPD Supplemental EIS*. For further discussion, refer to Section 2.1, Topic B, of this CRD.

150-4 See the response to comment 150-2 regarding the revised Preferred Alternative. TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose.

Based on this *SPD Supplemental EIS* and consistent with the requirements of NEPA, DOE may make a decision in a ROD to be issued no sooner than 30 days after its announcement of a Preferred Alternative in the *Federal Register*. TVA, as a cooperating agency, may adopt this *Final SPD Supplemental EIS* after independently reviewing the EIS and determining its comments and suggestions have been satisfied (40 CFR 1506.3(c)).

Commentor No. 150 (cont'd): Paulette Frankl

between the 2 metric tons that the facility is already slated to process for MOX feedstock to a maximum throughput of 2.5 metric tons annually for a total of 35 metric tons. For this SPD SEIS to purport that it has adequately analyzed the additional impacts to plutonium facilities at both LANL and SRS given the very broad variance in material throughput defies belief and common sense. ***150-9 cont'd***

Existing Conditions At Los Alamos Must Be Explained More Fully

The existing plutonium facility, PF-4, is an extremely sensitive facility given that it is the nation's sole facility for plutonium pit production. So once again this cries for review and analysis on a programmatic level that takes into account possible impacts on other national security plutonium programs not related to the MOX program but that could be impacted by it. Additionally, the Defense Nuclear Facilities Safety Board has long been concerned with possible doses to the public should PF-4 experience a serious seismic event. ***150-10*** ***150-11***

This SEIS Must Be Withdrawn Until All Reference Documents Are Made Available

Finally, concerning online availability to the listed reference documents that are integral to the SPD SEIS, the NNSA web site <http://www.nnsa.energy.gov/aboutus/ouroperations/generalcounsel/nepaoverview/nepa/spdsupplementaleis> states, "Draft SPD Supplemental EIS – References (Coming Soon)." Thus NNSA has failed to make the reference documents easily accessible to the public for better-informed comment. NNSA should get with the times, and make all reference documents available online to the fullest extent possible in all of its NEPA processes. ***150-12***

For all the reasons stated in these comments and more, NNSA should not issue a Final Supplemental EIS. Instead, it must prepare a new programmatic environmental impact statement on plutonium storage and disposition that includes analysis of all credible alternatives that could better achieve the nuclear nonproliferation goals of our country and help save taxpayers' money at the same time.

Sincerely,

Paulette Frankl

The disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts as required by NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors, including, but not limited to five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants. These reactors are explicitly considered because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Section I.1). However, the MOX Alternative also analyzes irradiation in generic commercial nuclear reactors including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2), and is not dependent on TVA participation.

150-5 DOE believes this *SPD Supplemental EIS* adequately evaluates the impacts associated with the proposed activities at SRS, LANL, and TVA, as well as generic reactors. Appendix B provides a description of facility construction and modification activities. Evaluated risks and impacts are presented in Chapter 4, with additional information provided in the appendices, and are summarized in Chapter 2, Section 2.6. For further discussion, refer to Section 2.5, Topic A, of this CRD.

As described in Chapter 4 and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, environmental impacts and risks are expected to be minor at the evaluated plutonium disposition facilities and commercial nuclear reactors under any proposed alternative. For further discussion, refer to Section 2.2, Topic A, of this CRD.

150-6 A detailed program schedule is not required to perform the environmental impacts analysis in this *SPD Supplemental EIS*. The actual production schedule for MFFF would depend on factors such as license conditions and the specific contracts received from customers to manufacture specific types of MOX fuel. As shown in Appendix B, Table B–2, MFFF is estimated to operate for 21 to 24 years, depending on the amount of surplus plutonium to be fabricated into MOX fuel. As described in Appendix B, Section B.1.1.2, and analyzed in the *Interim Action Determination, Flexible Manufacturing Capability for the Mixed Fuel Fabrication Facility* (DOE 2011a) signed on April 1, 2011, MOX fuel could be fabricated for use in BWRs, PWRs, or next-generation LWRs. There are currently no plans to fabricate fuel for other types of reactors. DOE anticipates that MOX fuel could be supplied to other BWRs and PWRs (referred to in this *SPD Supplemental EIS* as "generic reactors") beyond the TVA reactors analyzed in this *SPD Supplemental EIS* (see Appendix I, Section I.2). Use of MOX fuel in other types of nuclear reactors would require the preparation of additional NEPA documentation.

Commentor No. 150 (cont'd): Paulette Frankl

As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) evaluated numerous alternatives for disposition of surplus plutonium, including immobilization and disposal as waste. DOE selected an approach for disposition of some of the plutonium declared surplus (68 FR 20134). As discussed in Section 2.2, Topic A, of this CRD, DOE's prior disposition decisions are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. These alternatives address continued storage of this plutonium, use of this plutonium as MOX fuel, and preparation of this plutonium for disposal as waste. Examining the cost of the MOX fuel program is not within the scope of this *SPD Supplemental EIS*, but is a factor that may be considered in reaching a decision on the Surplus Plutonium Disposition Program.

150-7 As stated in the response to comment 150-6, DOE's prior disposition decisions are not addressed in this *SPD Supplemental EIS,* but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. The action alternatives evaluated for the 13.1 metric tons (14.4 tons) of surplus plutonium are the Immobilization to DWPF Alternative, MOX Fuel Alternative, H-Canyon/HB-Line to DWPF Alternative, and WIPP Alternative. All of the action alternatives evaluated in this *SPD Supplemental EIS* are considered to render surplus plutonium into a proliferation-resistant form or result in proliferation-resistant disposal.

DOE acknowledges the commentor's support of immobilization of surplus plutonium.

150-8 Accident analyses for U.S. nuclear power reactors already consider the radiological impacts of accidents like the Fukushima accident in Japan, in that the safety evaluations include evaluation of beyond-design-basis accidents. These analyses assume that, for whatever reason, such as a dam failure, effective cooling of the reactor core is lost, substantial damage to the core occurs, and reactor confinement is lost, resulting in the uncontrolled release of radioactivity to the environment. This was the ultimate result of the loss of power at the Fukushima reactors. The focus of activities at U.S. nuclear power reactors is ensuring that severe events such as earthquakes, tsunamis, and dam failures do not ultimately lead to loss of cooling. This *SPD Supplemental EIS* evaluates the radiological impacts of accidents with ultimate impacts on the reactor, similar to a Fukushima-like event, of beyond-design-basis accidents with MOX and LEU fuel. These accidents would have impacts similar to those associated with seismic events, flooding, or Fukushima-type events. The differences in the projected radiological impacts

associated with the use of full LEU and partial MOX fuel cores are small. NRC is incorporating lessons learned from the Fukushima accident in its regulations for U.S. nuclear power reactors. For further discussion, refer to Section 2.5, Topics B and C, of this CRD.

150-9 DOE believes this *SPD Supplemental EIS* adequately evaluates the impacts associated with the proposed pit disassembly and conversion activities at LANL. MOX fuel would not be made at LANL. The evaluated impacts at LANL are presented in Chapter 4 and Appendix F and are summarized in Chapter 2, Section 2.6, Table 2–3. The No Action Alternative evaluates the impacts associated with disassembling and converting 2 metric tons (2.2 tons) of pit plutonium at LANL, while the action alternatives evaluate the impacts associated with disassembling and converting up to 35 metric tons (38.6 tons) of pit plutonium at LANL. For further discussion, refer to Section 2.3, Topic A, of this CRD.

150-10 Appendix B, Section B.2.1, of this *SPD Supplemental EIS* describes pit disassembly and conversion at PF-4 at LANL under the 2-metric-ton (2.2-ton) and expanded facility (35-metric-ton [38.6-ton]) options, including the amounts of materials processed and the throughputs. DOE does not expect that expanded pit disassembly and conversion operations at PF-4 would impact other LANL missions in this facility. For further discussion, refer to Section 2.3, Topic A, of this CRD.

150-11 DOE is aware of the seismic concerns that were raised by DNFSB and is aggressively pursuing additional analyses of and upgrades to this facility to ensure it continues to operate safely. This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9). The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

150-12 The period for submitting comments on the *Draft SPD Supplemental EIS* closed on October 10, 2012. On the same day, DOE posted the references on the *SPD Supplemental EIS* website at http://nnsa.energy.gov/aboutus/ouroperations/generalcounsel/nepaoverview/nepa/spdsupplementaleis. Nonetheless, the *Draft SPD Supplemental EIS* and the cited resources on which DOE relied to support the analysis in the *Draft SPD Supplemental EIS* were available to the public for the duration of the comment period. Copies of the cited reference materials were sent along with copies of the document to all of the reading rooms and libraries listed in the Summary, Section S.13, of the *Draft SPD Supplemental EIS* prior to

Commentor No. 150 (cont'd): Paulette Frankl

the beginning of the public comment period. However, there are certain types of sensitive information that cannot be posted at publicly accessible locations and may be exempt from public release, including UCNI, OUO, PII, and proprietary information. This information was not posted on the project website or provided to the reading rooms and libraries. Despite the stated closing date of the comment period, DOE considered all comments received on the *Draft SPD Supplemental EIS*, including those received after the close of the comment period.

In this *SPD Supplemental EIS*, DOE evaluated the potential environmental impacts of a range of reasonable alternatives for the disposition of 13.1 metric tons (14.4 tons) of surplus plutonium, in accordance with the requirements of NEPA. As described in Chapter 2, Section 2.4, this *SPD Supplemental EIS* supplements the *SPD EIS* (DOE 1999), which tiers from the *Storage and Disposition PEIS* (DOE 1996). These parent documents considered additional alternatives. The *Storage and Disposition PEIS*, *SPD EIS*, supporting supplement analyses, and the decisions announced in the related RODs remain valid and, in accordance with CEQ and DOE NEPA regulations, do not need to be updated before this *SPD Supplemental EIS* can be issued. See the response to comment 150-1 regarding the commentor's opinion about the need for a new programmatic EIS on storage in disposition of surplus plutonium.

Cost is among the factors that may be considered in reaching a decision on the Surplus Plutonium Disposition Program. For further discussion, see the response to comment 150-3.

Commentor No. 151: Stephanie Hiller

From: Stephanie Hiller
Sent: Tuesday, October 09, 2012 8:43 PM
To: spdsupplementaleis@saic.com
Subject: NNSA's Surplus Plutonium Disposition

Ms. Sachiko McAlhany, NEPA Document Manager
SPD Supplemental EIS
National Nuclear Security Administration
U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324

Dear Ms. McAlhany,

As always there are many technicalities and complexities with this issue.

All I know is, there is plutonium scattered all over LANL. No one even knows where some of it is. Plus, 300 plus kilograms of Pu are unaccounted for, according to an audit conducted by Arjun Makhakani. And security is lax. ***151-1***

I live below "the Hill," and I don't want more of that stuff traveling on our roads and being "disposed" up there. Whoever created the Pu needs to dispose of it in situ. As for MOXX, it really sounds like a great idea, but I understand there are problems with it. ***151-2***

When, I wonder, will technology serve the people, instead of draining our resources and spilling toxic chemicals all over the landscape. It's tragic. We have a beautiful home and we're trashing it. I know you have to do something with all that plutonium. I don't think this is it. ***151-1 cont'd***

But you might start by not making any more of it, and not making any more nuclear waste, period. The whole thing was a bad idea.

thanks,

Stephanie Hiller

151-1 DOE is not producing new plutonium. Examining issues related to cleanup of LANL, LANL security, and plutonium production and accounting is not within the scope of this *SPD Supplemental EIS*.

LANL has been working closely with the New Mexico Environment Department to define the nature and extent of plutonium in the environment of LANL. The results provide a detailed map that guides ongoing work to clean up legacy contamination. The data are publicly available at www.intellusnmdata.com/. The environment of LANL is also described in the annual environmental reports that can be accessed at www.lanl.gov/community-environment/environmental-stewardship/environmental-report.php.

DOE maintains tools, procedures, and oversight to ensure proper accountability of SNM, including the estimate of holdup and other residual materials within facility ventilation systems. The control of SNM is a key component of the wider security posture mandated by law, overseen by the DOE, and executed by contractors, that maintains capabilities to protect nuclear material from an array of scenarios and risks; LANL is currently upgrading some security systems to both maintain and enhance the security systems that support its plutonium facility.

151-2 For further discussion, refer to Section 2.4, Topic A, of this CRD, regarding safety of MOX fuel.

Transportation risks are analyzed for all alternatives proposed in this *SPD Supplemental EIS*, including the threat of theft and diversion of radioactive materials. Chapter 4, Section 4.15, presents projected impacts from transportation of nuclear materials and waste for the alternatives proposed. As discussed in this Section and summarized in Chapter 2, Section 2.6, Table 2–3, risks to the public are expected to be minor from transportation under any proposed alternative. Additional information is provided in Appendix E.

Under the proposed alternatives, plutonium would not be brought to LANL for disposal. Plutonium pits would be brought to LANL to be converted into plutonium oxide, which would be transported to SRS for use in MOX fuel fabrication. Except possibly for low-level radioactive waste, radioactive waste generated as a result of these proposed activities would be disposed of at offsite authorized or licensed facilities.

Commentor No. 152: Scott Richmond

From: Scott Richmond
Sent: Tuesday, October 09, 2012 10:20 PM
To: spdsupplementaleis@saic.com
Subject: I Agree with the DOE-NNSA Pu plan

Dear Sachiko,

My name is Scott Richmond. I am a citizen living in White Rock, NM.

I am writing you to say that I strongly agree with the "Surplus Plutonium Disposition Supplemental Environmental Impact Statement" and the DOE/NNSA's plan for expanding the amount of weapons usable plutonium converted and rendered unusable. *152-1*

I feel very confident that it is a good plan and well within the NNSA's ability to complete in safe manner.

Sincerely,

Scott Richmond

152-1 DOE acknowledges the commentor's opinion.

Commentor No. 153: Terry Burns, M.D.

From: Terry Burns
Sent: Tuesday, October 09, 2012 10:55 PM
To: spdsupplementaleis@saic.com
Subject: Plutonium

NEPA Document Manager, SPD Supplemental EIS, U.S. Department of Energy, P.O. Box 2324, Germantown, MD 20874-2324

Dear Sachicko McAlhany:

I am very concerned about Department of Energy plans for surplus plutonium. Six metric tons of plutonium is probably enough to kill all life on Earth. It will remain highly toxic for tens of thousands of years.

No additional plutonium should be brought to Los Alamos National Lab (LANL), which has misplaced more than one pound of plutonium in the past. Los Alamos cannot meet seismic standards in the case of an earthquake, and has enough mess to clean up now. *153-1*

WIPP has a limited mission and does not have the capacity for all this surplus plutonium. *153-2*

I strongly oppose converting plutonium into MOX and attempting to use it as fuel in current nuclear power plants. This "recycling" of nuclear waste is not safe and not cost effective. The U.S. banned such procedures decades ago under the Carter and Reagan administrations due to the risk of diversion to terrorists and rogue States. *153-3*

Plutonium and other toxic wastes are the Achilles heel of so called "safe" and "clean" nuclear power. These materials are only safe when not produced, and so nuclear power is never safe and should be abandoned as soon as possible. In the interim, current plutonium production should be minimized, and current stocks should be immobilized and stored on site, with as little transport as possible, until technically sound, suitable disposition facilities are available. *153-4*

I urge you to not send any plutonium to WIPP or to LANL.

Thank you,

Terry Burns, M.D

153-1 As described in Chapter 4 and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, risks to the public are expected to be minor from both normal operations and potential accidents under any proposed alternative. The accidents evaluated include those that could occur at LANL due to natural phenomena such as earthquakes. Additional information on human health effects from facility accidents is provided in Appendix D.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

153-2 As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

153-3 The Surplus Plutonium Disposition Program does not involve reprocessing of used nuclear fuel. The use of MOX fuel is consistent with U.S. nonproliferation policy and international nonproliferation agreements. Use of MOX fuel in commercial nuclear power reactors would render surplus plutonium into a used fuel form that is not readily usable for nuclear weapons. For further discussion, refer to Section 2.4, Topic A, of this CRD.

153-4 DOE is no longer producing plutonium. As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium.

Commentor No. 153 (cont'd): Terry Burns, M.D.

Chapter 4, Section 4.15, of this *SPD Supplemental EIS* presents projected impacts from transportation of nuclear materials and waste; additional information is provided in Appendix E. As indicated in these sections, no fatalities are expected to the public from transportation under any evaluated alternative. The United States' policy on the continued use of nuclear energy is outside the scope of this *SPD Supplemental EIS*.

Commentor No. 154: Charles D. Bowman, Ph.D., President, ADNA Corporation and Rolland P. Johnson, Ph.D., President, Muons Inc.

From: Charles D. Bowman
Sent: Wednesday, October 10, 2012 10:01 AM
To: spdsupplementaleis@saic.com
Cc: Rol Johnson; mcoster@thefgagroup.com
Subject: Comments on SPD Supplemenatal EIS
Attachments: Comments on Supplemental EIS W-Pu rol.pdf

Sachiko McAlhany, NEPA Document Manager
SPD Supplemental EIS
U. S. Department of Energy
P.O. Box 2324
Germantown, Md 20874-2324

Please find attached written comments on the SPD Supplemental EIS from Dr. Charles D. Bowman, president, ADNA Corp. and Dr. Rolland P. Johnson, president, Muons Inc. Both also made brief oral presentations at the Espanola, NM hearing on September, 18 2012.

Charles D. Bowman, Ph. D., President
ADNA Corporation
Accelerator Driven Neutron Applications
1045 Los Pueblos
Los Alamos, NM 87544

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Commentor No. 154 (cont'd): Charles D. Bowman, Ph.D., President, ADNA Corporation and Rolland P. Johnson, Ph.D., President, Muons Inc.

Comments on the 2012 Supplemental EIS for W-Pu

Charles D. Bowman, Ph. D.
President ADNA Corporation
Accelerator-Driven Neutron Applications

1045 Los Pueblos
Los Alamos, NM 87544
505-662-3192

[redacted]

Rolland P. Johnson, Ph. D.
President , Muons Inc. and Muons⁺ Inc.
Newport News, VA
rol@muonsinc.com
[redacted]

Muons, Inc.

New Accelerator Technology Enables GEM*STAR

OAK RIDGE, Tenn., Sep. 28, 2009 — The Department of Energy's 1 GeV Spallation Neutron Source (SNS), breaks the one-megawatt barrier! Operating at <10% duty factor, this corresponds to >10 MW at CW. Based on Superconducting RF Cavities, available from U.S. Industry:

Response side of this page intentionally left blank.

Commentor No. 154 (cont'd): Charles D. Bowman, Ph.D., President, ADNA Corporation and Rolland P. Johnson, Ph.D., President, Muons Inc.

Comments on the 2012 Supplemental EIS for W-Pu October 10, 2012

Introduction

The DOE's Draft Surplus Plutonium Disposition Supplemental EIS of 2012 should be revised first because the U. S. should not set a precedent of burying anywhere materials that could be recovered in amounts sufficient for nuclear weapons. Prof. Per Petersen, formerly chair of the U.C. Berkeley Nuclear Engineering Department and a member of the Blue Ribbon Panel on disposition of reactor spent fuel estimated for the IAEA that it would be ten times faster and ten times cheaper to recover W-Pu from underground storage compared to producing it in a reactor. *154-1*

Even more importantly, weapons-useful materials should not be burned using the outdated reactor technologies of the 1960s, such as LWRs and fast spectrum reactors, because both reactor types (1) *transform W-Pu to an isotopic mixture more readily used by terrorists for nuclear weapons than W-Pu itself, and (2) produce material that over time will decay towards W-Pu.* These two dangers carried by the old technology might be avoided by cycling the material more than once, but this requires proliferation-prone reprocessing technology. In addition the Supplemental EIS, like the original EIS, would place an enormous unnecessary burden on the federal budget at a time when deficits must be reduced. *154-2* *154-3*

Instead the DOE should work with the private sector to apply the new transformative subcritical liquid-fuel technology GEM*STAR that avoids the proliferation-prone MOX and reprocessing technologies. This new technology also would turn W-Pu disposition into a financial gain for both the U. S. and Russia and thereby avoid for both nations the onerous expenditure required by the old technology. *154-4*

The new GEM*STAR technology detailed in Chap. 24 of the *International Handbook of Nuclear Energy (Springer 2010)* is briefly described in this Comment along with its relevance to the W-Pu disposition mission. Concerns about the Supplemental EIS and its predecessor document that rely on the expensive technologies of the past are listed below.

1. *Burning W-Pu as proposed requires more than one cycle through an LWR* because once burned W-Pu will decay in storage towards W-Pu.
2. *Burning W-Pu in LWRs requires more than one cycle* because one pass of weapons plutonium leaves behind plutonium that is much easier for a terrorist or proliferating nation to turn into a weapon than the initial W-Pu.
3. *Only one pass through an LWR is presently possible, not two.* After the first pass the material would then have to undergo reprocessing that was forbidden in the U. S. 30 years ago on proliferation grounds. The U. S. has no reprocessing plant and no plans to build one. *154-5*
4. *After conversion of W-Pu to MOX fuel, the NNSA has no reactor for burning it.* The MOX fuel was to be burned in a nuclear reactor belonging to the quasi-private Tennessee Valley Authority (TVA), but the TVA will not announce which one of its reactors will burn the plutonium and can no longer even provide assurance that it will burn W-Pu MOX in any of its reactors. *154-6*
5. *It would take one TVA reactor about 120 years to process 34 tons of W-Pu* because MOX fuel can make up only 30 % of the total reactor fuel load. At least three TVA reactors rather than one would be required for results on a helpful time scale. *154-7*
6. *So the NNSA would have to build its own reactors, but it would not be able to sell the electricity from them.* The government cannot compete in the private market and there is *154-8*

154-1 In this *SPD Supplemental EIS*, DOE evaluated the potential environmental impacts of a range of reasonable alternatives for the disposition of 13.1 metric tons (14.4 tons) of surplus plutonium, in accordance with the requirements of NEPA. Plutonium disposition options are described in Chapter 2, some of which include preparation of surplus plutonium for potential underground disposal as CH-TRU waste at WIPP in New Mexico. WIPP would provide permanent disposal of plutonium materials.

154-2 A large portion of the plutonium that is the subject of this *SPD Supplemental EIS* exists as plutonium metal, the form most readily usable in a nuclear weapon. The technology evaluated in this *SPD Supplemental EIS* (use as a MOX fuel) includes converting the metal to an oxide, diluting the plutonium oxide substantially by mixing it with uranium oxide, and using it as fuel in an LWR (DOE is not considering the use of fast reactors). The use of MOX fuel in commercial nuclear power reactors would substantially reduce the quantity of fissile plutonium in MOX fuel assemblies and result in an overall reduction in the amount of plutonium in the irradiated fuel. Footnote 3 in Chapter 2 of this *SPD Supplemental EIS* describes a 60 percent reduction in plutonium-239 after irradiation for two cycles in a domestic commercial nuclear power reactor. After removal from the reactor, radioactive decay would not result in the creation of more plutonium-239. The used nuclear fuel resulting from burning the MOX fuel in LWRs would be highly radioactive, thus making any plutonium recovery extremely difficult. It is not necessary to reprocess used nuclear fuel to make it proliferation-resistant because its inherent radioactivity provides the same function.

154-3 Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD. Examining congressional budget decisions and the U.S. budget deficit is not within the scope of this *SPD Supplemental EIS*.

154-4 As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium.

As there are currently no domestic commercial nuclear power reactors or accelerators using the disposition technologies described by the commentor and none are currently under construction, these technologies are not reasonable

Commentor No. 154 (cont'd): Charles D. Bowman, Ph.D., President, ADNA Corporation and Rolland P. Johnson, Ph.D., President, Muons Inc.

a surplus of electricity capacity in the U. S. southeast and southwest already. Three new reactors would cost the NNSA probably about $24 billion to construct. Without electricity sales to pay the bills, the operations costs would be about $0.12 billion per year per reactor or a total of $11 billion. Including the capital costs for the U. S. reprocessing and MOX plants and a Russian MOX plant and breeder reactor, the total cost would be $50 billion with dubious results for the exercise.

7. *The key player on W-Pu disposition, Russia, is not on board with LWR burning of W-Pu and the U. S. and Russia most move in step on W-Pu disposition.* Russia does not have a MOX fuel facility and would require the U. S. to build one for them. They refuse to burn MOX in their light water reactors believing that this would only be exchanging one problem for another and would waste their valuable W-Pu resource. They do see significant advantage to burning W-Pu in their BN-800 fast spectrum plutonium breeder reactor that, however, the U. S. must pay for.
8. *MOX fuel is primarily a stalking horse for proliferation-prone reprocessing technology for the U. S.* The centerpiece of the DOE Nuclear Energy Office's program for the future of nuclear energy has been for the past 40 years the proliferation-prone triad of reprocessing, MOX fuel, and the plutonium breeder reactor. W-Pu disposition would provide a foot in the door for using the SRS MOX fuel facility for manufacturing MOX from LWR spent fuel for LWR recycling. The second W-Pu cycle through the LWR needed by the DOE plan would also require a reprocessing facility at SRS.

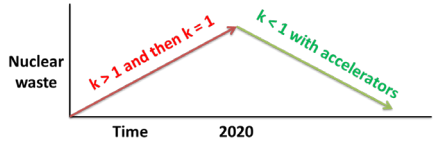
The figure below announces a new regime for nuclear technology featuring subcritical liquid fuel reactors based on major advances in proton accelerator technology.

Accelerator-Based Burning of Weapons Plutonium

Multiplying chain	(k > 1)	Nuclear weapons
Steady chain	(k = 1)	Today's reactors from 1960s
Decaying chain	(k < 1)	Tomorrow's energy future

GEM*STAR

Deploying advanced accelerator-based technology
(No enrichment, no reprocessing, no weapons-useful material)
Green electricity, diesel, gasoline, fertilizer, other basic products



154-8 cont'd

154-9

154-10

alternatives within the time period necessary to implement the Surplus Plutonium Disposition Program objectives. All of the action alternatives evaluated in this *SPD Supplemental EIS* are considered to render surplus plutonium into a proliferation-resistant form or result in proliferation-resistant disposal. For further discussion, refer to Section 2.2, Topic A, of this CRD.

154-5 By using weapons-grade or weapons-usable plutonium as MOX fuel in one or more commercial nuclear reactors, DOE would render the plutonium into a used fuel form that is not readily usable for nuclear weapons. As discussed in the response to comment 154-2, the plutonium would be within a heavy, highly radioactive fuel assembly where the remaining plutonium oxide is intermixed with fission products that would be impossible to handle without highly specialized equipment. In addition, the remaining plutonium would contain a much higher percentage of plutonium isotopes that would require a larger mass to be usable in a nuclear weapon, making it less attractive for use in weapons. The MOX fuel would not be reprocessed, however. DOE expects that MOX fuel assemblies would be left in the reactors for multiple cycles (typically about one-third of the core is replaced every 18 months and the MOX fuel would be left in for two to three cycles before it is removed), further reducing the amount of fissile plutonium left in the core.

154-6 The disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts as required by NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors, including, but not limited to five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants. These reactors are explicitly considered because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Section I.1). However, the MOX Alternative also analyzes irradiation in generic commercial nuclear reactors including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2), and is not dependent on TVA participation.

TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose.

154-7 The five Browns Ferry and Sequoyah Nuclear Plant reactors are evaluated in this *SPD Supplemental EIS* because DOE and TVA have entered into an interagency agreement to evaluate the use of MOX fuel in these nuclear plants. TVA may decide to use MOX fuel in all of these reactors. From a technical perspective, DOE believes

Comments on the 2012 Supplemental EIS for W-Pu October 10, 2012

Solving one problem and creating another

Burning W-Pu as MOX fuel in an LWR probably raises the proliferation risk of W-Pu rather than lowering it. The basis for this concern was first published in 1992 by Robert Serber in a book titled, "The Los Alamos Primer; First Lectures on How to Build an Atomic Bomb" University of California Press, Berkeley, CA. The subject is also discussed in a paper by J. Carson Mark, formerly head of the LANL Theoretical Physics Division, titled "Explosive Properties of Reactor-Grade Plutonium" first published in Science and Global Security, 4 (1) 1993. It was published again in the same journal in 2009 with an appendix by Frank von Hipple and Edward Lyman containing calculations relating to Mark's results.

These publications show three essential requirements for a weapon from W-Pu; (1) a successful spherical implosion of Pu using high explosive, (2) a pulse of neutrons, and (3) production of the pulse at the time of optimum compression. Both sources discuss pre-initiation in detail including how it can significantly influence the explosion. Pre-initiation happens when unwanted neutrons launch a rapidly growing neutron chain reaction that produces an outward nuclear expansion stronger than the chemical implosion before the minimum radius of the W-Pu is reached. These neutrons come primarily from spontaneous fission of ^{240}Pu but also from ^{242}Pu. W-Pu is prepared with a fraction of ^{240}Pu (about 6-7 %) that is small enough that 97 % of explosions will yield the nominal 20 KT of the pure fission Trinity bomb tested in New Mexico.

Mark's paper addresses the bomb yields when more neutrons are present from spontaneous fission than at Trinity. He includes two tables; one for the explosive speed of the 1940s and another for that of the 1990s. The critical masses for the isotopes of plutonium are also given in the paper so that one can estimate the critical mass for any isotopic distribution. This information enables an estimation of the larger mass of plutonium that is required for a bomb for material other than W-Pu.

The primary point of Mark's paper is that plutonium with its much wider distribution of isotopes after burning in an LWR, enables "severely damaging explosions" extending to a diameter of 0.5 to 1 mile. An even more important point is that W-Pu burned as MOX in an LWR produces plutonium with sufficient spontaneous fission neutrons that it will explode with a yield in the 5 to 20 KT range *without a pulsed neutron source and without solving the very difficult problem of properly timing the pulse.*

For this reason Russian weapons scientists believe that MOX-burned W-Pu from an LWR is a more dangerous form of plutonium for terrorist or low technology proliferating nations than the more difficult to use W-Pu. Russia has not agreed to burn its W-Pu in LWRs, but plans to use it in its BN-800 fast neutron reactor design (if the U. S. will pay for the BN-800 construction). The BN-800 would burn the W-Pu to a lesser degree than LWR-burning so that pre-initiation is less likely to reduce the yield, and a properly timed neutron pulse is still required. Neither approach is optimal; the U.S. creates more readily usable burned plutonium with some sacrifice in yield, and the Russian approach gives less reduction in yield but requires proper neutron pulse timing. GEM*STAR in a single pass reduces the Pu mass by three and produces an isotopic mix that reduces the probability of a full yield explosion to less than 5 %. A second pass through GEM*STAR, readily possible without reprocessing, reduces the W-Pu by another factor of three,

that MOX fuel could potentially be used in any domestic commercial nuclear power reactor.

154-8 DOE is not considering building its own reactors to burn MOX fuel.

154-9 Under the PMDA (USA and Russia 2000), which entered into force in 2011, the United States and the Russian Federation agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. Russia plans to irradiate its MOX fuel in fast reactors (BN-600 and BN-800) under certain nonproliferation conditions. To that end, Russia has successfully irradiated 21 prototypic MOX fuel LTAs in its BN-600 fast reactor; completed over 50 percent construction of the BN-800 fast reactor; completed formal siting of its MOX fuel fabrication facility; established an integrating contracting office for implementation of PMDA activities; and actively participated with the United States and the IAEA in negotiating a verification agreement that will enable IAEA to independently verify that the objectives of the PMDA are met. More information on the PMDA is located on the U.S. State Department website at www.state.gov/r/pa/prs/ps/2010/04/140097.htm.

154-10 The recycling (reprocessing) of used nuclear fuel is not within the scope of this *SPD Supplemental EIS*. As analyzed in this *SPD Supplemental EIS*, MOX fuel would be used in an LWR to produce electricity and then handled as used fuel, consistent with handling of the reactor's other used fuel. There are no plans to use MFFF to manufacture MOX fuel from used reactor fuel.

renders this small remnant 93 % likely to be a dud if it could be made into a bomb, and also increases the decay heat in the plutonium to an impossibly high level for weapons use.

Some means for burning W-Pu better than others

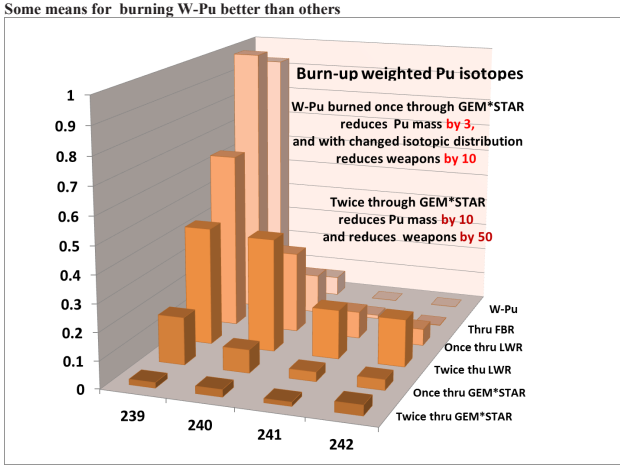


Fig. 1. The distribution and amounts of Pu isotopes after burning by various means compared with W-Pu shown in the row at the back. The dramatic advantage of GEM*STAR over burning in the LWR arises partly because in GEM*STAR W-Pu does not have to be mixed with ^{238}U that enables ^{239}Pu to grow about as fast as ^{239}Pu is burned. The more important advantage is that there is no reactivity swing with the liquid fuel implemented as in GEM*STAR enabling the much higher burn up at k_{eff}=0.98-0.99. In a single pass through GEM*STAR, the total plutonium is *reduced* by the factor of 3 compared to being *increased* in the LWR by a factor of 1.08. If detrimental effects of pre-initiation and decay heat on weapons are omitted from consideration, once through GEM*STAR reduces the number of potential Pu weapons by a factor of 10 owing to the lower fissionability of some of the higher isotopes. Twice through GEM*STAR reduces the number of potential weapons by 50.

Fig. 1 shows the isotopic distributions and amounts of various means for burning plutonium. The back row of the figure shows the isotopic distribution of W-Pu and the fractions of ^{239}Pu and ^{240}Pu add to 1.00. Next to the back row, the isotopic distribution after burning in the Russian BN-800 is shown. Notice that all four isotopes are present and that the total might add to more than 1.00 or about 1.15 because it is a breeder reactor, although the breeding ratio could be reduced. By reprocessing the BN-800 output and remanufacturing MOX fuel for a second pass

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through the BN-800, the ^{240}Pu fraction would be increased. Without the second pass the BN-800 the output Pu would decay back to W-Pu in one half-life; 6600 years, or about the age of the Sphinx.

The third row from the back shows W-Pu as MOX fuel burned once-through in an LWR with a wider distribution of isotopes. Because the fed MOX fuel is a combination of W-Pu and depleted uranium, additional ^{239}Pu isotope is bred from the ^{238}U while ^{239}Pu is being destroyed by neutron absorption. The net result is that the total plutonium is increased in the LWR by the factor of 1.08. The MOX-LWR output would decay as well towards W-Pu in about 50,000 years with ^{242}Pu becoming the dominating source of spontaneous fission neutrons.

The fourth row from the back shows W-Pu twice through an LWR with the ^{239}Pu fraction decreasing to 0.47 from the one-pass result of 0.66. This Pu distribution never decays back toward W-Pu owing to the presence of significant ^{242}Pu. Of course a second pass through an LWR requires the construction of a reprocessing plant for the burned W-Pu that neither the U. S. nor the Russians have. And the reprocessed plutonium has to be refabricated into MOX fuel. As shown below, one pass through an LWR is insufficient for significant benefit. The second pass will more than double the DOE-NNSA cost estimate for one pass of W-Pu as MOX through an LWR.

The fifth row from the back shows the dramatic reduction of plutonium with only one pass through GEM*STAR. Preparing the W-Pu for this only requires conversion of the W-Pu from metal to fluoride (PuF_3) in a process essentially the same as the first step in preparation for MOX fuel, which is conversion of W-Pu from metal to oxide (PuO_2). No reprocessing or MOX fuel operations are required to recycle the one-pass GEM*STAR remnant a second time with results shown in the front row.

Burned W-Pu still useful for terrorists

Fig. 2 summarizes the effect of pre-initiation on nuclear yield for various means of burning W-Pu based on Mark's analysis. The probability of explosive yield is given for various means of burning. The amount of plutonium required for explosions is referenced to 3 kg of W-Pu on the basis of the NNSA claim that the destruction of 34 tons of W-Pu will eliminate 17,000 nuclear weapons and the assumption that a terrorist weapon might require 50 % more W-Pu than a more sophisticated weapon. Fig. B also includes Mark's assumption that the implosion speed by 1995 would be twice as fast as that in 1945.

The row at the back for W-Pu shows that there is a 94 % probability of 20 kilotons (KT) and a 97 % probability of more than 5 KT for a W-Pu mass of 3 kilograms. This yield requires a properly timed neutron pulse and there could be perhaps 11,000 weapons from the 34 tons.

The second row from the back shows explosive yield for W-Pu burned once through a fast reactor such as the Russian BN-800. Because of the presence of about 12 % of ^{240}Pu as shown in Fig. A, the plutonium mass requirement is larger or 4.14 kg instead of 3 kg. However, burning in the BN-800 increases the plutonium mass from 34 to 39 tons. The number of weapons possible from W-Pu burned in the BN-800 yielding more than 5 KT is therefore 39,000/4.14 = 9,420 instead of 11,000. Note that the terrorist must not only master the

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plutonium compression using high explosive but also the daunting neutron pulse and timing technologies as well. Still the BN-800 burning has only modestly reduced the explosive yield and the number of weapons.

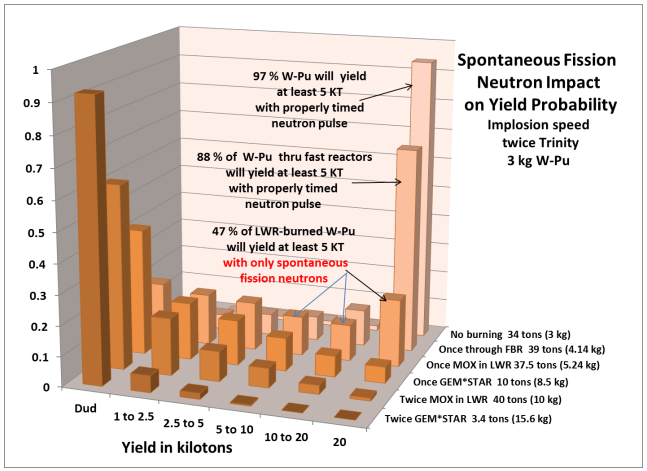

Fig. 2. Probability of explosive yield for W-Pu burned by various means. The back row shows a 94 % probability that the yield will be 20 KT from W-Pu and a 97 % probability that the yield will be above 5 KT. The front row shows a 93 % probability that W-Pu burned twice through GEM*STAR would yield a dud and a 4 % probability that the yield will be between 1 and 2.5 KT. The third row from the back shows that the NNSA preferred option of MOX burning in LWRs will yield still-dangerous plutonium in that about half of the weapons would yield more than 5 KT and only 15 % would be duds. Moreover weapons from this material are especially simple for a terrorist to construct because they would not require a properly timed pulse of neutrons.

The third row from the back shows the DOE-NNSA preferred alternative of burning W-Pu as MOX in LWRs. The apparent benefit is larger than BN-800 burning as only about half of the explosions will yield more than 5 KT and the number of weapons is reduced to 37,500/5.24 = 7,150 weapons. However the output from LWR burning is much more attractive for the terrorist because MOX burning introduces an almost ideal rate for spontaneous fission neutrons that *eliminates the need for any neutron source or timing technology at all!* Simply implode 5 kg of MOX/LWR-burned plutonium and 84 % of the time the bomb will yield at least

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1 KT, which is enough explosive to cover a football field with 40 trailer trucks loaded to capacity with conventional high explosive. And 47 % of the time the yield will be sufficient for five to twenty layers of trucks on the field.

These technologies of MOX fuel burned in fast reactors or LWRs have been around for 40 years. The performance of GEM*STAR technology is shown in the fourth row from the back. As shown in Fig. 1, the plutonium remnant from 34 tons is only 11 tons and the wider isotopic distribution requires about 8.5 kg for each weapon. In only one cycle through, the number of weapons is reduced from 11,000 to 11 tons/8.5 kg = 1300. As shown in the front row the GEM*STAR output can be recycled a second time and the number of weapons, if they are practical, is reduced from 11,000 to 220 with 92 % being duds.

Mark also briefly discusses the decay heat from burned W-Pu that can potentially overheat and melt the high explosive eliminating some plutonium isotopic mixtures from practicality. His analysis indicates that the remnant plutonium from twice burning in GEM*STAR yields too much decay heat for use in a weapon, so twice through GEM*STAR truly eliminates weapons usefulness of the remnant. In addition, the presence of significant amounts of ^{242}Pu eliminates forever back-decay towards W-Pu.

Mark's decay heat analysis does not fully rule out the use of the remnant from once-burned in GEM*STAR or twice burned MOX in LWRs shown in the fifth row from the back. However, twice-burned MOX in LWRs requires passing the once-burned remnant through a reprocessing plant that the U. S. does not have and refabricating MOX fuel. The MOX plant requirements for W- Pu and for LWR-burned MOX are not the same because the neutron and gamma ray fields for the MOX-LWR are much higher and the decay heat also is higher.

A second recycle of GEM*STAR requires only the movement of the once-burned liquid fuel by compressed helium gas through a tube from output storage to the GEM*STAR input. No chemistry or mechanical operations like those in MOX fuel preparation are required.

GEM*STAR technology

Fig. 3 illustrates the key operational features of GEM*STAR showing a bucket with 93 % of its volume being graphite and 7 % molten salt that contains the W-Pu. The salt is 1 % PuF_3 and the remainder is an equal mixture of NaF and BeF_2 with a small addition of LiF. This salt melts at about 350 C. A container is shown pouring this liquid salt into GEM*STAR once per hour. It contains 30 g of W-Pu mixed with the other salts and the volume poured in is about 1 liter. The addition would increase reactor reactivity from 0.98 to 0.98015 and increase the power from 500 MWt to 504 MWt. Except that the figure shows an overflow pipe to storage below that removes as much volume of salt as was added, so that the power change is less than 4 MWt. The actual power change will be 1 MWt *without employing control rods*. Until the next fuel addition an hour later, the power will slowly drift down to 500 MWt as the plutonium burns away. (The pioneering molten salt critical reactor at ORNL ran safely for three years without moving its control rods by controlling reactivity by the amount and spacing of fuel additions.)

Note that with 30 g of W-Pu added per hour, the time to burn one pit containing 3 kg of W-Pu is 100 hours (4 days).

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It is important to note that the reactor's liquid fuel circulates rapidly so that an addition of the fuel is rapidly mixed with that already in the reactor in a few minutes. It might be counterintuitive to note that the composition of the fuel in the tank is the same as that overflowing into the storage tank. Therefore W-Pu is not burned to the end composition in years as in solid fuel reactors, but the input W-Pu with 93 % ^{239}Pu is converted in a few minutes, simply by mixing, to the transformed isotopic composition of the overflow shown at the bottom left of Fig. 3.

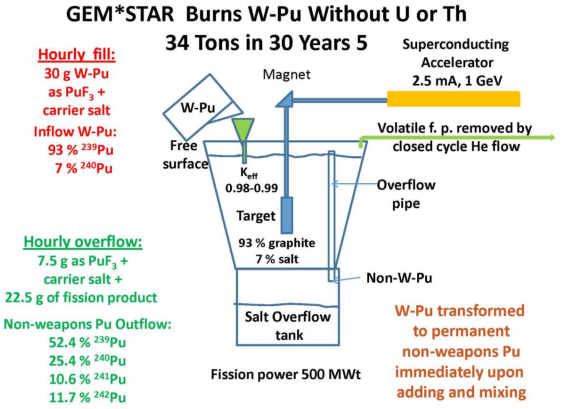

Fig. 3. Schematic view of GEM*STAR reactor arranged for W-Pu burning. Four such units would provide 2,000 MWt and be sufficient to treat the 34 tons of excess W-Pu in 30 years.

All solid fuel reactors suffer from a pressure build-up in the solid fuel assemblies of volatile fission products. Even in the Fukushima accident, it was the volatile fission products that escaped and that required the evacuation of the surroundings and that drove the Japanese decision to abandon nuclear power. A liquid fuel reactor such as GEM*STAR has the advantage that the volatile fission products are not confined in fuel assemblies but can diffuse in a few minutes to the free surface of the salt. Here a flow of helium collects the volatiles and carries them far from the reactor to an underground storage tank where a centrifuge separates the fission products from the much lighter helium that is then returned to the reactor. Because the volatiles diffuse to the surface in a few minutes whereas spent fuel assemblies typically spend 3 years in an LWR, the volatile fission products present in GEM*STAR are lower by a factor of 300,000 compared to an LWR of the same power. If GEM*STAR technology had been present instead

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of LWRs at Fukushima, the volatile radioactivity release would have been barely detectable and inconsequential even if the reactor had been lost.

This means of handling volatiles is an enormous advantage in terms of reactor safety and Nuclear Regulatory Commission oversight. The primary concern of virtually every aspect of reactor operation or malfunction is the release of radioactive volatiles. What would NRC oversight be like if containment vessel failure, pressure vessel failure, loss of coolant, loss of outside power, failure of diesel back-up, cable electrical fires, integrity of new spent fuel cladding, earthquake, spent fuel wet and dry storage, etc. could not lead to consequential volatile fission product release? How much lower would the cost of an LWR be if these matters were reduced in importance by a factor of 300,000? This advantage of liquid over solid fuel is but one of many safety and operational advantages of liquid fuel reactors over solid fuel systems.

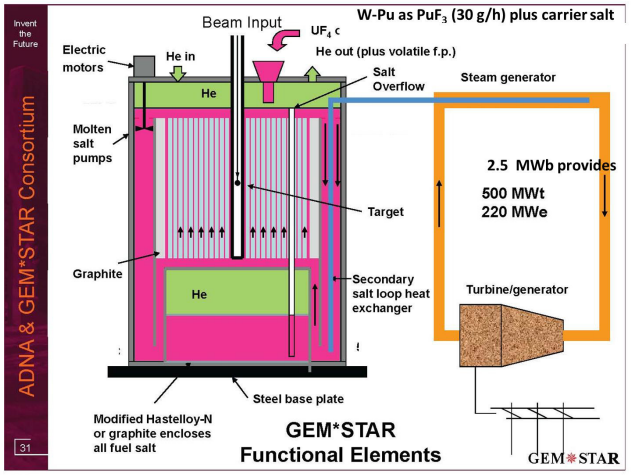

Fig. 4. More detail on the GEM*STAR reactor design

Fig. 4 shows GEM*STAR functionality in more detail. A primary goal of the 11 MWt molten salt reactor experiment at ORNL was to demonstrate that the metal Modified Hastelloy-N was sufficiently corrosion resistant to the molten salt and the fission product fluorides. This was achieved and therefore this metal was used wherever the salt would be in contact with metal. The white in the center of Fig. 4 is graphite with space for molten salt to flow up to where it adds

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to a pool on top before overflowing down the outside of the core. The circular flow is assisted by an array of pumps around the outside top as shown in the upper left. A target is shown in the reactor center with a vertical beam transport arrangement and many neutrons are produced per proton striking the target. These neutrons drive the subcritical chain reactions that run for about 50-100 fissions on average before stopping. The molten salt in the overflow tank is kept in molten form by the decay heat and can be removed readily by raising the He pressure to move the overflow salt up and out of the tank and to remote underground storage tanks through a tube that is not shown. The overflow tank holds 10 years of salt flow.

The reactor is situated below grade with natural convection airflow to allow passive cooling of the salt in case of interruption of the secondary salt cooling flow. Evaporation and boiling of precipitation or floodwater will also be allowed to supplement the natural convection air cooling.

The subcritical fission reaction in the fuel creates heat that is carried in the salt to the exterior wall of the reactor where an internal heat exchanger enables heat transfer to a secondary salt containing no fuel or radioactivity. This salt flows to an output storage tank (not shown), then to a heat exchanger, back to an input storage tank (not shown) and then back to the reactor. The heat can be used either to make electricity or to generate renewable diesel/gasoline from inputs of natural gas in combination with char from various sources. The purpose of the two holding tanks is to store hot secondary salt so that electricity or diesel/gasoline can flow without interruption in case of accelerator beam interruptions for periods up to one hour. Longer interruptions are much less of an issue for diesel production than electricity, which is another reason to demonstrate GEM*STAR first for diesel and later for electricity.

For diesel, the lower temperature of the fuel salt is 750 C and the upper temperature is 850 C; the lower temperature of the secondary salt is 650 C and the upper temperature is 750 C. For electricity all temperatures can be 100 C lower and still enable a thermal to electric conversion efficiency of 44 %. A table of design parameters for GEM*STAR optimized for W-Pu use is shown in Fig. 5.

GEM*STAR safety and non-proliferation benefits ADNA Corporation's GEM*STAR was designed after the year 2000 when the safety issues of solid fuel critical reactors including LWRs and FBRs were well understood. ADNA Corp. saw no point in proposing a new technology that addressed some but not all of the known problems.

Eliminate the Threat rather than Defend in Depth
Rather than eliminate the basis of safety issues, the DOE chose to erect strong defense against them. For example, to prevent release of fission product volatiles that build up in fuel pins, high quality zircalloy cladding was prepared to eliminate leaks. The zircalloy would melt if the heat was not removed so it had to be always covered with water. If water pumps failed, the water might not be present, so back-up pumping was needed. If these were electric pumps and the electricity failed, then diesel generators were needed to supply the back-up electricity. In spite of these defenses, volatiles might leak from the fuel pins into the reactor so means for sealing off the pressure vessel were needed. And in case this defense was not sufficient, a confinement vessel was required.

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The international nuclear chant is Defense in Depth and the NRC scrutinizes designs and oversees operations to assure that these elaborate precautions are maintained. ADNA Corporation's liquid fuel design prevents these volatiles from accumulating so that the volatile inventory is a factor of about 300,000 smaller than that of an LWR or an FBR. ADNA Corporation's approach for the GEM*STAR design is Eliminate the Threat rather than Defend in Depth.

GEM*STAR Parameters for Burning W-Pu

Core/blanket parameters

Green energy multiplication factor	29
Fission power per reactor (MWt)	500
Total fission power (MWt)	2000
k_{eff}	0.99
Fuel salt melting point C	350
Fuel salt maximum operating temp. C	850
Fuel salt minimum operating temp. C	550
Fuel atom flow through time (years)	4.5
Fuel loading temporal spacing (hours)	1.0
Fuel salt loading volume (liters)	0.78
Fission power increase per loading (%)	0.25
Time to equilibrium (years)	7.0
Dimension of cubic core/blanket (cm)	502
Side of graphite square cylinders (cm)	15.24
Number of cylinders (33 x 33)	1089
Number of cylinders across the core	27
Volume of core (m^3)	86
Reflector thickness (cm)	50
Volume of blanket (m^3)	42
Reflector volume (m^3)	109
Total graphite mass (T)	350
Fuel salt volume in core (m^3)	6.1
Radius of blanket holes (cm)	5.23
Fuel salt volume in the blanket (m^3)	15.6
Thickness of outer salt channel (cm)	8.9
Height of outer salt channel (cm)	1200
Fuel salt volume in the heat exch. (m^3)	8.9
Total fuel volume (m^3)	30.6
Total fuel mass (T)	76
Total fissioned mass per year (kg)	200
Thickness of outer Hastelloy (mm)	13
Thickness of steel structure vessel (mm)	50
Steel vessel mass (T)	158
Hast. bolt spacing square pattern (cm)	50
Average thermal flux (n/cm^2-s x 10^{14})	1.4
Core power density (kw/l)	4.0
Graphite lifetime (years)	17

Internal Heat Exchanger

Total heat transfer (MWt)	500
Number of peripheral pumps	50
Fuel salt inlet temp. (^{0}C)	850
Fuel salt outlet temp. (^{0}C)	750
Fuel salt down velocity (m/s)	1.3
Number of concentric paired tubes	300
Concentric tube pitch (mm)	81.3
Inside down tube wall thickness (mm)	3.2
ID of inside down tube (mm)	44.5
Outside uptube wall thickness (mm)	3.2
ID of outside uptube (mm)	69.9
Down tube velocity (m/s)	3.2
Uptube velocity (m/s)	2.8
Inlet secondary salt temperature (^{o}C)	650
Secondary salt temp at bottom (^{o}C)	670
Secondary salt temp. at top (^{o}C)	750

Accelerator and target parameters

Number of accelerators	1
Number of accelerator targets/reactor	2
Number of reactors	4
Fraction of useful neutrons (%)	90
Beam energy (GeV)	1.0
Accelerator current/reactor (mA)	2.5
Beam power of accelerator (MWb)	10
Accelerator electric power (MWe)	35
Accelerator length (m)	150

Fig. 5. Parameters of GEM*STAR for W-Pu burning

Subcriticality

The operation of critical reactors is an impressive accomplishment of the nuclear reactor designers. Inadequate fuel reactivity from natural uranium is dealt with by isotopic enrichment and by plutonium production that ultimately is also dependent on uranium enrichment. The required initial loading with more than a critical mass is dealt with by means of a significant negative temperature coefficient, and by control rods. When fission products grow too large to

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continue critical operation, the fuel can be removed and reprocessed to remove the fission products to enable recycling. Some reactors such as fast neutron spectrum reactors can only operate with tons of plutonium meaning even thousands of critical masses if the plutonium should reconfigure inside or outside of the reactor, but means are provided that reduce the probability of such accidental reconfigurations.

As a subcritical system, GEM*STAR requires none of these design constraints and proliferation-prone adjunct technologies such as enrichment and reprocessing. By insisting on graphite, a well thermalized neutron spectrum, and subcriticality, it is impossible for GEM*STAR fuel to reach criticality either by internal or external reconfiguration.

The benefits of subcritical operation were not accessible 50 years ago when today's reactors were designed because the required accelerator technology did not exist. However, today the cost of accelerator-produced neutrons is lower by about one million than in 1960, so that the benefits of subcritical operation are accessible. ADNA Corp. believes that GEM*STAR technology is the optimal design for introducing subcritical technology.

Enrichment, reprocessing, and proliferation

At this writing, there are rumblings of war over Iran's persistence on uranium enrichment said to be only for low enriched uranium (LEU) for the new Iranian LWR. The enrichment could be carried far enough to produce highly enriched uranium (HEU) useful only for nuclear weapons. Or Iran could produce only LEU, but burning it in Iran's LWR would enable the production of C-Pu and W-Pu, both for nuclear weapons as described above. Neither material would be accessible except for the use of reprocessing technology. So either way the Iranian pursuit of enrichment is an open path to nuclear weapons.

The linkage between civilian and military use of nuclear energy has been from the beginning a consequence of the technological necessity for critical reactors. Because this linkage has not been broken by technical advances, international rules have been established that permit some nations from employing enrichment and reprocessing while excluding others.

Accelerator-driven nuclear energy opens a new era, enabling GEM*STAR to produce competitive nuclear energy from natural uranium. GEM*STAR output can be recycled by increasing the accelerator power without reprocessing and can be recycled yet again without reprocessing and still remain economically competitive. GEM*STAR therefore breaks the coupling of energy and weapons so that there is no longer a need for either enrichment or reprocessing. With GEM*STAR, enrichment and reprocessing can be outlawed for every nation without the world losing the benefits of nuclear energy.

Returning to the Iran and the North Korea situation, with GEM*STAR the U. S. (and the world community) could have responded by providing GEM*STAR technology for production of nuclear energy from natural uranium without enabling a path to nuclear weapons. As it was, the U. S. could only respond to North Korea by promising an LWR requiring enriched fuel that could be used to produce W-Pu from its first loading. With GEM*STAR and an initial load of equilibrium fuel, North Korea could benefit from nuclear energy. Any attempt to pervert the

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technology by removing plutonium would have required the development of a new reprocessing technology for molten salt.

While it could be argued that the accelerator could be diverted from its peaceful purpose with beam directed to a primitive natural uranium target for the purpose of producing plutonium, that also would require some form of reprocessing to extract the plutonium. A nuclear weapon could more readily be obtained by uranium enrichment technology.

GEM*STAR Deployment for W-Pu Burning

It is helpful to reiterate the points made earlier that GEM*STAR addresses:

1. The U. S. should not set a precedent for the rest of the world of simply burying W-Pu
2. Burning W-Pu in an LWR only converts it to a form more easily used by terrorists and continues to justify proliferation-prone reprocessing and MOX fuel preparation
3. Any W-Pu burn process must be a deep burn that eliminates its usefulness for weapons and deep enough to prevent decay back towards weapons-useful material
4. The nuclear energy from burning W-Pu cannot be converted into electricity and sold into the grid except via an arrangement with a private sector entity.
5. A private entity willing to burn W-Pu in today's LWRs is unlikely to be found.
6. A NNSA project to burn 50 tons of W-Pu in three NNSA LWRs without conversion of heat to electricity will probably cost the NNSA more than $50 billion
7. The final waste form after burning should be as close to compatible with WIPP waste standards to enable burial in WIPP without major changes to WIPP's enabling legislation.
8. The technology should be applied within the DOD-NNSA envelope to avoid non-military oversight.

The excess W-Pu therefore requires a deep burn technology that does not require MOX fabrication and reprocessing and a private sector effort able to sell its diesel/gasoline or electricity into the commercial market. GEM*STAR is the only technology filling the bill in these respects. Three passes of W-Pu would also take the 50 tons down by 30 to less than two tons. Because this Pu remnant would be distributed in 1000 m^3 of $NaF\text{-}BeF_2$ salt, the WIPP loading would be 2 g/liter of plutonium and 60 g/liter of radioactive and non-radioactive fission product.

Fig. 6 shows at the bottom a version of GEM*STAR with one accelerator enabling the burning in one pass of 34 tons of W-Pu in 30 years. During this time the facility would produce 42 billion gallons of diesel worth $126 billion wholesale. This facility could be built in three stages. The upper frame of the figure shows a ¼ size version of the facility driven by a proton beam power of 2.5 MWb and driving a single subcritical reactor producing 500 MWt. The capital cost of the reactor and the plant for conversion to diesel is about $400 million each. The accelerator would cost $600 million including provision for increasing its power from 2.5 to 10 MWb. If all of this $1.4 billion cost were borrowed at a rate of 6 % and a term of 20 years, the annual loan payment would be $112 million/year. For a $0.06/kwh cost of electricity and a 33 % accelerator bussbar efficiency, the annual power cost would be $3.6 million. Green wood supply would cost about $36/t delivered for a total of a $145 million/year. The cost of the natural gas would be about the same. Operations and maintenance costs including plant labor of about 500 persons would be about 10 % of capital costs or $140 million. The total costs are then

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Commentor No. 154 (cont'd): Charles D. Bowman, Ph.D., President, ADNA Corporation and Rolland P. Johnson, Ph.D., President, Muons Inc.

Annual Costs to Produce 350 Million Gallons

Debt retirement	$112 million
Electricity	4
Wood	145
Natural gas	145
Operations and maintenance	140
Total annual costs	$546 million

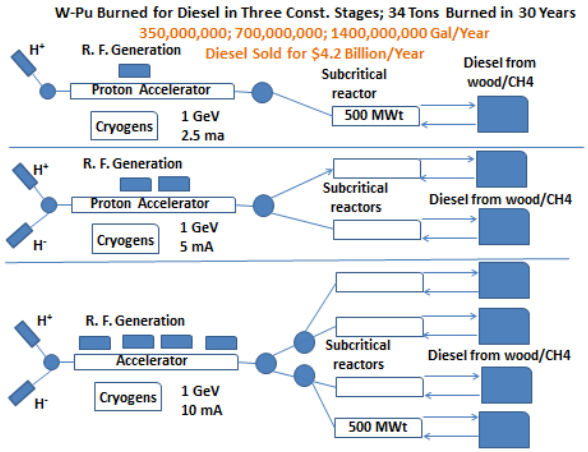

Fig. 6. Enhancement of superconducting accelerator in three stages to quadruple the W-Pu burn-up rate. The initial stage is shown at the top where one accelerator drives one reactor providing heat for one conversion facility for biomass/CH_4 to diesel. The same accelerator can be readily upgraded by adding more r. f. power and injecting more current. The superconducting accelerator has the advantage that its ultracold superconducting accelerator cavities can accelerate larger currents as additional r. f. power is supplied.

The income from wholesale of diesel at $3.00/gallon (enabling a sales price at the pump of about $3.75/gallon) would be $1.05 billion/year and a net profit of about $500 million corresponding to a net profit per gallon of $1.43 without the present approximately $0.80/gal subsidy for renewable diesel. The production cost would be $1.56/gallon.

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After the plant operation is stabilized, the plant size can be doubled without doubling the accelerator cost owing to the advantages of superconductivity. The only changes to the accelerator are an H^- beam injector and a doubling of the radiofrequency power to bring the accelerator to 5.00 MWb at a price of about $150 million. Adding also another reactor and diesel facility for $400 million each would bring the upgrade total to $950 million that would increase debt payment by $76 million. The economics of doubling the plant size with the same accelerator would be:

Annual Cost to Produce 700 Million Gallons/Year

Debt retirement	$188 million
Electricity	8
Wood	290
Natural gas	290
Operations and maintenance	210
Total annual costs	$876 million

The income from wholesale of diesel at $3.00/gallon would be $2.1 billion/year and a net profit of about $1.224 billion corresponding to a net profit of $1.75/gallon. The production cost would be $1.25/gallon.

Doubling the plant size again to 1.4 billion gallons per year, which is still small on the scale of today's petroleum refineries, is shown at the bottom of Fig. 6. The only additions to the accelerator are doubling the rf power again and adding two more beam splitters. These would require another $400 million. Adding two more reactors and diesel plants along with the accelerator enhancement would require an additional $400 + 2 x 800 = $2.0 billion. The total capital cost for the final plant configuration is then $1.4 billion + $0.95 billion + 2.0 billion = $4.35 billion requiring a debt retirement of $348 million/year. The economics of doubling the plant size yet again then would be:

Annual Cost to Produce 1400 Million Gallons/Year

Debt retirement	$348 million
Electricity	16
Wood	580
Natural gas	580
Operations and maintenance	360
Total annual costs	$1884 million

The income from wholesale of diesel at $3.00/gallon (enabling a sales price at the pump of about $3.75/gallon) would be $4.2 billion/year and a net profit of about $2.316 billion corresponding to a net profit of $1.65/gallon. The production cost would be $1.35/gallon.

It should be noted that the first version of the plant netted $500 million of profit and that two years of operation would provide all of the funds required for doubling the plant size without an additional loan. And that two years of operation with the 700,000,000 galloon/y plant would provide the funds for 1.4 billion gallons/y. On this basis the initial loan of $1.4 billion would have built the full 1.4 billion gallon/y plant and the final production cost for the plant would have

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Commentor No. 154 (cont'd): Charles D. Bowman, Ph.D., President, ADNA Corporation and Rolland P. Johnson, Ph.D., President, Muons Inc.

dropped to $1.10 per gallon. The net profit for the plant at that point would be $2.7 billion/y on a $1.4 billion investment.

Another point of interest, there was little economic gain in moving from a production of 0.7 billion gallon per year to $1.4 billion. Because these estimates were based on burning 34 tons of W-Pu and the total amount of W-Pu to be burned is actually 50 tons, the job might just as well be done with three 0.7 billion gallon per year plants in 30 years with three GEM*STAR plants located perhaps at Carlsbad, NM, Amarillo, TX, and Aiken, SC and with a 100-MWt pilot plant located at one of these sites, or perhaps elsewhere where accelerators in this class already exist such as Oak Ridge or Los Alamos.

The pilot plant would run at 100 MWt of fission power and produce 70 million gallons of diesel per year from scrap wood biomass. The pilot plant's W-Pu conversion rate would be about 57 kg per year. The entire facility would be built in the private sector by ADNA Corp. in collaboration with Muons Inc. The accelerator would produce 1 mA of 1-GeV beam and would cost $200 million. The reactor and diesel components would cost $150 million each bringing the total construction cost to $500 million. The renewable diesel would be sold by ADNA Corp for use by the three branches of the DOD that presently consume about 2 billion gallons per year of liquid fuel.

The GEM*STAR demo also could be applied to other missions such as excess ^{233}U at ORNL, used naval spent fuel in Idaho, less costly and more effective burning of LWR spent fuel, and burning of natural uranium. For most of the W-Pu, the only preparation required by GEM*STAR is the conversion of W-Pu from metal to PuF_3 using technology similar to Aries located at Los Alamos. The Aries conversion rate would be less than 5 kg/day or perhaps one pit per shift for the 50 tons.

Financing for GEM*STAR

Project scope

ADNA Corp. has developed the GEM*STAR concept with its diesel/gasoline production in the private sector. In order to reduce costs for W-Pu disposition to the U. S. government, ADNA Corp. and Muons Inc. propose to provide the GEM*STAR facilities and burn the W-Pu under contract with the NNSA. The financing would be arranged via private investment combined with government guaranteed loans from the U. S. DOE or the U. S. Small Business Administration with the diesel/gasoline production paying off borrowed capital and enabling a robust financial arrangement.

The actual costs to the NNSA would be those for conversion of metallic plutonium to PuF_3 and for eventual emplacement of the remnant waste in WIPP. NNSA would produce the required eutectic mix of one mole percent of PuF_3 in the 99 % equal mols of BeF_2 and NaF at a temperature of 750 C in ten-liter batches. Each batch would contain 300 g W-Pu with about 25 kg of salt, and 10 per pit would be required. After burning, the W-Pu mixed with BeF_2 and NaF would be removed from GEM*STAR by He-pressurized transfer of molten salt from the storage under the reactor to cylinders that are 400 cm long and 30 cm in diameter, and that hold 280 liters or about 720 kg of salt. The total weight of salt and cylinder would be about 800 kg and 6000 of these cylinders would be transported and stored in WIPP for the 50 tons of W-Pu.

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Commentor No. 154 (cont'd): Charles D. Bowman, Ph.D., President, ADNA Corporation and Rolland P. Johnson, Ph.D., President, Muons Inc.

Spreading the delivery to WIPP over thirty years would require one truck making about two trips per month assuming that the shipping casks and the salt weight are comparable.

The total cost to the NNSA from weapon pit to WIPP might be $40 million/year or about $1 billion total compared with about $50 billion to burn W-Pu in NNSA's own LWRs. GEM*STAR total costs would be about $80 billion spread over four sites for 30 years. Although this amount of $660 million/year for each site is private money instead of federal funds, it still adds about 7,500 private sector jobs for each site for facility operations and biomass collection. These figures do not include the private sector jobs for facility construction cost of about $4.4 billion per site. The sites benefit further from gross receipt tax on total sales, on corporate taxes, employee income taxes, and general local business enhancement.

Placement in WIPP could begin after only one pass through GEM*STAR and some preparatory operations. With the GEM*STAR demo beginning operation in 2019, placements could begin in about 2026. The first pass of 50 tons could be completed by about 2060 with a reduction of plutonium to 17 tons. However cycling the W-Pu through three times would reduce the plutonium mass to about 2 tons and that would be completed by 2073.

*GEM*STAR Design*
The key to outstanding GEM*STAR economics is using GEM*STAR heat carried by the secondary salt for combining natural gas and char from biomass into diesel. However, the technology does not require nuclear heat for the molten salt, so ADNA Corp. will first build a non-nuclear demo with char to heat the molten salt. This system is being constructed in Callaway, VA and will be operational by the end of 2013 with production of about 0.5 million gallons per year.

*Nuclear GEM*STAR demo design*
A nuclear demo must be scaled at sufficient size to not only show satisfactory and reliable operation, but it must be large enough to achieve practical economics, rather than attempt to imply practicality with a mini-system. A 100-MWt reactor is required to be driven by a 1 GeV 1-mA proton beam from a superconducting accelerator. The capital cost is $200 million for the accelerator, $150 million for the reactor, and $150 million for the liquid fuel component for a total capital cost of $500 million. This system will produce 70 million gallons/year of diesel at a breakeven cost of $2.00/gallon compared to present wholesale for diesel of about $3.00/gallon.

ADNA Corp. and Muons Inc. require $10 million/year for two years from the NNSA for a two-year design of this demo.

*GEM*STAR demo construction over three years*
Construction of the demo would require three years. This demo would show economic viability necessary to take the nation's cost for W-Pu disposition to zero. We believe that the non-nuclear economically successful diesel plant demonstrating the molten salt technology and a persuasive demo design will attract $125 million of private investment that should enable a federally guaranteed loan supported by the Congress for the remaining $375 million. Paying off this loan at 6% over 20 years would require $30 million/year compared with the GEM*STAR demo's annual gross income of $210 million from sale of 70 million gallons of diesel per year.

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Commentor No. 154 (cont'd): Charles D. Bowman, Ph.D., President, ADNA Corporation and Rolland P. Johnson, Ph.D., President, Muons Inc.

*Full-scale GEM*STARs*
As shown above, each of these four full scale systems can begin operation at 350 million gallons per year for a capital cost of about $1.4 billion each supplied by private investment and government guaranteed loans. The facilities can then bootstrap themselves up to the 0.70 or 1.4 billion gallon per year level.

Sales value of W-Pu
The above financing plan is based on private investment and government loan guarantees with no appropriations from the U. S. government. The profits from using heat from burning W-Pu to produce renewable diesel/gasoline are substantial even without a government subsidy for the production of renewable diesel. GEM*STAR is not only capable of burning W-Pu, but it has been designed primarily for burning natural uranium. The cost for the natural uranium fuel is estimated to be about 6% of the operating costs and GEM*STAR could afford to pay the same amount for W-Pu as fuel. Based on the figures above, this is about $ 0.5 million/kilogram for W-Pu. For the 50 tons of excess W-Pu, this corresponds to $25 billion. GEM*STAR would transform the NNSA's present $50 billion liability for W-Pu disposition to a $25 billion asset. The cost for the NNSA role of conversion of W-Pu to PuF_3 and emplacement of the GEM*STAR remnant at WIPP is small compared to the $75 billion impact on the NNSA budget.

Summary
The present NNSA plan for disposition of W-Pu is based on 50-year old technology that leaves behind more plutonium than was fed, in a state that can be more readily used by terrorists for nuclear explosions than W-Pu. The NNSA has no facility to burn the W-Pu and no place to store this plutonium. The total cost for disposition of the 50 tons of excess W-Pu is about $50 billion.

After a simple operation of converting metal to fluoride, GEM*STAR technology can burn W-Pu down by a factor of 10 leaving a remnant that cannot be made to explode under any circumstances. The remnant plutonium is in a form diluted on a mole ratio by a factor of 1000 compared to the output of W-Pu burned in LWRs and therefore probably eligible for disposal in WIPP. Selling the W-Pu as fuel for GEM*STAR will not only relieve the NNSA from a $50 billion burden, but will turn the W-Pu into a $25 billion asset for the NNSA.

The DOE-NNSA should help launch GEM*STAR by providing $20 million of design funds to ADNA Corp. and Muons Inc., and support loan guarantees of $375 million backing up $125 million of private investment to construct a GEM*STAR demo on an NNSA lab site. The successful burning of W-Pu with demonstration of a substantial profit will attract private funding to burn the full 50-ton W-Pu excess.

GEM*STAR can also provide a simple solution for disposal of other excess DOE materials such as 1.5 tons of ^{233}U and the spent naval reactor fuel stored in Idaho.

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Commentor No. 155: J. L. Harrison

From: larry harrison
Sent: Wednesday, October 10, 2012 11:32 AM
To: spdsupplementaleis@saic.com
Subject: COMMENTS ON PLUTONIUM DISPOSITION EIS
Attachments: DOE MOX A.doc

See attachments for comments.

J. L. Harrison

I am providing input as a retired private citizen. Based on my knowledge of the technical aspects of nuclear fuel assemblies, I have no concern about the use of mixed oxide (MOX) fuel in commercial reactors as this type of fuel has been used for years by the French in their reactors. Also, as soon as a reactor with standard uranium oxide fuel begins operation, the fuel becomes MOX as plutonium is generated during operation. As long as the starting oxide powders, the fuel pellets made from them, the tubing encasing the pellets and the fuel assemblies are manufactured to applicable specifications, performance of MOX fuel assemblies will not be an issue.

155-1

I worked at the Savannah River Site in Aiken, SC for fourteen years at the Defense Waste Processing Facility (DWPF), a major effort to stabilize liquid nuclear waste. This facility would play a role in an alternative for plutonium disposition using the can-in-canister approach with high level nuclear waste. However, I favor the MOX route as it is the most permanent process for assuring safe disposition due to the isotopic changes in plutonium which occur in a reactor plus the material provides energy for generating electric power rather than just being immobilized.

J. L. Harrison

155-1 DOE acknowledges the commentor's opinion.

Commentor No. 156: Jill K. Cliburn

From: Jill K. Cliburn
Sent: Wednesday, October 10, 2012 12:13 PM
To: spdsupplementaleis@saic.com
Subject: Comments on Env Impact Statement on Moving/Immobilizing Plutonium

I wish to enter brief comments on the Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SPD DSEIS). I oppose the likely alternative, which would involve moving plutonium --and especially that which is in "pits", disassembling them and making MOX fuel. The moving of is material is very dangerous. There is already too much nuclear material moving about the US. Further, as a resident of Santa Fe County, within view of Los Alamos, I find it very troubling that the pits would be moved to Los Alamos. New Mexico has long been a "nuclear sacrifice zone," where the small population, many of them poor, are not likely to speak out, as people in more prosperous parts of the country would. *156-1* *156-2*

It would be better to immobilize the material specifically in place and so that it would be difficult to use for weapons in the future. MOX is still a dream-- nuclear plants in the US are not using it for fuel--and partly because it is a security risk. I am also opposed to sending the waste from out of state to WIPP. That site was not intended for this material. *156-3*

I am hopeful that this material, which is dangerous for thousands of years, can be properly taken care of, and that no more will be created.

--

Jill K. Cliburn

156-1 Transportation risks are analyzed for all alternatives proposed in this *SPD Supplemental EIS*, including the threat of theft and diversion of radioactive materials. In developing the proposed action and reasonable options for pit disassembly and conversion and surplus plutonium disposition, DOE has determined that transportation of plutonium materials between sites cannot be avoided. The alternatives in this *SPD Supplemental EIS* were developed recognizing that plutonium materials are currently stored at multiple DOE sites and individual sites have their own specific capabilities with respect to pit disassembly and conversion and plutonium disposition. Chapter 4, Table 4–22, shows that, under all alternatives, the radiological risks to the public from shipments of radioactive materials would be comparable, with no LCFs expected among the transportation crew or general public along the transportation routes. The packaging and transportation of radiological materials would meet NRC and DOT regulations that are designed to ensure the safe transport of radiological materials on the Nation's highways, and the transportation of SNM would be accomplished using NNSA's Secure Transportation Asset Program, as described in Appendix E.

156-2 DOE does not agree that New Mexico is being considered as a "nuclear sacrifice zone." Chapter 4, Section 4.1.6, of this *SPD Supplemental EIS*, analyzes the environmental justice impacts of the options for pit disassembly and conversion at LANL and concludes that minority and low-income populations living near LANL would not be exposed to elevated risks compared to nonminority or non-low-income populations living in the same area, and that the risks associated with the activities proposed at LANL would be small. Section 4.5.3.8 describes cumulative environmental justice impacts. The analysis has shown that risks to the public are expected to be minor from both normal operations and potential accidents under any proposed alternative at LANL. No LCFs are expected for the offsite population, including minority and low-income populations, as a result of the normal operations of surplus plutonium disposition facilities. For further discussion, refer to Section 2.6, Topic A, of this CRD.

156-3 DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) considered numerous alternatives (technologies and locations) for disposition of surplus plutonium; those alternatives included locating facilities at the Pantex Plant and immobilization and direct disposal of the entire surplus plutonium inventory as waste. DOE selected an approach for disposition of some of the plutonium declared surplus (68 FR 20134).

Commentor No. 156 (cont'd): Jill K. Cliburn

As discussed in Section 2.2, Topic A, of this CRD, DOE's prior disposition decisions are not addressed in this *SPD Supplemental EIS.* DOE is, however, reconsidering the decision to construct and operate a stand-alone PDCF and is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. One of the alternatives involves immobilization of this surplus plutonium followed by safe storage. All of the action alternatives evaluated in this *SPD Supplemental EIS* are considered to render surplus plutonium into a proliferation-resistant form or result in proliferation-resistant disposal. Although DOE is reconsidering constructing and operating PDCF at SRS, DOE is considering options for pit disassembly and conversion capabilities only at locations with existing plutonium processing capabilities (i.e., LANL and SRS). The current pit disassembly and conversion operations ongoing at LANL are performed in accordance with the 2008 *LANL SWEIS* (DOE 2008) and ROD (73 FR 55833). This *SPD Supplemental EIS* evaluates the impacts of expanding those existing operations under the action alternatives.

MOX fuel is not an attractive target for terrorist attack because it is not readily usable for a nuclear device or a dirty bomb. The plutonium in MOX fuel is blended with approximately 20 times as much depleted uranium as plutonium and is formed into ceramic pellets encased in metal cladding. Moreover, the MOX fuel is contained in large, heavy fuel assembly structures that would make theft extremely challenging. Without substantial physical dismantling and chemical separation, the plutonium in the MOX fuel cannot be used in a nuclear bomb. Use of MOX fuel in commercial nuclear power reactors would render surplus plutonium into a used fuel form that is not readily usable for nuclear weapons.

As shown in Chapter 4, Section 4.5.3.6.3, of this *SPD Supplemental EIS*, CH-TRU waste disposal under all alternatives evaluated in this *SPD Supplemental EIS* would be accomplished pursuant to WIPP's existing authority and would remain within WIPP's disposal capacity as mandated under the WIPP Land Withdrawal Act. This includes the WIPP Alternative, which could result in disposal of 13.1 metric tons (14.4 tons) of surplus plutonium at WIPP (see Chapter 2, Section 2.3.5). WIPP was built to accept TRU waste from across the DOE complex. For further discussion, refer to Section 2.2, Topic B, and Section 2.4, Topic A, of this CRD.

Commentor No. 157: Ann Anthony

From: Ann Anthony
Sent: Wednesday, October 10, 2012 1:18 PM
To: spdsupplementaleis@saic.com
Subject: transfer of p;utonium to LANL

TO WHOM IT MAY CONCERN

I strongly protest the transfer of "surplus" plutonium to LANL to be disassembled. It is dangerous to transport such dangerous material. The work of disassembly should be done where it is now located. *157-1*

Sincerely,

Ann Anthony

157-1 Transportation risks are analyzed for all alternatives proposed in this *SPD Supplemental EIS*, including the threat of theft and diversion of radioactive materials. In developing the proposed action and reasonable options for pit disassembly and conversion and surplus plutonium disposition, DOE has determined that transportation of plutonium materials between sites cannot be avoided. The alternatives analyzed in this *SPD Supplemental EIS* were developed recognizing that plutonium materials are currently stored at multiple DOE sites and individual sites have their own specific capabilities with respect to pit disassembly and conversion and plutonium disposition. The Pantex Plant in Texas, where the surplus plutonium pits are stored, does not have the capability to disassemble pits or to convert the plutonium metal to an oxide; they must be transported elsewhere for these operations. Establishing a pit disassembly and conversion capability at the Pantex Plant was evaluated in the *SPD EIS* (DOE 1999). In the *SPD EIS* ROD (65 FR 1608), DOE selected SRS, not the Pantex Plant, as the site at which to establish the pit disassembly and conversion capability because it has extensive experience with plutonium processing and can take advantage of existing infrastructure, as is the case with LANL. The Pantex Plant possesses neither the experience nor the infrastructure needed to support plutonium processing; therefore, the Pantex Plant was not evaluated in this *SPD Supplemental EIS*. As shown in Chapter 4, Table 4–22, under all alternatives, the radiological risks to the public from shipments of radioactive materials would be comparable, with no LCFs expected among the transportation crew or general public along the transportation routes.

Commentor No. 158: Tom Clements, Nonproliferation Policy Director Alliance for Nuclear Accountability

From: Tom Clements
Sent: Wednesday, October 10, 2012 2:17 PM
To: spdsupplementaleis@saic.com
Subject: Comments on Draft SPD Supplemental EIS; DOE/EIS-0283-S2
Attachments: group_comments_on_draft_plutonium_SEIS_10.10.2012_pdf.pdf

To: Ms. Sachiko McAlhany, SPD Supplemental EIS NEPA Document Manager, U.S. Department of Energy, P.O. Box 2324, Germantown, MD 20874-2324.

From: Tom Clements, Alliance for Nuclear Accountability

Attached and at the link below, you will find groups comments on the Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SPD Supplemental EIS; DOE/EIS-0283-S2)

http://ananuclear.org/Portals/0/group%20comments%20on%20draft%20plutonium%20SEIS%2010.10.2012%20pdf.pdf

I am also mailing a hard copy of the comments along with additional documents for consideration for the record.

Thank you.

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Commentor No. 158 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

Alliance for Nuclear Accountability – South Carolina Chapter of the Sierra Club
Friends Committee on National Legislation – Oak Ridge Environmental Peace Alliance
NC Waste Awareness and Reduction Network – Southern Alliance for Clean Energy
Blue Ridge Environmental Defense League
Bellefonte Efficiency & Sustainability Team – Mothers Against Tennessee River Radiation
Nuclear Watch South – Georgia Women's Action for New Directions
Nuclear Watch of New Mexico – Tri-Valley CARES – The Peace Farm
Concerned Citizens for Nuclear Safety – Public Citizen – Friends of the Earth
Nuclear Information and Resource Service – Nuclear Age Peace Foundation
Women's Action for New Directions – Physicians for Social Responsibility
Western North Carolina Physicians for Social Responsibility
Physicians for Social Responsibility-Kansas City – Proposition One Committee
Rocky Mountain Peace and Justice Center – Partnership for Earth Spirituality
Women's International League for Peace and Freedom
SAFE Carolinas – Peace Action New York State – Nuclear Energy Information Service
Citizens' Environmental Coalition – Nukewatch – Coalition Against Nukes
Don't Waste Michigan – Coalition for a Nuclear Free Great Lakes
San Luis Obispo Mothers for Peace – Citizens for Alternatives to Chemical Contamination
Stand Up/Save Lives Campaign – Huron Environmental Activist League
Home for Peace and Justice – Tennessee Environmental Council
Citizens to End Nuclear Dumping in TN – Snake River Alliance
The Colorado Coalition for Prevention of War

Group Comments Submitted for the Record of the Department of Energy's *Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement* (DOE/EIS-0283-S2, July 2012)

October 10, 2012

The groups noted above and at the end of this submission appreciate the opportunity to comment for the record and expect that all of our comments, including those on legal matters concerning the National Environmental Policy Act (NEPA), will be responded to in a substantive manner.

We believe that the Department of Energy's (DOE) current *Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement* is inadequate for a host of reasons, which are discussed below in detail and briefly summarized here:

- **DOE has failed to identify utilities committed to testing and use of experimental plutonium fuel (MOX) made from weapons-grade plutonium;** ***158-1***

158-1 The disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts as required by NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors, including, but not limited to five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants. These reactors are explicitly considered because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Section I.1). However, the MOX Alternative also analyzes irradiation in generic commercial nuclear reactors including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2), and is not dependent on TVA participation.

Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In the *Draft SPD Supplemental EIS*, the MOX Fuel Alternative was DOE's Preferred Alternative for surplus plutonium disposition. DOE's preferred option for disposition of surplus non-pit plutonium that is not suitable for MOX fuel fabrication was disposal at WIPP. DOE's preferred option for pit disassembly and conversion of surplus plutonium metal, regardless of its origins, was to use some combination of facilities at TA-55 at LANL and K-Area, H-Canyon/HB-Line, and MFFF at SRS, rather than to construct a new stand-alone facility.

In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose. TVA, as a cooperating agency, may adopt this *Final SPD Supplemental EIS* after independently reviewing the EIS and determining its comments and suggestions have been satisfied (40 CFR 1506.3(c)).

Commentor No. 158 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

- **DOE's pro-MOX "preferred alternative" is flawed as the Tennessee Valley Authority has not agreed to test or use MOX; the "preferred alternative" must be reconsidered;** *158-1 cont'd*
- **DOE has failed to evaluate all the risks involved with MOX use in commercial reactors;** *158-2*
- **DOE has failed to analyze the required testing of weapons-grade MOX, never before used on a commercial scale and never tested in boiling water reactors (BWRs);** *158-3*
- **DOE has failed to evaluate all the risks associated with processing plutonium for MOX;** *158-4*
- **DOE has failed to outline the operational schedule of the MOX plant and what type of MOX fuel would be fabricated;** *158-5*
- **DOE has failed to thoroughly evaluate options to dispose of plutonium as waste;** *158-6*
- **The Tennessee Valley Authority has not evaluated MOX testing and use and has no "preferred alternative" to use MOX; TVA must stick with the no-MOX option;** *158-7*
- **A full discussion of revisions of facilities at SRS and Los Alamos to process plutonium from nuclear weapons "triggers" must be included;** *158-8*
- **Costs for the MOX program are out of control and cheaper options should be the focus;**
- **Around $17.5 billion is yet to be spent on MOX, the highest-cost option for plutonium management;**
- **Costs for the MOX program and other costly and poorly-managed DOE projects are putting budgetary strain on key DOE clean-up and non-proliferation programs;**
- **Given legal issues under NEPA, DOE is compelled to not issue a Final Supplemental EIS and must prepare a new Programmatic EIS on plutonium storage and disposition;** *158-9*
- **DOE has no "Plan B" to pursue for plutonium management when the MOX program fails due to cost, technical and scheduling challenges and must pursue non-MOX options.** *158-10*

New Approach Needed to Plutonium Disposition

The Department of Energy (DOE) document we are commenting on - the *Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement* (Draft Supplemental EIS or Draft SEIS) - is part of the problem in the challenge to deal with surplus weapons plutonium and not part of the solution. Almost five years in preparation, the document breaks little new ground and only serves to reaffirm the troubles facing the policy to fabricate plutonium into mixed oxide plutonium fuel (MOX) for use in commercial reactors such as those operated by the Tennessee Valley Authority (TVA). MOX is the highest-cost, riskiest option with the most proliferation concerns.

What is urgently needed is for DOE and the department's National Nuclear Security Administration (NNSA) to start over and begin a new programmatic process to determine the best and least expensive options to dispose of the surplus plutonium as nuclear waste. This would include an analysis of the financial ramifications of the various alternatives, many of which are not considered in the document before us. *158-11*

158-2 As summarized in Chapter 4 and described in detail in Appendices I and J of this *SPD Supplemental EIS*, the impacts associated with using a partial MOX fuel core versus a full LEU fuel core in commercial nuclear power reactors are expected to be similar. The risks associated with postulated accidents would be small. For further discussion, refer to Section 2.5, Topic B, of this CRD.

As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

158-3 This *SPD Supplemental EIS* evaluates the environmental impacts associated with MFFF operations, the environmental impacts of construction and operation of other facilities at SRS and LANL that would be potentially used to prepare the surplus plutonium for use at MFFF, and the environmental impacts of operation of the principal facilities at SRS and LANL that would support plutonium disposition activities. The evaluated impacts are presented in Chapter 4 and summarized in Chapter 2; additional information is provided in Appendices C, D, F, G, and H.

158-4 A detailed program schedule is not required to perform the environmental impacts analysis in this *SPD Supplemental EIS*. The actual production schedule for MFFF would depend on factors such as license conditions and the specific contracts received from customers to manufacture specific types of MOX fuel. As shown in Appendix B, Table B–2, MFFF is estimated to operate for 21 to 24 years, depending on the amount of surplus plutonium to be fabricated into MOX fuel.

As described in Appendix B, Section B.1.1.2, of this *SPD Supplemental EIS* and analyzed in the *Interim Action Determination, Flexible Manufacturing Capability for the Mixed Fuel Fabrication Facility* (DOE 2011a), signed on April 1, 2011, MOX fuel could be fabricated for use in BWRs, PWRs, or next-generation LWRs. There are currently no plans to fabricate fuel for other types of reactors. Use of MOX fuel in other types of nuclear reactors would require the preparation of additional NEPA documentation.

Commentor No. 158 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

History of Plutonium Disposition

In 2000, in a once-noble effort to forever prevent the use of a large amount of surplus military plutonium in nuclear weapons, the US entered into an agreement with Russia to "dispose of" 34 metric tons of surplus weapons-grade plutonium. [Note: This negotiated document with Russia was not a treaty, as a DOE video used at the hearing on the Draft SEIS states. That video must not be used again with this erroneous language.] The US chose two parallel disposition strategies: one track to make experimental mixed oxide plutonium fuel for use in unspecified nuclear reactors; and a cheaper quicker, safer track to immobilize plutonium in high-level nuclear waste. DOE subsequently dropped the cheaper immobilization option in 2002, without a public process, and has gone on to spend billions of dollars building a MOX fuel fabrication plant which has no customers and no production schedule, the so-called "MOX factory to nowhere."

The US-Russia "Plutonium Management and Disposition Agreement (PMDA) can simply be terminated "by written agreement of the Parties." Given the many changes and vagaries in the plutonium management and disposition programs in both countries since the signing of the agreement in the year 2000, it now has limited value.

In 2003, DOE estimated that construction of the MOX plant at DOE's Savannah River Site in South Carolina would be finished in 2007 and cost $1.6 billion. Under the terms of the plutonium disposition agreement with Russia, both countries were to begin operating MOX facilities in 2007. The MOX plant cost estimate has been frozen at $4.8 billion for the last several years and there remain no customers to use the experimental weapons-grade MOX that the factory is slated to produce. Russia is not constructing a similar MOX plant. *158-12*

It was reported in the Weapons Complex Morning Briefing on September 26, 2012, that DOE's internal rebaselining of the MOX plant construction had jumped $2 billion, to almost $7 billion. Despite repeated requests from public interest groups, DOE has adamantly refused for all of 2012 to release this new cost estimate for either the MOX plant construction or overall plutonium disposition program and is keeping this vital information secret.

Now, the MOX program continues to spin out of control due to massive cost overruns and little interest by nuclear utilities to use costly experimental MOX fuel in their reactors. The time has come to again investigate options to manage plutonium as nuclear waste. *158-13*

Where Are We Now with Russia? US Helping Russian Proliferation

The US has functionally but not rhetorically distanced its plutonium disposition program from the Russian program. Russia never wanted a MOX plutonium fuel program unless they could continue to reprocess their commercial spent fuel and pursue new plutonium breeder reactors, as part of their program to reuse plutonium. Likewise, Russia balked at the idea to dispose of plutonium as waste either in the US or Russia, but both sides have been free to manage the plutonium as they choose. *158-14*

3

158-5 As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) considered numerous alternatives for disposition of surplus plutonium, including immobilization and direct disposal of the entire surplus plutonium inventory as waste. DOE selected an approach for disposition of some of the plutonium declared surplus (68 FR 20134). As discussed in Section 2.2, Topic A, of this CRD, DOE's prior disposition decisions are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of an additional 13.1 metric tons (14.4 tons) of surplus plutonium, including use of the surplus plutonium as MOX fuel or its conversion into waste forms suitable for disposal.

158-6 See the response to comment 158-1 regarding the revised preferred alternative.

158-7 In this *SPD Supplemental EIS*, DOE considers a variety of options for plutonium pit disassembly and conversion, including construction of a new stand-alone facility at SRS, modification of facilities at SRS that either already exist (H-Canyon/HB-Line and K-Area Complex) or are already under construction (MFFF), and modification of existing facilities at LANL. Appendix B provides a description of the facilities and construction and modification activities that would occur under the surplus plutonium disposition alternatives. Environmental impacts and risks from facility construction and operation are evaluated in Appendix F and summarized in Chapter 4 and Chapter 2, Section 2.6, Table 2–3.

158-8 The decisionmaker may consider cost, among other factors, when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD. Examining issues related to cleanup, other nonproliferation programs, and funding priorities is not within the scope of this *SPD Supplemental EIS*.

158-9 DOE does not agree with the commentor's opinion about the need for a new programmatic EIS on plutonium storage and disposition. DOE believes that the decision to prepare this *Final SPD Supplemental EIS* complies with CEQ and DOE regulations and guidance. For further discussion, refer to Section 2.1, Topic A, of this CRD.

158-10 As discussed in the response to comment 158-1, Chapter 2, Section 2.5 of this *Final SPD Supplemental EIS* was revised to change the Preferred Alternative. As discussed in the response to comment 158-5, other alternatives being considered in this *Final SPD Supplemental EIS* for some of the surplus plutonium include immobilization, vitrification, and disposal at WIPP.

158-11 See the response to comment 158-9 regarding a new programmatic evaluation of alternatives.

Commentor No. 158 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

When Russia canceled efforts to use MOX in its VVER (light-water) reactors, it became clear that Russia's disposition program was concentrated on an effort to build a new BN-800 breeder reactor that can produce, or "breed," weapons-grade plutonium if allowed to operate with a depleted uranium "blanket" around the reactor in which plutonium can be produced. Though Russia has said it will initially operate the reactor in a "non-breeding mode" it could later operate the reactor to produce weapons-grade plutonium.

Thus, the US program has given cover for Russia to continue constructing the BN-800, which is a blow to US non-proliferation efforts though the State Department turns the matter on its head and seems to triumph a new plutonium breeder reactor in Russia as indicating progress in plutonium disposition.

158-14 cont'd

The sodium-cooled BN-800 reactor could be operable in 2014, though a host of technical questions, including potential design flaws, raise questions about the ability of the reactor to operate. Any rush by the US to produce MOX fuel in the SRS MOX factory, if it were to ever be licensed and operate, simply for the State Department to make a questionable claim that we are proceeding in a parallel disposition track with Russia, is fallacious.

It's All about the Money

An estimated $3 billon has already been spent on the MOX plant construction, being carried out by Shaw AREVA MOX Services (SHAMS), and another $4 billion is apparently needed to complete construction. It is clear that MOX is a worsening investment. With no apparent constraint on DOE's spending on the MOX plant construction program, costs may well go even higher, which will enrich AREVA and Shaw and other contractors and squander tax dollars.

The negative impacts of MOX spending will continue into the future. The out-year spending projection through 2017 for the MOX program is approximately $900 million a year for an estimated total of $3.6 billion. The FY 2013 budget request is for $388 million for construction costs of the MOX plant and $499 million for associated plutonium disposition costs. No other program at the Savannah River Site, including the much more urgent clean-up of high-level nuclear waste, is getting such funding commitment. It is becoming clearer that the huge cost for the MOX program is causing considerable and lasting harm to essential clean-up activities at SRS and other sites.

158-15

The Alliance for Nuclear Accountability (ANA) estimates $17.5 billion or more will need to be spent through the remaining life of the overall MOX program as now presented. DOE refuses to release their cost estimates for either the future funding needed for the MOX program or for the life-cycle cost of the overall plutonium disposition program. Likewise, DOE continually refuses to respond to the ANA estimate. At some point this stone-walling of the public and Congress will be considered a cover-up.

It has been repeatedly stated that DOE wanted to save money by not building the Pit

4

158-12 See the response to comment 158-8 regarding cost. Cost information on DOE programs is made publicly available as part of the President's annual budget submission to Congress. CEQ and DOE NEPA regulations do not require that costs be included in an EIS.

158-13 See the responses to comments 158-8 regarding cost, 158-1 regarding the use of MOX fuel by utilities, and 158-5 regarding options to dispose of plutonium as waste.

158-14 The use of MOX fuel is consistent with U.S. nonproliferation policy and international nonproliferation agreements. Use of MOX fuel in commercial nuclear power reactors would render surplus plutonium into a form that is not readily usable for nuclear weapons. For further discussion, refer to Section 2.4, Topic A, of this CRD.

Under the PMDA (USA and Russia 2000), which entered into force in 2011, the United States and the Russian Federation agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. Russia plans to irradiate its MOX fuel in fast reactors (BN-600 and BN-800) under certain nonproliferation conditions. To that end, Russia has successfully irradiated 21 prototypic MOX fuel LTAs in its BN-600 fast reactor; completed over 50 percent construction of the BN-800 fast reactor; completed formal siting of its MOX fuel fabrication facility; established an integrating contracting office for implementation of PMDA activities; and actively participated with the United States and the IAEA in negotiating a verification agreement that will enable IAEA to independently verify that the objectives of the PMDA are met. More information on the PMDA is located on the U.S. State Department website at www.state.gov/r/pa/prs/ps/2010/04/140097.htm.

Under the PMDA, Russia must operate its fast reactors as plutonium burners, not breeders; cannot reprocess any of its used fuel during the life of the agreement; and, after the agreement expires, can only reprocess under an international monitoring regime and only for commercial purposes. Operations of the Russian fast reactors will be monitored and verified by IAEA.

158-15 As addressed in the response to comment 158-8, cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD. Examining issues related to cleanup, other nonproliferation programs, and funding priorities is not within the scope of this *SPD Supplemental EIS*.

Commentor No. 158 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

Disassembly and Conversion Facility (PDCF) at SRS to disassemble plutonium triggers (pits) now stored at the DOE's Pantex site in Texas. The truth is that due to the MOX program costs soaring out of control, DOE had to reduce costs somehow and was forced to shelve plans for an expensive stand-alone pit disassembly building. Congress has wisely pulled all funding from the PDCF construction project but the presentation that this is saving money is a smoke screen designed to make the exorbitant costs of MOX somehow appear more reasonable and to shore up MOX funding.

DOE has not provided their estimated costs associated with the alternatives to MOX, making it impossible to compare the cost of MOX with other options. Costs of alternatives – such as immobilization in different manners, geological disposal, and via "off-specification" MOX rods inserted into spent LEU fuel bundles - must be discussed by DOE in NEPA documents.

Additionally, as MOX is getting the lion's share of DOE's nuclear non-proliferation budget, important programs to secure nuclear materials in the former Soviet Union are now under chronic strain. As such programs as the Global Threat Reduction Initiative (GTRI) can be argued to be far more important from a nuclear non-proliferation perspective than a MOX fuel program in the US, it is possible that some in DOE and Congress have their spending priorities reversed.

158-15 cont'd

The MOX program is but one of the four big budget-busting projects being pursued by DOE: the Chemistry and and Metallurgy Research Replacement (CMRR) project at Los Alamos - $6 billion plutonium "pit" facility - which is rightfully halted (at least for the moment), the maldesigned Uranium Processing Facility (UPF) at Oak Ridge - a $7.5 billion dollar thermonuclear bomb plant - and the Waste Treatment Plant (WTP) at Hanford – a $12 billion facility to process high-level nuclear waste. Even though the WTP project is mired in problems some form of high-level waste processing capability is urgently needed at Hanford so the program must continue. As they are not needed, the budget pressures caused by the highly questionable MOX and UPF programs are likely to increase.

If accurate, a $2-billion increase in the MOX construction budget will cause much additional pressure on all aspects of the DOE budget. Though DOE may attempt to continue to hide the MOX plant cost estimate, the budgeting problems are causing is apparent and must be faced by Congress and budget watchdogs like the Office of Management and Budget (OMB).

Where Are the Customers for Experimental MOX fuel?

DOE has spent billions of dollars with no results and the Draft Supplemental EIS only hints at the problems facing the program. First and foremost, there are no reactors or customers committed to use MOX fuel. Further, the document is unrealistic and inadequate concerning MOX testing and use. Further, no MOX plant operational schedule is presented, no plan or schedule for MOX testing in TVA or "generic" reactors is presented and no schedule for full-scale use of MOX in nuclear reactors is outlined. Thus, DOE's "preferred alternative" based on MOX use is flawed and must be reassessed.

158-16

158-16 See the responses to comments 158-1 through 158-4.

Commentor No. 158 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

Plutonium Disposal as Waste - Cheaper, Safer

It appears that DOE could prepare 34 metric tons of plutonium for disposal as waste for a sum of only $3.4 billion. This figure based on a DOE cost estimate made public at a Savannah River Site Citizens Advisory Board (SRS CAB) meeting on September 24, 2012, that it is costing about $100,000 per kilogram to prepare for disposal as waste in the Waste Isolation Pilot Plant. The cost for disposal as waste in other facilities, including a geologic facility for spent fuel, must be reviewed by DOE.

Given the critical and essential information that such an analysis would provide, as part of the required NEPA cost-benefit analysis, an assessment of costs of disposing of plutonium as waste vs MOX costs must be developed and presented in any subsequent or new NEPA document. *158-17*

A careful review of all options to dispose of plutonium as a waste form will likely yield the best path forward, a path away from a proliferation-prone and risky attempt to commercialize the use of plutonium as a nuclear power fuel. If DOE will not prepare this review on its own initiative, Congress should so direct it. The Government Accountability Office (GAO), which has reported before on the plutonium disposition program and is now tracking the MOX program, may also have a role in such an alternatives study.

DOE Violating NEPA – Must Conduct Programmatic EIS

DOE/NNSA is not in compliance with the National Environmental Policy Act and must not proceed with issuance of a Final Surplus Plutonium Disposition Supplemental Environmental Impact Statement. The Draft Supplemental EIS to support decisions about surplus plutonium disposition is tiered from the December 1996 Storage and Disposition of Weapons-Usable Fissile Materials Programmatic EIS (Storage and Disposition PEIS). However, the surplus plutonium disposition program discussed in the Draft Supplemental EIS is fundamentally changed from the program and alternatives discussed in the Storage and Disposition PEIS. Therefore, DOE/NNSA must issue for public comment a new Storage and Disposition PEIS or a Supplemental PEIS describing the overall surplus plutonium disposition program and its alternatives before it can proceed with a Final Supplemental EIS. *158-18*

The program presented in the Draft Supplemental EIS is greatly changed from the Storage and Disposition PEIS in several ways. First, the Storage and Disposition PEIS considered and eliminated the alternative of disposing of surplus plutonium at the Waste Isolation Pilot Plant (WIPP) (pages 2-10 to 2-15). Nonetheless, the Draft Supplemental EIS includes WIPP as the preferred alternative for disposition of surplus plutonium that is not suitable for MOX fuel fabrication. Second, the Storage and Disposition PEIS did not include Los Alamos National Lab (LANL) as a pit disassembly or conversion location (pages 2-89 to 2-95). Nonetheless, the Draft Supplemental EIS includes LANL as a pit disassembly and conversion alternative. Third, the Storage and Disposition PEIS included sites for up to 50 years of long-term storage (pages 2-2 to 2-7). However, storage at SRS and Pantex could be necessary for more than 50 years, given that the disposition program as described in the Storage and Disposition PEIS has not been

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158-17 See the responses to comment 158-8 regarding cost and 158-5 regarding options to dispose of plutonium as waste.

A cost-benefit analysis is not required under NEPA. Cost information on DOE programs is made public in the President's annual budget submission and the congressional budget process.

158-18 See the response to comment 158-9 regarding a new programmatic evaluation of alternatives.

The direct disposal of 50 metric tons (55 tons) of surplus plutonium was eliminated from further analysis in the *Storage and Disposition PEIS* (DOE 1996:2-13) because it would exceed the capacity of WIPP when added to DOE's inventory of TRU waste. In response to comments on the *Draft SPD Supplemental EIS*, DOE expanded the WIPP Alternative to include potential disposal of all 13.1 metric tons (14.4 tons) of the surplus plutonium for which a disposition path is not assigned. The disposal at WIPP of 13.1 metric tons (14.4 tons) of surplus plutonium, which is approximately 26 percent of the amount considered in the *Storage and Disposition PEIS*, could potentially be accomplished within WIPP's capacity and, therefore, is considered a reasonable alternative in this *Final SPD Supplemental EIS* (see Chapter 4, Section 4.5.3.6.3). A description of WIPP's capacity and the process that would be used to dispose of surplus plutonium as CH-TRU waste at WIPP is contained in Appendix B, Sections B.1.3 and B.3, and the impacts on WIPP capacity that are associated with this alternative are discussed in Chapter 4, Section 4.5.3.6. For further discussion, refer to Section 2.2, Topic B, of this CRD.

The use of LANL to support pit disassembly and conversion has been ongoing. In 1998, DOE completed an environmental assessment of a proposed pit disassembly and conversion demonstration project at LANL (DOE 1998a). The *SPD EIS* (DOE 1999) acknowledged these activities, and the *LANL SWEIS* (DOE 2008) included the impacts associated with these ongoing activities. In this *SPD Supplemental EIS,* DOE is now considering an expansion of these activities and has included an evaluation of all of the environmental impacts associated with this proposal (see Appendix F and the various sections in Chapter 4 that include impacts analyses related to LANL).

As described in Appendix B, Table B–2, of this *SPD Supplemental EIS*, 40 years of storage of surplus non-pit plutonium is analyzed under the No Action Alternative. Storage for fewer years is analyzed under the action alternatives. DOE's alternatives for surplus plutonium disposition are expected to complete these activities within the 50-year storage period previously analyzed.

Commentor No. 158 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

implemented. Thus, at least three important elements of the current program were not considered in the earlier PEIS, leading to the unavoidable conclusion that the program has dramatically changed, and a new PEIS or supplemental PEIS is required before the current SEIS process can proceed.

158-18 cont'd

TVA and the "Preferred Alternative" - the "No-MOX Option"

The Tennessee Valley Authority (TVA), founded in 1933, is "a corporation owned by the U.S. government, [that] provides electricity for 9 million people in parts of seven southeastern states" (http://www.tva.com/abouttva/index.htm). TVA, which operates six nuclear power reactors, is thus subject to the National Environmental Policy Act. If TVA, as a lead agency in supplying reactors for a DOE-defined mission, decides to test and use MOX, this will be considered a major federal action subject to NEPA.

Keeping in mind the bigger issue of the need to conduct a new Programmatic EIS on the plutonium disposition program, in the draft environmental document before us it is stated that "***The TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose.***" (Summary, page S-iv) This is in conflict with DOE's "preferred alternative" to provide MOX fuel for testing and use in TVA reactors. How under the National Environmental Policy Act (NEPA) can one U.S. Government agency legally dictate to another what to do? This simply can't comport with the law and no further NEPA documents can be issued due to this legal conflict.

While DOE is named as the "lead agency" and TVA as the "cooperating agency" in preparation of the Draft SEIS, TVA is, in fact, much more than a cooperating agency.

158-19

The summary Draft SEIS states: "A cooperating agency participates in the preparation of an EIS because of its jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative)(40 CFR 1501.6, 1508.5)." (page S-2)

As the MOX program hinges on TVA's participation, TVA contributes far more than certain "jurisdiction by law or special expertise." The entire MOX program as presented in the Draft SEIS depends on TVA. It appears that DOE may well be interpreting NEPA incorrectly by claiming that DOE can make a final decision, a "preferred alternative," for TVA in any Final SEIS.

TVA must not bow to pressure by internal MOX advocates or to the DOE and must not be forced to make a premature decision before any Final SEIS is issued. Too much is at stake for TVA to come to a hasty decision that could have a host of negative technical, safety, cost and public relations ramifications for both TVA and its customers.

TVA must stick with the "preferred alternative" presented in the Draft SEIS and not decide to test or use MOX fuel on DOE's schedule. DOE's attempt to force TVA to agree to a pro-MOX "preferred alternative" may not reflect the reality of TVA's decision-making process and raises legal questions under NEPA.

158-19 See the response to comment 158-1 regarding TVA's role in the preparation of this *SPD Supplemental EIS*, as well as the response to comment 158-9 regarding a new programmatic evaluation of alternatives.

Commentor No. 158 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

Likewise, if DOE is somehow able to issue a Final SEIS – perhaps via a watered down "preferred alternative" statement – it must not then go on and issue a "Record of Decision" (ROD) establishing the policy of MOX use by TVA, a decision for which DOE has no legal authority and which TVA's chief nuclear officer has stated will not be made until years from now. Issuance of a ROD in 2013 without full TVA sign-on and before a public decision-making process, including a new PEIS and site-specific EISs for the TVA nuclear reactors being considered, will be questioned under NEPA.

158-19 cont'd

Incomplete Analysis: MOX Testing and Use and the Tennessee Valley Authority

In addition to a host of technical, cost, safety and public relations challenges, the Tennessee Valley Authority faces many difficulties in meeting the criteria that it has outlined for testing and use of experimental MOX fuel.

MOX made from weapons-grade plutonium has never been used commercially in any reactor worldwide and never even been tested in any "boiling water reactor" (BWR) such as Browns Ferry. This point is emphasized as some entities participating in the MOX program, especially contractors associated with AREVA, have consistently and deliberately made misleading and factually incorrect statements about the testing and use of weapons-grade MOX in BWRs. Those erroneous statements seem, in part, to be part of a public relations campaign to convince the Nuclear Regulatory Commission not to require the requisite MOX testing.

MOX was tested in a "pressurized water reactor" (PWR) owned by Duke Energy for a period of time but the test was halted before its completion. Claims by TVA, DOE or the plutonium company AREVA that weapons-grade MOX have been used and can be licensed by the Nuclear Regulatory Commission without successful testing and evaluation are simply false.

158-20

TVA has stated that: "TVA is willing to consider using mixed oxide fuel if it meets three criteria: operationally and environmentally safe; economically beneficial to TVA customers; licensed by the Nuclear Regulatory Commission (NRC)." (TVA fact sheet on MOX, July 24, 2012)

Meeting these criteria poses a series of hurdles for those in TVA who are interested in MOX fuel. TVA management and the TVA board should exercise sound judgment and reject further consideration of experimental MOX fuel.

Even if DOE makes a conclusion that it wants to pursue use of MOX in TVA reactors, it will be TVA which makes that decision. It will be TVA which will then have to do its own reactor-specific analysis under NEPA. That document will have to be in-depth as the analysis now before us is cursory and incomplete and provides no technical justification or cost basis on which TVA can make a decision concerning MOX testing and use.

158-20 See the responses to comment 158-6 regarding decisions made by TVA, and comment 158-2 regarding worldwide MOX fuel experience and testing of MOX fuel in PWRs and BWRs.

Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

See the response to comment 158-2 regarding NRC licensing of MOX fuel in a domestic commercial nuclear power reactor.

The information presented by GNF was based on use of a GNF-designed fuel and did not address the potential use of AREVA-designed MOX fuel. AREVA has extensive data on the performance of reactor-grade MOX fuel in both BWRs and PWRs. As discussed above, additional information is available from the prior irradiation of MOX LTAs at the Duke Energy Catawba Nuclear Station.

Commentor No. 158 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

MOX Will Require Lengthy Testing in Browns Ferry, Constrained in Sequoyah

Even if TVA decides to tentatively pursue testing and use of experimental MOX fuel made from weapons-grade plutonium – a "new fuel form" which has never been used anywhere in the world on a commercial basis – the Nuclear Regulatory Commission will require confirmatory performance testing, followed by extensive post-irradiation examination and "license amendment requests" (LARs) before any license can be considered for commercial MOX use.

In an August 8, 2012 presentation to the NRC, Global Nuclear Fuel (GNF) – the company based in Wilmington, NC, which provides uranium fuel to Browns Ferry – outlined the testing needed of 16 "lead use assemblies" (or "lead test assemblies," LTAs) needed to certify MOX use in a "boiling water reactor" (BWR). (That GNF document has earlier been submitted for the Draft SEIS record.)

158-20 cont'd

Under the initial GNF plan, the company indicated that a test of MOX would begin in 2019 and end in 2025, which would mean a test for the regular three fueling cycles of two years each, or 6 years. GNF would supply fuel assembly hardware to AREVA, which would operate the MOX plant (if it can obtain a license and operate as designed), and the MOX assemblies would be made in the SRS MOX plant to GNF specifications for its BWR customer – Browns Ferry.

The Draft SEIS fails to discuss the necessity of the test of what the NRC calls a "new fuel form."

Such a lengthy test of "lead use assemblies" (LUAs) in Browns Ferry or other reactors will have severe impacts on the operational schedule of the MOX plant at DOE's Savannah River Site and will drive costs considerably higher.

For the Sequoyah "pressurized water reactors" (PWRs), the Draft SEIS essentially admits that MOX use may well be constrained, if licensed by the NRC, to a maximum of only two 18-month cycles and not the usual three 18-months cycles for uranium fuel. (See page J-5) This is because an unsuccessful test of MOX in Duke Energy's Catawba reactor was halted after two cycles and the burn-up reached for three cycles was not achieved. A repeat of the test could be required if MOX use for three cycles is sought or if test results reveal problems, which would have more cost and schedule impacts on the overall program.

158-21

Importantly, in a June 8, 2012 ruling by the U.S. Court of Appeals for the District of Columbia Circuit, "The Appeals Court ruled that NRC should have considered the potential environmental effects in the event a permanent repository for disposing of spent fuel is never built, and found other deficiencies with the agency's consideration of leaks and fires involving spent fuel pools." (NRC news release, September 6, 2012, http://pbadupws.nrc.gov/docs/ML1225/ML12250A653.pdf) In response to the court's ruling, NRC Commission "directed the agency's staff to develop an environmental impact statement (EIS) and a revised waste confidence decision and rule on the temporary storage of spent nuclear fuel."

158-22

158-21 As discussed in the response for comment 158-20 and summarized in Appendix J, Section J.2, of this *SPD Supplemental EIS*, Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

158-22 The NRC published its final rule on the Continued Storage of Spent Nuclear Fuel, formerly known as Waste Confidence, in the *Federal Register* on September 19, 2014 (79 FR 56238). NRC's final rule became effective on October 20, 2014. As of October 20, the previous NRC suspension on licensing actions was lifted. With respect to TVA's Browns Ferry and Sequoyah Nuclear Plants, which may irradiate MOX fuel, any TVA license renewal or amendment applications would be in accordance with applicable NRC regulations and policies, and the thermal output of used MOX fuel would be reflected as appropriate in the associated licensing documents.

Commentor No. 158 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

The NRC went on in the September 6 news release to affirm that the agency will "not issue licenses dependent on the waste confidence rule – such as new reactors and renewal of existing reactor operating licenses – until the Court's remand is appropriately addressed." This "waste confidence" and relicensing matter is of importance concerning MOX use as the 40-year licenses for the two Sequoyah reactors expire in 2020 and 2021. As TVA has stated that additional 20-year licenses will be sought for the reactors, this delay in relicensing matters as well as the additional heat output of spent MOX fuel may well impact consideration of MOX use in the Sequoyah reactors. The court ruling and NRC action in this matter must be discussed in the SEIS.

158-22 cont'd

Browns Ferry Reactors - NRC Violations Raises Caution Flags about MOX Use

Of special concern is the fact that the Browns Ferry reactors are now under increased scrutiny by the NRC. Violations issued for Units Two and Three have merited additional oversight and the only US reactor to obtain a red finding on Unit One, which, according to the NRC, signifies "that it has high safety significance." [The NRC uses a violation scale of green, white, yellow and red, with red being the most severe and of "high safety significance."]

Likewise, in the current NRC's "Reactor Oversight Process Action Matrix" the three Browns Ferry reactors are listed as all needing "supplemental inspections," which places the reactors in a uniquely negative position amongst all US nuclear reactors.

That the reactors are of the GE Mark I Fukushima design underscores the increased scrutiny by the NRC and the public. Unit 3 at Fukushima had a partial core of reactor-grade MOX - not weapons-grade MOX - at the time of the accident. If not for a decade of citizen activism, the core would have held much more MOX fuel and perhaps the other units would have also contained MOX.

158-23

Given the safety concerns at the Browns Ferry units, it is a troublesome and potentially costly distraction for TVA to commit any resources towards consideration of MOX in the reactors. Given that reactors are aging - and reach the end of their 60-year licenses in 2033, 2034 and 2036 - use of MOX would cause additional stresses on the reactors and pose unacceptable safety and operational problems.

Spent MOX Will Pose Storage Problems Due to Higher Thermal Output

Spent MOX fuel is thermally hotter than spent uranium fuel and will thus pose problems in on-site storage and in any repository, especially given that the draft document says that 2-16% more spent fuel would be created due to MOX use. These problems will increase handling issues and possibly have a significant cost impact for TVA.

158-24

For example, in a September 2011 presentation to the Nuclear Waste Technical Review Board (NWTRB) entitled *TVA's Consideration of the Use of MOX to Fuel its Nuclear Reactors*, the TVA presenter, Dan Stout, stated that *"Used MOX would need to be kept in dry cask storage an*

158-23 The Browns Ferry Nuclear Plant is designed and maintained to meet stringent NRC safety requirements for nuclear power reactors. Safety-related equipment is regularly inspected, maintained, and replaced well before the end of its scheduled operating life. As discussed in Appendix J, Sections J.1 and J.2, of this *SPD Supplemental EIS*, continued assurance of the safe operation of these plants is the responsibility of the plant operator which operates under the independent regulatory oversight of NRC, including NRC regulations and license conditions. If the plant operator were to make a decision to use MOX fuel, it would be the joint responsibility of the plant operator and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely. For further discussion, refer to Section 2.5, Topics A and B, of this CRD.

Accident analyses for U.S. nuclear power reactors already consider the radiological impacts of accidents like the Fukushima accident in that the safety evaluations include evaluation of beyond-design-basis accidents. As discussed in Appendix J, Section J.3, the analysis in this *SPD Supplemental EIS* compares the accident results for partial MOX fuel and full LEU fuel cores to determine whether the use of MOX fuel in these TVA reactors would make any substantive difference in the potential risks associated with the accidents analyzed. The beyond-design-basis accidents include severe accidents with a subsequent loss of containment similar to the accident at Fukushima. The results show that the consequences of such an accident, should it occur, would be comparable, regardless of whether the reactor was using a partial MOX fuel core or a full LEU core. DOE does not believe that the accident at the Fukushima Dai-ichi Nuclear Power Station changes this conclusion. At the time of that accident, the Fukushima Dai-ichi Nuclear Power Station's Unit 3 was operating using a partial MOX fuel core. However, at least one authority has determined that the accident involved failures unrelated to the use of MOX fuel, and there is no evidence to suggest that the presence of MOX fuel in Unit 3 increased the consequences of the accident (ONR 2011). For further discussion, refer to Section 2.5, Topic C, of this CRD.

158-24 As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel, by storing it in the reactor's used fuel storage pool or placing it in dry storage. Irradiated MOX fuel initially produces about 4 percent less decay heat than equivalent LEU fuel. However, decay heat production in MOX fuel declines at a slower rate than LEU fuel due to isotopic differences in the irradiated MOX fuel. As a result, irradiated MOX fuel continues to produce slightly more decay heat than irradiated LEU fuel, about 16 percent more after 5 years. Initially, used MOX fuel would be discharged to

Commentor No. 158 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

additional 56 years longer than UOX to have the same thermal impact on a repository at the time of emplacement."

This is an indication of how much hotter MOX fuel is, both in and out of a reactor. Particularly if the spent MOX fuel is stored on site, it could bring additional cost and storage challenges. In a repository, MOX would add additional heat that must be considered in the design of the facility, resulting in higher cost impacts.

158-24 cont'd

Would DOE Pay TVA to Use MOX and Reimburse for All Cost and Risks….or Not?

TVA is also under contract with DOE to produce radioactive tritium gas, which is used in all US nuclear weapons to boost the explosive power of the weapon, via irradiation of special rods inserted into the Watts Bar Unit 1 reactor in Tennessee. Though a nuclear weapons material that is also produced through normal operation of any reactor, tritium is not fissile and thus can't be used by itself to manufacture the core of a weapon. TVA is carrying out the tritium mission for DOE given that TVA is a government-owned corporation and thus has parallels with DOE's MOX program.

If the way DOE treated TVA in its production of tritium for the US nuclear weapons program is an indication, TVA may well be right in expecting to be saddled with additional costs and risks associated with testing and use of experimental MOX fuel. Though DOE aims to provide MOX to TVA at far below its production cost, in order to claim that it costs about the same as uranium fuel, TVA will expect DOE to pay for irradiation of the experimental MOX fuel and for reactor modifications and perhaps for increased risk to reactor operation.

158-25

In a 2011 TVA inspector general report entitled *TVA'S TRITIUM PROGRAM UNDER DOE/TVA INTERAGENCY AGREEMENT DE-A102-00DP00315*, the IG stated that "We were unable to determine if tritium production costs were accurately identified and invoiced or if any negative impacts on plant operation from tritium production were reimbursed by DOE due to inadequate documentation."

The report goes on to document irregularities in reimbursement to TVA for services rendered and inadequacies in TVA's own bookkeeping, so it is unclear if TVA was letting DOE rip it off or if DOE was simply taking advantage of another US Government agency. In any event, the rate payers and tax payers suffered and it is unknown if this problem has been rectified.

Given that DOE proved itself not to be a reliable partner in the tritium production program, at least through 2010, caution is urged by TVA in expecting full payment for all costs incurred by using MOX. The NEPA analysis simply can't assume that DOE's MOX program can be carried out given questions about proper billing and reimbursement in the DOE-TVA relationship concerning tritium production.

the reactor's used fuel storage pool, where it would be stored with existing used LEU fuel. After about 5 years, the decay heat load from both fuel types would be low enough to allow the fuel to be transferred to dry storage casks (ANS 2011). After about 30 years of cooling, the decay heat difference would be equivalent to the heat produced by a few incandescent light bulbs. The use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would displace LEU fuel that otherwise would have been used to power the nuclear power reactor. Use of MOX fuel could increase used nuclear fuel generation by 8 to 10 percent for TVA's Browns Ferry and Sequoyah Nuclear Plants, and from 2 to 16 percent for generic reactors during the period MOX fuel could be used at a reactor. DOE expects that increases of this magnitude would be managed within the reactor's normal planning for storage of its used fuel.

158-25 TVA is a cooperating agency for this *SPD Supplemental EIS* and, as such, is not required to declare a preferred alternative. TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose. TVA, as a cooperating agency, may adopt this *Final SPD Supplemental EIS* after independently reviewing the EIS and determining that its comments and suggestions have been satisfied (40 CFR 1506.3(c)). Examining issues related to cost reimbursement for the MOX fuel program or the cost of tritium production is not within the scope of this *SPD Supplemental EIS*.

Commentor No. 158 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

"Generic Reactors" and "Next-Generation Light Water Reactors" for MOX – What Are They?

DOE claims in the Draft SEIS that it is looking at unnamed "generic" reactors – what utilities are considering MOX use? – and stated in an Interim Action Determination dated April 1, 2011 - http://energy.gov/sites/prod/files/EIS-0283-S2-IAD-2011.pdf - that non-existent "next-generation light water reactors" are also being considered. DOE intends that fuel for these reactors would also be produced in the MOX Fuel Fabrication Facility (MFFF) at SRS.

In that Interim Action Determination it is stated: "DOE proposes to modify the MFFF design to allow the flexibility necessary to manufacture fuel for a variety of reactor designs. The modifications would provide the MFFF with the capability to produce fuel for boiling water reactors (BWR) and next-generation light water reactors, in addition to the current capability for manufacture of pressurized water reactor (PWR) fuel."

That DOE is considering unnamed "generic reactors" and non-existent "next-generation light water reactors" signals that DOE may well believe that pursuit of experimental MOX use in TVA reactors may fail. It is unknown if those "generic reactors" or "next-generation reactors" may include so-called "small modular reactors" (SMRs) which some special interests are pursuing for the Savannah River Site and which have been presented as capable of using plutonium fuel. A full explanation and identification of these non-TVA "generic reactors" and "next-generation reactors," including the possibility of SMRs, is required.

DOE must reveal plans that it may have as to soliciting more utilities to provide nuclear reactors to potentially use MOX, explain what type of reactors are being sought and discuss the impact of the MOX-use timeline if "generic reactors" or other reactors are solicited. Additionally, any modifications to the MOX plant must be discussed for providing "generic" or "next-generation" MOX, including physical modifications needed and associated NRC licensing impacts.

Any solicitation of "generic reactors" may imply that DOE is aiming to provide MOX in smaller batches to a number of nuclear reactors across the country. As it is likely that pursuit of MOX by more utilities will be met with great concern by the public and that reactor safety and licensing issues will place great hurdles in the path of pursuit of such "generic reactors," DOE must reveal which utilities beyond TVA and Energy Northwest have expressed interest in MOX use.

It has been reported that DOE is soliciting low-enriched uranium (LEU) fuel fabrication vendors to have their fuel design be made into MOX fuel by AREVA in the SRS MOX fuel plant. Therefore, the SEIS must fully discuss the solicitation by DOE or contractors of such vendors as GE, Westinghouse and AREVA and associated environmental impact and describe how MOX would be made to the specifications of the various vendors of LEU fuel for both BWRs and PWRs.

As revealed by documents obtained by Friends of the Earth via the Freedom of Information Act, in a secret meeting on April 22, 2009 between DOE, TVA, AREVA, MOX Services and Oak Ridge

158-26

158-26 See the responses to comment 158-1 regarding the use of MOX fuel in generic reactors, as well as comment 158-4 regarding fabrication of fuel for other types of reactors.

Commentor No. 158 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

National Lab, there was a discussion about the "need to make fast reactor fuel for the first core of a Advanced Recycle Reactor and the MFFF ability to fabricate this fuel if it is oxide fuel." Any plans or capability for production of such fast reactor fuel in the MOX plant must be fully discussed in the SEIS.

158-26 cont'd

No presentation of MOX plant operating schedule

The Draft SEIS not only does provide adequate clarification about of what type of fuel the MOX plant will make, it also doesn't present any operational schedule for the MOX plant. As the schedule for production and the types of fuel to be produced have environmental impacts, this information must be discussed.

DOE has stated in the past that 8 fuel assemblies would be produced in the MOX plant in 2018. It is unknown what these are or where they would be used. A guess is that they will have to be "lead use assemblies" for lengthy testing in a boiling water reactor (BWR) such as TVA's Browns Ferry but DOE needs to clarify what these first 8 assemblies are, how long the MOX plant will operate or be idle given the need for lengthy irradiation testing, and what types of fuel will be produced over the life of the MOX plant. Additionally, lengthy storage of fabricated MOX will lead to build up of americium in the stored fuel.

The DOE budget to Congress for FY2012 stated that "Supplying BWR MOX fuel to the Browns Ferry BWR's would account for 50 percent of the MOX facility's production" (page 392, NNSA budget volume 1, http://www.cfo.doe.gov/budget/12budget/Content/Volume1.pdf). Apart from doubts that Browns Ferry will ever use experimental MOX fuel, DOE has presented no production schedule at all so it remains speculative as to what kinds of MOX might be made in the facility. Given the need for NRC-licensed testing of weapons-grade MOX in a BWR, which may be conducted from 2019-2025, it will be impossible for any full-scale BWR MOX use, that also must be licensed by the NRC, to begin before 2025 or later.

158-27

DOE has stated in the Fiscal Year 2013 budget request various lengths of anticipated operation of the MOX plant, from as little as 13 years to 20 years (NNSA budget request for FY2013, pages 436 and 461, http://www.cfo.doe.gov/budget/13budget/Content/Volume1.pdf). In the Draft SEIS, in Tables C-30 and C-31 on page C-25, DOE states that the "operational years" for the MOX plant ranges from 21 to 24 years. DOE must clarify the length or operation, the yearly production schedule for the MOX plant, including types and amounts of fuel, and what the decontamination and decommissioning plan is and when decommissioning and closure is set to take place.

Use of the MOX plant for unstated or secret missions, such as production of fast reactor fuel or small modular reactor fuel, must be revealed by DOE in NEPA documents. Additionally, if DOE has considered the use of the MOX plant in association with any facilities involved in the reprocessing of spent fuel at SRS - for plutonium removal for fabrication into fuel - this must be revealed in full.

158-27 See the response to comment 158-4 regarding the MFFF schedule and the types of fuel to be produced.

When licensed to operate, the production schedule for MFFF operation will depend on factors such as the requirements of its customers, as will the types of fuel that will be produced. MFFF would not produce MOX fuel on a commercial scale unless contracts or other arrangements are in place for its use. There is currently no schedule for fabrication and testing of LTAs. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process.

The eight fuel assemblies mentioned in the DOE FY 2013 budget is a key milestone to meet the MOX production objective identified in public law (P.L. 107-314, as amended). The use of those assemblies will be determined as fuel sales agreements and contracts are put into place. DOE is not limiting the potential use of MOX fuel to a subset of domestic commercial nuclear power reactors. DOE would entertain interest from any U.S. utility regarding use of MOX fuel in its reactors.

As addressed in Chapter 4, Section 4.6, the nature, extent, and timing of future decontamination and decommissioning activities are not presently known. For MFFF, current plans are for the operator to deactivate the facility and request that NRC terminate the license once the facility's mission for surplus plutonium disposition is complete. MFFF would then become the responsibility of DOE, and DOE may decide to reuse it or decommission it.

Commentor No. 158 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

The Draft SEIS fails to discuss the legal challenge by public interest groups before the NRC to the MOX plant's operating license application by Shaw AREVA MOX Services. That intervention (Docket 70-3098-MLA, ASLBP No. 07-856-02-MLA-BD01) against the application is now being reviewed by an Atomic Safety Licensing Board. The intervention has raised significant issues concerning safe and secure operation of the MOX facility and it is possible that redesign of the plant will result in further "contentions" being filed. As it is unknown at this point if an operating license will be issued, any assumption that a license will be granted or that the plant will operate are speculative at this point. *158-28*

Processing Plutonium at Facilities at the Savannah River Site must be Discussed in Detail

In the transformation over the past year of the H-Canyon from an aging reprocessing facility at SRS into a "national asset," the search for new missions for the H-Canyon has intensified apace with the lobbying for the continued operation of the facility. The justification that underscores this effort rests squarely on the fact that the H-Canyon brings in around $150 million per year to SRS and thus contractors at the site will fight to continue receiving this budget allocation.

Technical details of the H-Canyon's ability to receive and process pits – to provide plutonium oxide feedstock for MOX factory - must be discussed in detail. This would include such things as families of pits to be processed, which dissolver line would do the processing, what the capacity of H-Canyon is to process pits, what upgrades are needed and the associated costs of such upgrades, criticality concerns, seismic and fire risks, worker dose, waste streams, environmental impacts, public health impacts, and risks and uncertainties including impact of a rapid shutdown, with and without restart, of H-Canyon during a pit processing campaign. *158-29*

DOE must provide information in the SEIS as to how plutonium is being packaged at the HB-Line for disposal in WIPP and how such packaging meets the WIPP WAC. At SRS, plutonium is being packaged into Pipe Overpack Containers and being blended with a special material – "stardust" – to make the removal of the plutonium more difficult via chemical processing. The nature of the "stardust" material must be discussed as well as the packaging process and associated risks and uncertainties. Packaging capacity, criticality risks, waste streams, amounts of plutonium to be processed, condition of aging equipment, worker dose and anticipated shipment schedules are but a few of the issues which must be addressed about use of the HB-Line. *158-30*

The role of K-Area in preparing pits shipped from Pantex must be fully discussed, including pit receipt and storage, methods to declassify and equipment to cut up pits, criticality issues, impact on pit handling on other K-Area missions, worker dose, environmental and public health impacts, waste generation, seismic and fire risks and security aspects in pit transport, shipping and receipt. *158-31*

The Draft SEIS fails to discuss details of the role of the MOX plant itself in processing pits. As the MOX plant is being built with a modified PUREX facility inside the plant, the role of this "polishing" facility must be discussed, along with the impact on other MOX operations of *158-32*

14

158-28 The Intervenors' contentions are being adjudicated before the Atomic Safety Licensing Board; the Board's proceeding is independent of and outside the scope of this *SPD Supplemental EIS*. As explained in this *SPD Supplemental EIS*, a license from NRC under 10 CFR Part 70 is required before MFFF can receive, possess and use SNM.

158-29 Operation of H-Canyon/HB-Line and the minor modifications to it that are projected under one of the pit disassembly and conversion options are described in Appendix B, Section B.1.3, of this *SPD Supplemental EIS*. Impacts from H-Canyon/HB-Line operation under the different alternatives are included in the evaluations presented in Chapter 4. These impacts include radiation doses to workers and the public from normal operations (Section 4.1.2.1), radiation doses to the public from possible accidents (including those resulting from fires and natural phenomena such as earthquakes) (Section 4.1.2.2), socioeconomic impacts (Section 4.1.3), waste streams and quantities (Section 4.1.4), environmental justice impacts (Section 4.1.6), and impacts to other resource areas such as ecological resources and infrastructure (Section 4.1.7). Additional information about potential impacts to workers and the public from normal operation of H-Canyon/HB-Line is provided in Appendix C, Sections C.3.3 and C.5, and to workers and the public from a variety of possible accidents (including criticality events) in Appendix D, Sections D.1.5.2.8 and D.2.8. Additional information about waste generation from H-Canyon/HB-Line is provided in Appendix F, Section F.4. As discussed in the response to comment 158-8, cost is among the factors that may be considered in reaching a decision on the Surplus Plutonium Disposition Program.

158-30 Preparation of surplus plutonium for potential disposal at WIPP in the SRS H-Canyon/HB-Line is described in Appendix B, Section B.1.3, of this *SPD Supplemental EIS*. As evaluated in Appendix G, preparation of plutonium for potential disposal at WIPP under normal operating conditions is expected to have minimal environmental impacts. Doses to the public from normal operations are addressed in Section G.2.1, as are projected doses to workers (refer to Tables G–4 and G–5); doses to the public from postulated accidents are addressed in Section G.2.2; and waste generation rates are addressed in Section G.4. Additional information about normal operations at H-Canyon/HB-Line is provided in Appendix C, Section C.3.3, and about postulated accidents involving H-Canyon/HB-Line in Appendix D, Sections D.1.5.2.8 and D.2.8. The Appendix D sections address accident scenarios such as criticality, fire, and natural phenomena such as tornadoes and earthquakes.

Commentor No. 158 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

adding a new pit mission to the facility. The SEIS must discuss how the MOX plant design and chemical processing will be changed in any new license amendment submitted to the NRC and how the review of the license and the associated intervention challenging the operating license of the plant will be impacted. Addition of furnaces or other equipment must be discussed, along with the cost and technical aspects of such modifications. The SEIS must discuss how the MOX plant EIS will be amended and what the anticipated schedule is for that process, including the required public meetings. Likewise, the impact of MOX plant modifications to the NRC operating license application must be discussed.

158-32 cont'd

Given the issues at hand, a stand-alone supplemental EIS on pit processing in the H-Canyon is needed, in addition to the new Programmatic EIS on plutonium disposition.

158-33

The "Spent Fuel Standard" is Dead - DOE Opens the Door for Non-MOX Waste Disposal Options

DOE earlier presented that getting plutonium into a form which had the equivalent radiation barrier as spent fuel – the so-called "spent fuel standard" – was a main driver for the plutonium disposition program. Now, DOE quietly admits in the Draft SEIS that:

"DOE believes that the alternatives analyzed in this *SPD Supplemental EIS*, including the WIPP Alternative, provide protection from theft, diversion, or future reuse in nuclear weapons akin to that afforded by the Spent Fuel Standard." (S-14)

This admission is an affirmation that MOX isn't the only equally acceptable disposal option and underscores the need for a new, in-depth analysis for disposal of plutonium as waste. Given the lack of clarity with the MOX option, it is clear that a "Plan B" for non-MOX options is urgently required. This draft "alternatives study" must get underway immediately and DOE must fully explain as part of the NEPA process when this will be finished and when the public can comment.

158-34

The only way that disposal of contaminated surplus plutonium in the Waste Isolation Pilot Plant (WIPP) can be considered is if the requisite Waste Acceptance Criteria are met and other regulatory requirements are met and if there is sufficient volume in WIPP, as specified by the Land Withdrawal Act. The exact amount of plutonium now destined to WIPP must be discussed both in the SEIS and the new PEIS as well.

While the draft document mentions the "glass can-in-canister" option, which we support as a viable disposition option, DOE must place other disposition options back on the table. As the MOX program is possibly fated to total failure, it is incumbent that DOE now begin a new analysis of all non-MOX options, some of which were included in early NEPA analyses. DOE must actively pursue an array of non-MOX disposal options open lest the collapse of the MOX program results in a total halt in the plutonium disposition program. This is an unacceptable outcome that is becoming more possible given DOE's years of mismanagement of the overall plutonium disposition program.

158-35

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This *SPD Supplemental EIS* evaluates the MOX Fuel Alternative, wherein 2 metric tons (2.2 tons) of surplus plutonium would be prepared for disposal as CH-TRU waste at WIPP, as well as the WIPP Alternative, wherein 13.1 metric tons (14.4 tons) of surplus plutonium would be prepared for disposal as CH-TRU waste at WIPP. Before being shipped to WIPP for disposal, the plutonium would be blended with inert materials to reduce the plutonium content and inhibit future plutonium material recovery. The makeup of this blending material is restricted information. All waste shipped to WIPP would be in compliance with the WIPP waste acceptance criteria.

As indicated in Appendix E, Section E.4.3, of this *SPD Supplemental EIS,* POCs could be used to dispose of surplus plutonium as CH-TRU waste at WIPP. However, this *SPD Supplemental EIS* also evaluates the impacts that could result should the plutonium be packaged in approved criticality control overpacks that can hold more plutonium than POCs. Criticality control overpacks have been approved for shipment within TRUPACT II and HalfPACT transportation packages, and for disposal at WIPP; however, this option would not be implemented until all additional analyses that may be required are completed and approved, and certified containers have been procured. Specific details about shipment schedules would be classified; shipment timing, however, would depend on a variety of factors, including the preparation rate at H-Canyon/HB-Line. As shown in Appendix B, Table B–2, preparation of surplus plutonium for potential WIPP disposal is assumed to require 10 to 16 years under the MOX Fuel Alternative and 13 to 30 years under the WIPP Alternative.

158-31 As addressed in Appendix B, Section B.1.2.5, of this *SPD Supplemental EIS*, only minor modifications to the K-Area Complex would be required to enable pit disassembly. As evaluated in Appendix F, pit disassembly at the K-Area Complex under normal operating conditions is expected to have minimal environmental impacts. For example, doses to the public from normal operations are addressed in Section F.2.1, as are projected doses to workers (Tables F–4 and F–5); doses to the public from postulated accidents are addressed in Section F.2.2, and waste generation rates are addressed in Section F.4. Additional information about postulated accidents involving the K-Area Complex pit disassembly capability is provided in Appendix D, Section D.1.5.2.4. The analysis in this Section addresses accident scenarios such as criticality, fire, and natural phenomena such as tornadoes and earthquakes. Details about transportation security capabilities and procedures are classified, but Appendix E, Section E.2.4, includes a general description of NNSA's Secure Transportation Asset Program, which would be used to transport SNM such as plutonium pits.

Commentor No. 158 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

Risks and Uncertainties of Expanded Pit processing in the PF-4 facility at Los Alamos must be Discussed in Detail

Risks related to criticality, vault storage, cost and schedule, secure shipping and handling, waste handling, staffing, worker dose, and impacts to other programs are among the possible risks. Given recent attention to seismic risks at the PF-4 facility by the Defense Nuclear Facilities Safety Board (DNFSB), the "seismic integrity" of the facility is of special concern. Among other things, this must address risks associated with handling and processing larger amounts of plutonium, especially in the more dispersible oxide form.

DNFSB concerns about the PF-4, expressed in a July 18, 2012 statement entitled "Board Issues a Reporting Requirement Concerning Seismic/Structural Analysis at the Plutonium Facility, Los Alamos National Laboratory" must be analyzed – see http://www.dnfsb.gov/sites/default/files/Board%20Activities/Letters/2012/ltr_2012718_19811.pdf - as well as the September 28, 2012, DOE response to the DNFSB about those concerns (http://www.hss.energy.gov/deprep/2012/TB12S28B.PDF).

Risks associated with ramping up production of plutonium feedstock using the Advanced Recovery and Integrated Extraction System (ARIES) equipment must be discussed given that this process was never planned to be a production-scale facility. The SEIS must discuss risks associated with ARIES contingency plans if higher throughput is necessitated to provide feedstock for the MOX plant in the eventuality that the H-Canyon and other SRS facilities would not be available for pit processing. Additionally, an assessment must be made if the LANL Site-Wide Environmental Impact Statement (SWEIS) will need modifying given any new pit disassembly mission.

The absence of analysis in the draft document on the ARIES process is striking. A thorough analysis of ARIES is needed.

158-36

Roof it and Mothball It

The idea to halt construction of the MOX plant has been raised with Congress. A stipulation for this approach was dependent upon getting the roof over the facility so that internal portions of the building would be protected from the weather. As no production schedule for the MOX plant has been produced and no reactors are secured to use MOX and given growing budget pressures, the possibility of construction being halted at some point looms large. Thus, the SEIS must address the environmental impacts of a halt to not only the MOX plant construction but all aspects of the plutonium disposition program, including extended secure storage of plutonium in the K-Area at the Savannah River site.

158-37

All Referenced Documents Must be Made Available

All documents listed as references in the SEIS documents must be available publicly via the NNSA website. This has been a recurring issue with DOE EIS documents and needs to be

158-38

158-32 Construction and operation of MFFF is described in Appendix B, Section B.1.1.2, of this *SPD Supplemental EIS*. Appendix A, Section A.1.1, discusses the NRC's 2005, *Environmental Impact Statement on the Construction and Operation of a Proposed Mixed Oxide Fuel Fabrication Facility at the Savannah River Site, South Carolina (MFFF EIS)* (NRC 2005), which evaluated construction of MFFF. In this *SPD Supplemental EIS*, the environmental impacts associated with MFFF operations and the Aqueous Polishing Process are evaluated.

MFFF is primarily intended as a facility to fabricate plutonium oxide into MOX fuel. Under some of the options for pit disassembly and conversion evaluated in this *SPD Supplemental EIS*, metal oxidation furnaces and associated gloveboxes would be installed at MFFF to convert metallic plutonium to plutonium oxide for use at MFFF. For these options, no new structures would need to be constructed, and only minor modifications would be required. The proposed oxidation process is not a PUREX (plutonium-uranium extraction) process, nor does it interact with the MFFF Aqueous Polishing Process.

The waste associated with all MFFF operations, including any aqueous polishing, has been evaluated in this *SPD Supplemental EIS*, as discussed in Chapter 4 and Appendices F and G. The possible need for amendments to the *MFFF EIS* (NRC 2005) or the MFFF license application is outside the scope of this *SPD Supplemental EIS*. As needed, amendments would be addressed at the appropriate time with NRC. For further discussion, refer to Section 2.4, Topic A, of this CRD.

158-33 Use of H-Canyon/HB-Line for pit processing is related to pit disassembly and conversion and, therefore, is most appropriately addressed as part of this *SPD Supplemental EIS.* See the response to comment 158-9 regarding a new programmatic evaluation of alternatives.

158-34 DOE believes that the alternatives analyzed in this *SPD Supplemental EIS* meet the goals of the Spent Fuel Standard. The Spent Fuel Standard is a term, coined by the National Academy of Sciences and modified by DOE, denoting the main objective of alternatives for the disposition of surplus weapons-usable plutonium: that such plutonium be made roughly as inaccessible and unattractive for weapons use as the much larger and growing stock of plutonium in civilian spent (used) nuclear fuel. Removal of WIPP from further analysis in the *Storage and Disposition PEIS* (DOE 1996) was not based on the Spent Fuel Standard. WIPP was not considered for further analysis in the *Storage and Disposition PEIS* because disposal of 50 metric tons (55 tons) of surplus plutonium would exceed WIPP's disposal capacity.

Commentor No. 158 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

promptly addressed. For example, this document is listed as a reference but has not been publicly available but must be made available during the comment period: *MPR (MPR Associates, Inc.), 2011, Pit Disassembly and Conversion Project-Evaluation of Alternatives, MPR-3651, Rev 0, November*. (Page S-59)

40 CFR §1502.21 supports the above interpretation and states: "Incorporation by reference. Agencies shall incorporate material into an environmental impact statement by reference when the effect will be to cut down on bulk without impeding agency and public review of the action. The incorporated material shall be cited in the statement and its content briefly described. No material may be incorporated by reference unless it is reasonably available for inspection by potentially interested persons within the time allowed for comment. Material based on proprietary data which is itself not available for review and comment shall not be incorporated by reference."

158-38 cont'd

In conclusion, the MOX program still remains an expensive, speculative program which likely can't be implemented due to a host of problems. DOE's attempt to avoid problems facing the program is a strategy doomed to failure and the time to end that approach has arrived. The Draft SEIS is inadequate from both technical and legal perspectives and the conflicting "preferred alternatives" aren't consistent with NEPA requirements, which necessitates that the entire NEPA process concerning the vexing problem of what to do with surplus weapons plutonium be started anew.

Respectfully Submitted,

Tom Clements, Alliance for Nuclear Accountability (ANA)
Susan Corbett, South Carolina Chapter of the Sierra Club
David Culp, Friends Committee on National Legislation (FCNL)
Ralph Hutchison, Oak Ridge Environmental Peace Alliance (OREPA)
Jim Warren, NC Waste Awareness and Reduction Network (NC WARN)
Sara Barczak, Southern Alliance for Clean Energy (SACE)
Lou Zeller, Blue Ridge Environmental Defense League (BREDL)
Gretel Johnston, Bellefonte Efficiency & Sustainability Team (BEST)
and Mothers Against Tennessee River Radiation (MATRR)
Glenn Carroll, Nuclear Watch South
Bobbie Paul, Georgia Women's Action for New Directions (Georgia WAND)
Jay Coghlan, Nuclear Watch of New Mexico
Scott Yundt, Tri-Valley CAREs
Jerry Stein, The Peace Farm
Joni Arends, Concerned Citizens for Nuclear Safety (CCNS)
Allison Fisher, Public Citizens
Kendra Ulrich, Friends of the Earth
Mary Olson, Nuclear Information and resource Service (NIRS)
Rick Wayman, Nuclear Age Peace Foundation

17

As described in Chapter 2, Section 2.3.3, of this *SPD Supplemental EIS*, 2 metric tons (2.2 tons) of plutonium material could be disposed of at WIPP under the MOX Fuel Alternative. As described in Chapter 2, Section 2.3.5, 13.1 metric tons (14.4 tons) of plutonium material could be disposed of at WIPP under the WIPP Alternative. Both alternatives are considered reasonable for consideration in this *SPD Supplemental EIS* because neither alternative would result in generation of TRU waste sufficient to exceed WIPP's disposal capacity.

Chapter 4, Section 4.5.3.6.3, of this *Final SPD Supplemental EIS* discusses the amount of CH-TRU waste that is projected for disposal at WIPP, as published in the *Annual Transuranic Waste Inventory Report – 2012* (DOE 2012a), as well as the amount of unsubscribed CH-TRU waste capacity that would be necessary to support the alternatives analyzed in this *Final SPD Supplemental EIS*. As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

158-35 See the responses to comment 158-5 regarding other options for plutonium disposition and 158-9 regarding a new programmatic evaluation of alternatives.

158-36 DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9), including a beyond-design-basis earthquake with fire, and describes concerns identified by

Kathy Crandall Robinson, Women's Action for New Directions (WAND)
Catherine Thomasson, MD, Physicians for Social Responsibility (PSR)
Don Richardson, Western North Carolina Physicians for Social Responsibility
Ann Suellentrop M.S.R.N., Physicians for Social Responsibility-Kansas City
Ellen Thomas, Proposition One Committee
Judith Mohling, Rocky Mountain Peace and Justice Center (RMPJC)
Joan Brown, Partnership for Earth Spirituality
Laura Roskos, Ph.D., Women's International League for Peace and Freedom (WILPF)
Laura Sorensen, SAFE Carolinas
Alicia Godsberg, Peace Action New York State
David Kraft, Nuclear Energy Information Service (NEIS)
Barbara Warren, Citizens' Environmental Coalition
Bonnie Urfer, Nukewatch
Priscilla Star, Coalition Against Nukes (CAN)
Alice Hirt, Don't Waste Michigan
Michael J. Keegan, Coalition for a Nuclear Free Great Lakes
Linda Seeley, San Luis Obispo Mothers for Peace
Otetwin Schrubbe, Citizens for Alternatives to Chemical Contamination (CACC)
Maureen Headington, Stand Up/Save Lives Campaign
William Freese, Huron Environmental Activist League
Joan McCoy, Home for Peace and Justice
Donald Safer, Tennessee Environmental Council (TEC)
Kathleen Ferris, Citizens to End Nuclear Dumping in TN (ENDIT)
Bob Kinsey, The Colorado Coalition for Prevention of War
Beatrice Brailsford, Snake River Alliance

DNFSB. Appendix D, Section D.1.5.2.11, of this *Final SPD Supplemental EIS* describes the completed and planned seismic upgrades to PF-4. To be conservative, the accident analysis in this *Final SPD Supplemental EIS* considers the current state of PF-4 without future seismic upgrades. For further discussion, refer to Section 2.3, Topic B, of this CRD.

The current pit disassembly and conversion operations ongoing at LANL are performed in accordance with previous DOE NEPA analyses and decisions, including the 2008 *LANL SWEIS* (DOE 2008) and ROD (73 FR 55833). This *SPD Supplemental EIS* evaluates the impacts from potentially expanding these existing operations. Appendix B, Section B.2.1, of this *SPD Supplemental EIS* describes pit disassembly and conversion at PF-4 at LANL under the 2-metric-ton (2.2-ton) option, which is reflective of current operations, and the expanded facility (35-metric-ton [38.6-ton]) option, including the amounts of materials processed and the throughputs. As discussed in Appendix B, Section B.2.1, the ARIES line at PF-4 is operating at demonstration capacity (based on single-shift operation) to produce 2 metric tons (2.2 tons) of plutonium oxide as early feed for MFFF. Section B.2.1 also describes the upgrades to the current ARIES line that would be needed to accommodate an increase in throughput. The increases in throughput would be accomplished by using existing processing rooms in PF-4. The assessment of the surplus plutonium disposition activities at LANL in this *SPD Supplemental EIS* meets the NEPA requirements and provides DOE with the potential environmental impact data needed to support making a decision. As appropriate, the environmental impacts would be incorporated into the *LANL SWEIS* when it is next updated. For further discussion, refer to Section 2.3, Topic A, of this CRD.

158-37 DOE does not agree with the commentor's opinion about the need for this *SPD Supplemental EIS* to evaluate the environmental impacts of a halt to MFFF construction. As discussed in the response to comment 158-4, the production schedule for MFFF would depend on factors such as license conditions and the specific contracts received from customers to manufacture MOX fuel. The environmental impacts associated with the extended secure storage of plutonium in the K-Area Complex are included under the No Action Alternative.

158-38 The period for submitting comments on the *Draft SPD Supplemental EIS* closed on October 10, 2012. On the same day, DOE posted the references on the *SPD Supplemental EIS* website at http://nnsa.energy.gov/aboutus/ouroperations/generalcounsel/nepaoverview/nepa/spdsupplementaleis. Nonetheless, the *Draft SPD Supplemental EIS* and the cited resources on which DOE relied to support

Commentor No. 158 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

the analysis in the *Draft SPD Supplemental EIS* were available to the public for the duration of the comment period. Copies of the cited reference materials were sent along with copies of the document to all of the reading rooms and libraries listed in the Summary, Section S.13, of the *Draft SPD Supplemental EIS* prior to the beginning of the public comment period. However, there are certain types of information that are exempt from public release; in the *Draft SPD Supplemental EIS*, the reference "MPR 2012" contained such protected information. In response to requests for this document, DOE prepared a redacted version, which is now available for public release. Despite the stated closing date of the comment period, DOE considered all comments received on the *Draft SPD Supplemental EIS*, including those received after the close of the comment period.

Commentor No. 159: Tom Clements, Nonproliferation Policy Director Alliance for Nuclear Accountability

From: Tom Clements
Sent: Wednesday, October 10, 2012 4:35 PM
To: spdsupplementaleis@saic.com
Subject: Fwd: NEPA issue concering referenced documents & Draft SPD **Supplemntal** EIS - comment period extension request

Hello Ms. McAlhany,

I see the document I have requested is now listed in the SPD Draft SEIS section in the following way: MPR (MPR Associates, Inc.), 2011, Pit Disassembly and Conversion Project-Evaluation of Alternatives, MPR-3651, Rev 0, November. UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

This document is Unclassified Controlled Nuclear Information (UCNI). Please contact the Document Manager listed below for further information regarding this reference.

Sachiko McAlhany, NEPA Document Manager
SPD Supplemental EIS
U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324
Telephone: 1-877-344-0513

E-mail: spdsupplementaleis@saic.com

I do not see how withholding or list this document, which is not available for me review, comports with CEQ regulations: "No material may be incorporated by reference unless it is reasonably available for inspection by potentially interested persons within the time allowed for comment. Material based on proprietary data which is itself not available for review and comment shall not be incorporated by reference."

There appears to be some confusion about the regulations so I would appreciate clarification. It does appear to me that the comment period must legally be held open.

Sincerely,

Tom Clements

159-1

159-1 There are certain types of information that are exempt from public release under the Freedom of Information Act. The reference "MPR 2012" is a document that contains such protected information (e.g., UCNI). DOE prepared a redacted version, which is now available for public release.

In response to multiple requests for more time to review and comment on the *Draft SPD Supplemental EIS*, DOE extended the originally scheduled comment period by an additional 15 days through October 10, 2012. DOE believes this comment period was sufficient and did not further extend the comment period.

Commentor No. 159 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

-----Original Message-----
From: Tom Clements
To: spdsupplementaleis <spdsupplementaleis@saic.com>
Cc: drew.grainger
Sent: Tue, Oct 9, 2012 5:55 pm
Subject: NEPA issue concering referenced documents & Draft SPD Supplemntal EIS - comment period extension request

Hello Ms. McAlhany, SPD Supplemental EIS NEPA Document Manager:

According to the interpretation given to me, all documents listed as references in the draft SEIS documents must be available publicly. This has been a recurring issue with DOE EIS documents and needs to be promptly addressed. For example, this document is listed as a reference but has not been publicly available during the course of the comment period but must be made available during the comment period: MPR (MPR Associates, Inc.), 2011, Pit Disassembly and Conversion Project-Evaluation of Alternatives, MPR-3651, Rev 0, November. (Page S-59)

40 CFR §1502.21 - COUNCIL ON ENVIRONMENTAL QUALITY regulations - supports the above interpretation and states: "Incorporation by reference. Agencies shall incorporate material into an environmental impact statement by reference when the effect will be to cut down on bulk without impeding agency and public review of the action. The incorporated material shall be cited in the statement and its content briefly described. No material may be incorporated by reference unless it is reasonably available for inspection by potentially interested persons within the time allowed for comment. Material based on proprietary data which is itself not available for review and comment shall not be incorporated by reference."

I was under the impression that at least a reviewed Pit Disassembly and Conversion Project-Evaluation of Alternatives, MPR-3651, Rev 0 document would be released to me after I raised this matter earlier but nothing has as of yet been provided.

I would appreciate a response to this concern as it hasn't been resolved after my request of about two months ago for the document in question.

Also, I am told that other referenced documents are not available.

I request that the comment period be extended beyond October 10 until such time as the document I requested, and all other referenced documents, be made available.

Sincerely,

Tom Clements
Alliance for Nuclear Accountability

159-2

159-2 In response to multiple requests for more time to review and comment on the *Draft SPD Supplemental EIS*, DOE extended the originally scheduled comment period by an additional 15 days through October 10, 2012. On the same day, DOE posted the references on the *SPD Supplemental EIS* website at http://nnsa.energy.gov/aboutus/ouroperations/generalcounsel/nepaoverview/nepa/spdsupplementaleis. Nonetheless, the *Draft SPD Supplemental EIS* and the cited resources on which DOE relied to support the analysis in the *Draft SPD Supplemental EIS* were available to the public for the duration of the comment period. Copies of the cited reference materials were sent along with copies of the document to all of the reading rooms and libraries listed in Summary, Section S.13, of the *Draft SPD Supplemental EIS* prior to the beginning of the public comment period. See the response to comment 159-1 regarding information exempt from public release under the Freedom of Information Act. Despite the stated closing date of the comment period, DOE considered all comments received on the *Draft SPD Supplemental EIS*, including those received after the close of the comment period.

Commentor No. 160: Edward S. Henderson, P. E.

From: Henderson, Edward S
Sent: Wednesday, October 10, 2012 2:57 PM
To: spdsupplementaleis@saic.com
Subject: Agree With Mixed Fuel For Power Reactors

160-1

Edward S. Henderson, P. E

160-1 DOE and TVA acknowledge the commentor's opinion.

Commentor No. 161: Mack MacKenzie

From: MacKenzie, Mack
Sent: Wednesday, October 10, 2012 3:11 PM
To: spdsupplementaleis@saic.com
Subject: AGREE WITH DOE's PREFERRED OPTION

AGREE WITH DOE's PREFERRED OPTION *161-1*

161-1 DOE acknowledges the commentor's opinion.

Commentor No. 162: Arjun Makhijani, Ph.D.
Institute for Energy and Environmental Research

ieer

INSTITUTE FOR ENERGY AND ENVIRONMENTAL RESEARCH

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Takoma Park, MD 20912

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Comments of the Institute for Energy and Environmental Research on the Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (DOE/EIS-0283-S2) Issued by U.S. Department of Energy's National Nuclear Security Administration, July 2012

by Arjun Makhijani, Ph.D.
October 10, 2012

Submitted via email to spdsupplementaleis@saic.com

I. Overview

The Institute for Energy and Environmental Research (IEER) is in general agreement with the comments, analysis, and recommendations filed by the Alliance for Nuclear Accountability (ANA) and others[1] on the Draft Supplemental Environmental Impact Statement DOE/EIS-0283-S2 (Draft SEIS). IEER's main comments, including some drawn from ANA et al. 2012, can be summarized as follows:

- The DOE has not identified specific utilities that have agreed to use MOX fuel or utilities that have made commitments to test MOX fuel. The reactors belonging to TVA identified by in the Draft EIS do not meet this test, since the TVA has not agreed to use MOX fuel produced by the DOE. Further, three of the five TVA reactors identified by the TVA are boiling water reactors (BWRs). MOX made from weapons plutonium has never been used on a commercial scale in power reactors and has never even been tested in Boiling Water Reactors (BWRs). *162-1*
- Given the that the waste confidence rule and decision of the Nuclear Regulatory Commission (NRC) has been vacated by a federal court, the NRC has suspended all licensing and relicensing decisions. Given the license expiry dates of the TVA reactors, among other factors, it is unclear if the identified reactors will be available to consume all the MOX fuel that DOE plans to produce. *162-2*
- In view of the fact that the Tennessee Valley Authority has not agreed to use MOX fuel made from weapons-grade plutonium, the DOE's "Preferred Alternative" is lacking an essential element. The additional MOX that is identified in the Preferred Alternative in *162-3*

162-4

[1] Alliance for Nuclear Accountability et al., "Group Comments Submitted for the Record of the Department of Energy's *Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement* (DOE/EIS-0283-S2, July 2012)," October 10, 2012, referred to hereafter as ANA et al. 2012.

162-1 The disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts as required by NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in generic commercial nuclear power reactors, including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2). This *SPD Supplemental EIS* also provides specific analysis of five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Section I.1).

162-2 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

162-3 The NRC published its final rule on the Continued Storage of Spent Nuclear Fuel, formerly known as Waste Confidence, in the *Federal Register* on September 19, 2014 (79 FR 56238). NRC's final rule became effective on October 20, 2014. As of October 20, the previous NRC suspension on licensing actions was lifted. With respect to TVA's Browns Ferry and Sequoyah Nuclear Plants, which may irradiate MOX fuel, any TVA license renewal or amendment applications would be in accordance with applicable NRC regulations and policies.

162-4 DOE and TVA currently have an existing interagency agreement to explore the possibility of MOX fuel use in TVA's nuclear power reactors.

Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In the *Draft SPD Supplemental EIS*, the MOX Fuel Alternative was DOE's Preferred Alternative for surplus plutonium disposition. DOE's preferred option for disposition of surplus non-pit plutonium that is not suitable for MOX fuel fabrication was disposal at WIPP. DOE's preferred option for pit disassembly and conversion of surplus plutonium metal, regardless of its origins, was to use some combination of facilities at TA-55 at LANL and K-Area, H-Canyon/HB-Line, and MFFF at SRS, rather than to construct a new stand-alone facility.

Commentor No. 162 (cont'd): Arjun Makhijani, Ph.D. Institute for Energy and Environmental Research

the Draft EIS would add to the 34 metric tons previously slated for MOX fuel production. The two matters are linked since the additional MOX would aggravate the problem of finding a sufficient number of reactors to use it within a reasonable time frame or even to use it at all. *162-4 cont'd*

- There would be storage costs and impacts if some or all of the produced MOX fuel has to be stored for a long period at SRS, if sufficient reactor facilities are not available and licensed to use weapons-MOX fuel. The impacts of prolonged storage of MOX fuel in case sufficient reactor capacity to irradiate it is not available should be evaluated. *162-5*
- The costs of the MOX program are escalating out of control. This increases the likelihood of the entire program failing, especially given the tight federal budgetary environment. It is therefore essential for DOE to identify cheaper alternatives for the entire amount of plutonium that has been declared surplus to US nuclear weapons requirements, including the 13.1 metric tons considered in the Draft SEIS and the 34 metric tons that was not considered in it because it was previously slated for MOX fuel production. Given that cost increases, delays, and technical issues have put these plans into jeopardy, it is essential for DOE, both on security and environmental grounds to evaluate disposition alternatives for the entire surplus plutonium inventory. *162-6*
- The plutonium disposition EIS must contain a "[a] full discussion of revisions of facilities at SRS and Los Alamos to process plutonium from nuclear weapons "triggers"" as stated in ANA et al. 2012. *162-7*
- The agreement with Russia on surplus weapons plutonium disposition is not a treaty and the US can proceed to treat plutonium as a waste to be disposed of, especially given that Russia is proceeding on its own path and is not going to use MOX fuel in light water reactors. *162-8*
- In view of the analysis in these comments, we conclude that the Draft SEIS is partial and essentially incomplete. It does not identify a valid and complete Preferred Alternative. As such it does not meet the requirements of the National Environmental Policy Act. It is essential for DOE to prepare a new or supplemental Programmatic Environmental Impact Statement (PEIS) for the entire surplus plutonium disposition program. A number of other parties have also asked for this.[2] *162-9*
- An alternative that would process all surplus plutonium, including the 34 metric tons previously slated for MOX fuel production, and the 13.1 metric tons under consideration in the Draft SEIS, as TRU waste for disposal in a deep geologic repository should be evaluated. If the volume of TRU waste thus produced cannot be accommodated within the present legal framework for WIPP, other repository options should be evaluated. *162-10*

More detail on some of these points is provided below.

II. The preferred alternative is incomplete and invalid

The Draft SEIS defines the "Preferred Alternative" as follows:

> ***Preferred Alternative:*** The MOX Fuel Alternative is DOE's Preferred Alternative for surplus plutonium disposition. DOE's preferred option for pit disassembly and

[2] ANA et al. 2012.

In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a Federal Register notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose.

162-5 MFFF would not produce MOX fuel on a commercial scale unless contracts or other arrangements are in place for its use; therefore, accumulation of fresh MOX fuel at SRS and long-term storage of this fuel would not occur.

162-6 As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS,* but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. The action alternatives evaluated for the 13.1 metric tons (14.4 tons) of surplus plutonium are the Immobilization to DWPF Alternative, MOX Fuel Alternative, H-Canyon/HB-Line to DWPF Alternative, and WIPP Alternative.

For decisions within the scope of this *SPD Supplemental EIS*, cost, schedule, technical viability, worker and public safety, environmental impacts, security, and the ability to carry out international agreements are among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

162-7 In this *SPD Supplemental EIS*, DOE considers a variety of options for plutonium pit disassembly and conversion, including construction of a new stand-alone facility at SRS, modification of facilities at SRS that either already exist (H-Canyon/HB-Line and K-Area Complex) or are already under construction (MFFF), and modification of existing facilities at LANL. Appendix B provides a description of the facilities and construction and modification activities that would occur under the surplus plutonium disposition alternatives. Environmental impacts and risks from facility construction, modification, and operation in support of plutonium disposition are evaluated in Chapter 4 and are summarized in Chapter 2, Section 2.6, Table 2–3.

Commentor No. 162 (cont'd): Arjun Makhijani, Ph.D.
Institute for Energy and Environmental Research

> the conversion of surplus plutonium metal, regardless of its origins, to feed for MFFF [MOX Fuel Fabrication Facility] is to use some combination of facilities at Technical Area 55 at Los Alamos National Laboratory and K-Area, H-Canyon/HB-Line, and MFFF at SRS, rather than to construct a new stand-alone facility. This would likely require the installation of additional equipment and other modifications to some of these facilities. DOE's preferred alternative for disposition of surplus plutonium that is not suitable for MOX fuel fabrication is disposal at WIPP. *The TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose.*[3]

This is not a valid preferred alternative disposition option for plutonium since it is fundamentally incomplete.

First, as the Draft SEIS itself states, "[t]he TVA does not have a preferred alternative." Indeed, the TVA has not asked the NRC for consideration of the safety of weapons-MOX fuel use in any of its reactors, to say nothing of the troubled Browns Ferry reactors. The actions that the TVA would have to take to get these reactors approved by the NRC for weapons-MOX fuel use include safety and environmental reports, and, very likely, the preparation of an EIS by the NRC. It is difficult to imagine that the NRC would grant a license amendment for weapons-MOX fuel use in any reactors, much less reactors that are similar in design to the stricken Fukushima Daiichi reactors (as is the case with the Browns Ferry units), without a full EIS and safety evaluation. *162-11*

Second, the licenses of two of the five reactors specified in the Draft EIS, TVA's Sequoyah reactors, expire in 2020 and 2021. This would be just after the presently estimated commissioning of the MOX plant in 2018. While the Sequoyah reactors could, in theory, be relicensed for another twenty years, it is essential to note that at present all commercial reactor licensing and relicensing decisions have been suspended by the NRC since its waste confidence rule was vacated by a federal appeals court in June 2012. The vacated rule was an essential basis of NRC reactor licensing and license extension decisions. While the NRC plans to issue an EIS to resurrect some form of the waste confidence rule, it is unclear whether the new document will meet the criteria set forth in the appeals court decision. Among other things the court required the NRC to consider long-term, even indefinite storage on-site of spent fuel, given that the availability of a repository is not assured. But the NRC decision setting forth the framework for the EIS includes consideration of only a limited time frame.[4] The outcome of an EIS process that actually addressed on site storage for hundreds of years is at present unknown. It cannot be assumed, *a priori*, that the impacts of such storage would be small. Therefore, it cannot be assumed that the Sequoyah reactors will be relicensed. The Draft EIS cannot rely on these reactors as part of the preferred alternative both because TVA has not agreed to weapons-MOX fuel use in them and because their license extensions are at present in question and will remain so for some time. *162-12*

[3] Draft SEIS Summary, p. iv, italics added.
[4] R. W. Borchardt, Executive Director for Operations, memorandum to Annette L. Vietti-Cook, Secretary, "Subject: Staff Requirements – COMSECY-12-0016 – Approach for Addressing Policy Issues Resulting from Court Decision to Vacate Waste Confidence Decision and Rule," NRC, September 6, 2012. Hereafter NRC 2012.

162-8 DOE evaluated disposition of plutonium as waste in this *SPD Supplemental EIS*, in addition to analyzing the disposition of some of this material as MOX fuel.

162-9 See the response to comment 162-4 regarding the Preferred Alternative, as well as the response to comment 162-6 regarding previous decisions. DOE believes that the decision to prepare this *SPD Supplemental EIS* complies with CEQ and DOE regulations and guidance. Refer to Section 2.1, Topic A, of this CRD regarding the need for a new or supplemental programmatic EIS.

162-10 See the response to comment 162-6 regarding previous decisions.

As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. The action alternatives evaluated for the 13.1 metric tons (14.4 tons) of surplus plutonium are the Immobilization to DWPF Alternative, MOX Fuel Alternative, H-Canyon/HB-Line to DWPF Alternative, and WIPP Alternative. In response to comments on the *Draft SPD Supplemental EIS*, DOE expanded the WIPP Alternative in this *Final SPD Supplemental EIS* to include potential disposal of all 13.1 metric tons (14.4 tons) of the surplus plutonium for which a disposition path is not assigned.

162-11 See the response to comment 162-4 regarding the revised Preferred Alternative. TVA is evaluating the use of MOX fuel as an alternative to LEU fuel in its reactors. Any reactor license modifications that may be required for TVA or other commercial reactor plant operators who might plan to use MOX fuel would be subject to NRC NEPA regulations in 10 CFR 51, as part of the NRC licensing process under 10 CFR Part 50.

162-12 See the response to comment 162-3 regarding the Waste Confidence Rule.

As discussed in the response to comment 162-1, DOE believes that MOX fuel could potentially be used in any domestic commercial nuclear power reactor. As described in comment 162-2, the need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process.

Commentor No. 162 (cont'd): Arjun Makhijani, Ph.D.
Institute for Energy and Environmental Research

The license of the three Browns Ferry reactors expire in 2033 (Unit 1), 2034 (Unit 2), and 2036 Unit 3). None of these units will be able to accommodate the anticipated 24 years that the Draft SEIS estimates would be the operational life of the MOX facility;[5] indeed, it unclear if even a much shorter period could be accommodated. The MOX plant would have to produce fuel that would be specifically designed for BWRs and this fuel would need to be tested. Hence the beginning of full scale use (one-third MOX core) at Browns Ferry could not begin until well into the decade of the 2020s even if there are no further delays in completing the work on the MFFF and the related facilities that are needed.

162-12 cont'd

In view of the above scheduling and licensing issues, the DOE has not identified licensed reactors for half or more of its MOX fuel production, quite apart from the fact that the TVA has not agreed to use or test any of it.

Hence, the Preferred Alternative is essentially incomplete even in its own terms. The appeal to "generic reactors" in the Draft SEIS as possible facilities for weapons-MOX irradiation is entirely speculative and without technical or legal foundation; it raises a host of questions. Would they be existing reactors? Given the parade of utilities that have backed out of weapons-MOX fuel use after expressing interest, striating in the mid-1990s, this is an unlikely and speculative prospect. If the term "generic design" refers to new designs of reactors, then there are even more questions: Are they certified designs? If not, when would they be certified? Would they be certified for MOX fuel use? Would they need fuel different from the types that the DOE currently plans to manufacture? What would be the schedule of licensing and constructing such reactors? How would that schedule match with the planned production schedule of the MOX plant? It is worth noting explicitly, though it should go without saying, that the claims of reactor vendors cannot be a basis for assuming some new reactor design could use weapons-MOX fuel. Only and NRC certification could provide such a basis.

162-13

Third, given the history of delays that have plagued the MOX program, and the likelihood of further delays arising for instance, from the need to add to and modify facilities at Los Alamos, another epicenter of cost overruns and delays (not to speak of seismic issues), it is unclear even a decade of post-testing MOX fuel use could be accommodated at two or even all three of the Browns Ferry reactors.

162-14

Fourth, the Draft EIS admits that the amount of spent fuel to be stored will increase by 2 to 16 percent during the period weapons-MOX fuel use.[6] Given that the waste confidence decision has been vacated and the needed EIS process has not even begun (no formal scope has been published as yet), it is incorrect to assume that the impacts of extended spent fuel storage will be small. MOX spent fuel will add to the risks, costs, and potential impacts. Indeed, a central problem with the Draft SEIS is that it implicitly assumes the impacts of MOX spent fuel storage are small:

162-15

[5] Draft SEIS, Vol. 2, Table C-30, p. C-25.
[6] Draft EIS, Vol. 2, Appendix I, p. I-17.

162-13 See the response to comment 162-4 regarding the Preferred Alternative. As discussed in its response to comment 162-1, DOE believes that MOX fuel could potentially be used in any domestic commercial nuclear power reactor; therefore, this *SPD Supplemental EIS* analyzes the environmental impacts of irradiating MOX fuel in generic reactors, including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2).

DOE recognizes that use of MOX fuel in one or more domestic commercial nuclear power reactors would be under the terms of NRC license(s) amendment. NRC would only issue a license agreement or license amendments to each applicable reactor operator when it is satisfied that the reactor can operate safely and within all design parameters. For further discussion, refer to Section 2.4, Topic A, of this CRD.

162-14 In this *SPD Supplemental EIS*, DOE has evaluated reasonable alternatives associated with the disposition of 13.1 metric tons (14.4 tons) of surplus plutonium, including disposal as waste and use as MOX fuel, as well as options for the pit disassembly and conversion capability using existing facilities as alternatives to constructing a new stand-alone PDCF at SRS. Appendix B, Table B–2, presents the expected construction and operation durations for surplus plutonium disposition facilities. Cost, schedule, technical viability, worker and public safety, environmental impacts, security, and the ability to carry out international agreements are among the factors that the decisionmaker may consider when selecting an alternative for implementation.

As discussed in the response to comment 162-1, DOE believes that MOX fuel could potentially be used in any domestic commercial nuclear power reactor.

162-15 See the response to comment 162-3 regarding the Waste Confidence Rule.

Commentor No. 162 (cont'd): Arjun Makhijani, Ph.D. Institute for Energy and Environmental Research

> It is expected that increases of this magnitude would be managed within the reactor's normal planning for storage in its used fuel storage pool or dry storage casks.[7]

There is at present no valid estimate of the environmental impacts of prolonged spent fuel storage, and such impacts are required to be calculated by federal court order:

> …[W]e hold the WCD [Waste Confidence Decision] is defective on far simpler grounds: As we have determined, the WCD is a major federal action because it is used to allow the licensing of nuclear plants….Therefore, the WCD requires an EIS or, alternatively, an EA that concludes with a finding of no significant impact. The Commission did not supply a suitable FONSI here because it did not examine the environmental effects of failing to establish a repository.
>
> Even taking the Commission's word that the WCD constitutes an EA for the permanent storage conclusion,…the EA is insufficient because a finding that "reasonable assurance exists that sufficient mined geologic repository capacity will be available when necessary," …does not describe a probability of failure so low as to dismiss the potential consequences of such a failure. Under NEPA, an agency must look at both the probabilities of potentially harmful events and the consequences if those events come to pass….An agency may find no significant impact if the probability is so low as to be "remote and speculative," or if the combination of probability and harm is sufficiently minimal….Here, a "reasonable assurance" that permanent storage will be available is a far cry from finding the likelihood of nonavailability to be "remote and speculative." The Commission failed to examine the environmental consequences of failing to establish a repository when one is needed.
>
> …[W]e are focused on the effects of a *failure* to secure permanent storage. The Commission apparently has no longterm plan other than hoping for a geologic repository. If the government continues to fail in its quest to establish one, then SNF will seemingly be stored on site at nuclear plants on a permanent basis. The Commission can and must assess the potential environmental effects of such a failure.[8]

The practical result of the action of the court that vacated the Waste Confidence Decision is that there is currently no valid environmental impact assessment of spent fuel storage for the long-term. Such an assessment is required even for LEU. Therefore, the Draft SEIS's assumption that additional MOX spent fuel storage could be accommodated as part of "normal planning" is not in compliance with the requirements of NEPA as currently interpreted. The NRC has decided to do an EIS,[9] and is not appealing the court's decision to vacate the Waste Confidence Decision.

162-15 cont'd

[7] Draft SEIS, Vol. 2, p. I-17.
[8] State of New York et al. v. Nuclear Regulatory Commission, U.S. Court of Appeals for the District of Columbia Circuit, No. 11-1045, June 8, 2012.
[9] NRC 2012.

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Commentor No. 162 (cont'd): Arjun Makhijani, Ph.D. Institute for Energy and Environmental Research

In view of the above considerations regarding the impacts of MOX spent fuel storage and the fact that there is at present no valid waste confidence rule, the Draft SEIS estimation of the environmental impacts MOX spent fuel storage is invalid under NEPA. A valid analysis must await the EIS process now envisaged by the NRC. Then the incremental impacts of extended MOX spent fuel storage must be added to that assessment. While the Commissioners of the NRC have asked the staff to complete the process in two years and limited the time frame for considering impacts of storage,[10] it is pertinent to note that the staff put the needed time at five years for a limited EIS and seven years for the full EIS that would include very long term storage (200 to 300 years).[11]

162-15 cont'd

The absence of reactors that would use all or even part of the MOX fuel and the waste as well as the suspension of licensing and relicensing decisions by the NRC, there is a real prospect that MOX fuel would just accumulate at Savannah River Site after production begins. The costs and impacts of long-term storage need to be taken into account in the SEIS. Further, if the storage time is long, increasing amounts of plutonium-241 will decay into americium-241. The usability of weapons-MOX fuel after prolonged storage needs to be examined in the SEIS. It is possible the sufficiently long storage would necessitate reprocessing to remove the americium-241, leading to higher costs, increased impacts, and greater delays. Such costs and delays may further jeopardize the entire program.

162-16

162-16 As discussed in the response to comment 162-5, MFFF would not produce MOX fuel on a commercial scale unless contracts or other arrangements are in place for its use; therefore, accumulation of fresh MOX fuel at SRS and long-term storage of this fuel would not occur.

IEER's analysis indicates that the Preferred Alternative in fundamentally incomplete and, given the lack of consideration of waste impacts and licensing issues discussed above, invalid. This reinforces the recommendation that it needs to be redone in the form of a supplemental or new PEIS.

162-17

162-17 See the response to comment 162-4 regarding the Preferred Alternative. Refer to Section 2.1, Topic A, of this CRD regarding the need for a new or supplemental programmatic EIS.

III. Alternatives

In view of the various fundamental problems with the Preferred Alternative in the Draft SEIS, which also generally affect the prior NEPA analysis and decision to convert 34 metric tons of weapons-grade plutonium into MOX, it is essential that non-MOX alternatives be explored in more detail for all the surplus plutonium. Specifically, these alternatives must take into account the plain reality that the spent fuel standard for plutonium is obsolete and is not being followed by the DOE regarding at least some of the plutonium that DOE is disposing of and/or proposes to dispose of at WIPP. IEER is in agreement with the following comments and analysis in ANA et al. 2012:

> DOE earlier presented that getting plutonium into a form which had the equivalent radiation barrier as spent fuel – the so-called "spent fuel standard" –

162-18

162-18 See the response to comment 162-6 regarding previous decisions, as well as the response to comment 162-4 regarding the revised Preferred Alternative.

DOE believes that the alternatives analyzed in this *SPD Supplemental EIS* meet the goals of the Spent Fuel Standard. The Spent Fuel Standard is a term, coined by the National Academy of Sciences and modified by DOE, denoting the main objective of alternatives for the disposition of surplus weapons-usable plutonium: that such plutonium be made roughly as inaccessible and unattractive for weapons use as the much larger and growing stock of plutonium in civilian spent (used) nuclear fuel.

[10] NRC 2012.
[11] Memorandum from R. W. Borchardt, Executive Director for Operations, to NRC Chairman Macfarlane, Commissioner Svinicki, Commissioner Apostolakis, Commissioner Magwood, Commissioner Ostendorff, "Subject: Approach for Addressing Policy Issues Resulting from Court Decision to Vacate Waste Confidence Decision and Rule," COMSECY-12-0016, NRC July 9, 2012. See the table on p. 9 for suggested staff schedule.

was a main driver for the plutonium disposition program. Now, DOE quietly admits in the Draft SEIS that:

"DOE believes that the alternatives analyzed in this *SPD Supplemental EIS*, including the WIPP Alternative, provide protection from theft, diversion, or future reuse in nuclear weapons akin to that afforded by the Spent Fuel Standard." (S-14).

This admission is an affirmation that MOX isn't the only equally acceptable disposal option and underscores the need for a new, in-depth analysis for disposal of plutonium as waste. Given the lack of clarity with the MOX option, it is clear that a "Plan B" for non-MOX options is urgently required. This draft "alternatives study" must get underway immediately and DOE must fully explain as part of the NEPA process when this will be finished and when the public can comment.[12]

162-18 cont'd

The total volume of TRU waste processed for disposal using the criteria for acceptance at WIPP and a total of 47.1 metric tons of plutonium of all varieties to be processed and disposed of, the expected volume would be almost 50,000 cubic meters (in round numbers). This is estimated on the basis of 1 gram of plutonium-239 per liter of waste (which is about the same as 200 grams of plutonium-239 per 55-gallon drum, which is about 200 liters).

162-19

An analysis of the space available at WIPP within the Land Withdrawal Act limitations needs to be made. In the event that the full amount cannot be accommodated at WIPP, as is quite possible, other processing and repository disposal arrangements are also possible and need to be evaluated. The following are among the possibilities that should be evaluated:

1. The full amount could be processed as denatured MOX fuel unsuitable for use in a reactor, interspersed with LEU spent fuel, and disposed of in deep geologic repository for spent fuel.
2. A new repository could be cited for TRU waste generated by processing surplus plutonium into a disposable form. Such a repository would be similar to WIPP in that it would not be faced with the high heat load that is characteristic of commercial power reactor spent fuel, and that would also characterize MOX spent fuel. Hence, salt would be a suitable medium for citing the facility, lowering construction costs relative to hard rock. In any case, IEER has concluded that such a repository is needed for a large amount of other waste, such as commercial Greater-than-Class-C (GTCC) low level waste, what the DOE has called "GTCC-like" waste and other wastes, such as the activated graphite reactor blocks at Hanford that would cause severe water pollution if disposed of in a shallow disposal facility. This matter was discussed at length in earlier comments prepared by IEER for a different EIS process and filed by the Yakama Nation,.[13]

162-20

[12] ANA et al. 2012, p. 13.
[13] "Comments of the Institute for Energy and Environmental Research on the Department of Energy's Draft Environmental Impact Statement for the Disposal of Greater-Than-Class C (GTCC) Low Level Radioactive Waste and GTCC-Like Waste (DOE/EIS-0375-D), published in February 2011". These comments were part of the comments filed by the Yakama Nation on the Draft GTCC EIS in June 2011. See Attachment 3 at

162-19 See the response to comment 162-6 regarding previous decisions, as well as the response to comment 162-10 regarding disposal of surplus plutonium as CH-TRU waste at WIPP. Refer to Section 2.1, Topic A, of this CRD regarding the need for a new or supplemental programmatic EIS.

162-20 See the response to comment 162-6 regarding previous decisions and cost, as well as the response to comment 162-10 regarding disposal of surplus plutonium as CH-TRU waste at WIPP. See Chapter 2, Section 2.4.5 for a discussion of why the disposal of 13.1 metric tons (14.4 tons) of surplus plutonium at a second repository similar to WIPP was not considered in the *SPD Supplemental EIS*.

Disposal of surplus plutonium as unirradiated MOX fuel interspersed with used LEU fuel in a deep geologic repository is not considered in this *SPD Supplemental EIS*. This *SPD Supplemental EIS* analyzes alternatives that would result in disposal of surplus plutonium in used (irradiated) MOX fuel under the MOX Fuel Alternative and disposal of surplus plutonium in a deep geologic repository under the WIPP Alternative. The analyzed alternatives bracket the alternative suggested by the commentor. Disposal of surplus plutonium as unirradiated MOX fuel interspersed with used LEU fuel would consume resources necessary to produce MOX fuel, with all its attendant impacts, without the benefits of generating electrical energy from the surplus plutonium. The WIPP Alternative presents a more direct approach for deep geologic repository disposal of surplus plutonium without using the resources and producing the impacts associated with fabricating plutonium into MOX fuel. Because of this inefficiency, disposal of surplus plutonium as unirradiated MOX fuel interspersed with used LEU fuel in a deep geologic repository is not analyzed in this *SPD Supplemental EIS*.

Examining the long-term storage of used fuel is not within the scope of this *Final SPD Supplemental EIS*. For further discussion, refer to Section 2.7, Topic A, of this CRD.

The action alternatives evaluated in this *SPD Supplemental EIS* are the Immobilization to DWPF Alternative, MOX Fuel Alternative, H-Canyon/HB-Line to DWPF Alternative, and WIPP Alternative. An alternative involving a combination of disposal of the surplus plutonium by mixing it with HLW at DWPF and disposal as CH-TRU waste at WIPP would be a hybrid of the H-Canyon/HB-Line to DWPF Alternative and WIPP Alternative. A hybrid alternative could be selected in the ROD for this *Final SPD Supplemental EIS*.

3. Some of the plutonium could be mixed with high-level waste in DWPF at SRS (as now proposed in the Draft SEIS) and the rest could be disposed of at WIPP or a repository similar to it.

Even if a second repository for waste other than spent fuel is needed because the TRU waste generated cannot be accommodated at WIPP, the costs of plutonium processing and disposal are may well be less than that of completing all the MOX facilities, producing MOX, using it as a fuel, storing it on-site for a prolonged period and disposing it of in a deep geologic repository along with LEU spent fuel. It should be noted that MOX spent fuel disposal will take more room in a repository than LEU spent fuel due to its higher heat generation on all relevant time scales for similar levels of irradiation. Further, an advantage of disposing of all of surplus plutonium as a waste in a separate repository for all non-spent-fuel and non-high-level waste that would be problematic for surface disposal[14] would be that the Waste Acceptance Criteria need not be as stringent as they are at WIPP. For one thing, the new criteria would probably not have to include considerations such as liquids and chemical hazardous waste in the TRU waste made from surplus weapons plutonium.

162-20 cont'd

IV. Costs

DOE has not published an estimate of the cumulative costs of the MOX program. Future cumulative costs have been estimated in ANA et al. 2012 as $17.5 billion. That document also provides a figure of $100,000 per kilogram for preparation of surplus plutonium for disposal at WIPP.[15] Assuming that this is about the order of magnitude of processing surplus plutonium as TRU waste, the total preparation cost would be about $5 billion (rounded) for all surplus plutonium. The construction costs of WIPP for the repository alone, excluding waste preparation and packaging and transportation, amounted to roughly $3 to $4 billion in 2010 dollars. Assuming a similar cost for a new repository for low-heat waste, such as TRU waste, processing and disposal as TRU waste could cost on the order of $10 billion, perhaps less – which is considerably lower than the estimated cost of further pursuing the MOX program.

162-21

The point here is not to make a precise cost estimate but to show that the argument that the volume of TRU waste would be too large to manage if all surplus plutonium is processed into TRU waste is does not hold up to scrutiny. Yet, the Draft SEIS rejects even the processing of 13.1 metric tons into TRU waste on the grounds that there would not be sufficient capacity at WIPP.[16] Insufficient space at WIPP is not a valid reason for rejecting the TRU waste option out of hand. As discussed, it is essential for a variety of reasons, that the DOE evaluate non-MOX alternatives for all surplus plutonium, including the entire 13.1 metric tons that are the subject of the Draft SEIS and the 34 metric tons previously slated for MOX fuel production.

162-22

http://ieer.org/wp/wp-content/uploads/2011/06/GTCC-EIS-Comments-2011_YakamaNation_with_IEER.pdf. Hereafter referred to as IEER 2011.
[14] See IEER 2011.
[15] ANA et al. 2012, p. 5.
[16] Draft SEIS 2012, Summary, p. S-33.

162-21 See the response to comment 162-6 regarding previous decisions and cost, as well as the response to comment 162-10 regarding disposal of surplus plutonium as CH-TRU waste at WIPP.

162-22 See the response to comment 162-6 regarding previous decisions, as well as the response to comment 162-10 regarding disposal of surplus plutonium as CH-TRU waste at WIPP.

Commentor No. 163: Ruth Thomas, Environmentalists, Inc.
Carol Urner, Women's International League for Peace and Freedom
Ellen Thomas, Proposition One Campaign

From: Ellen Thomas
Sent: Wednesday, October 10, 2012 4:58 PM
To: spdsupplementaleis@saic.com; GeneralForm@nrc.gov
Subject: Comments on DOE's SPD Supplemental EIS

TO: US Department of Energy and Nuclear Regulatory Commission

Comments continued on Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SPDSEIS).

Thank you for sending us the Plutonium Management Disposition Agreement (PMDA) and for identifying Section D in Volume 2 as the place to find discussions of human error and accidents. Several researchers are focusing on the information contained in both. We are continuing to seek answers to our questions regarding the Department of Energy (DOE)'s proposal to dispose of surplus plutonium pits from nuclear bombs in mixed oxide fuel (MOX) in nuclear reactors.

Some of the problem is SPDSEIS itself. It is not a scientific document. Its failures are numerous:

* The lack of adequate footnoting.
* Few connections are made between statements in the text, conclusions, and decisions reached, and any supporting evidence. ***163-1***
* The testimony of witnesses at adjudicatory proceedings is missing, yet such testimony is a valuable source of documentation because the witnesses are responding under oath to cross-examination questions.

We also found very little reference to evidence related to actual happenings, such as radioactive pollution from leaks into the soil from reactor piping, contamination of food and water, worker exposures, maintenance problems, human error in the workplace, design mistakes, faulty predictions, estimates based on incomplete data, major accidents such as the partial meltdown at Three Mile Island and the meltdowns at Fukushima's reactors and spent nuclear fuel cooling pond.

Beyond all of this there is a basic underlying assumption on the part of the DOE, electric utilities, and the Nuclear Regulatory Commission (NRC), and other nuclear proponents that it is possible to overcome the properties of radioactive materials -- a confidence that nuclear power would be a favored choice, with enough safety measures, enough rules and regulations, enough containment measures, enough backup systems to take over in times of emergency, etc. We disagree. None of these measures can possibly provide complete protection from all circumstances, whether natural or man-made or a combination. ***163-2***

163-1 References are cited throughout the text of the document and are listed in detail in Chapter 7 of this *SPD Supplemental EIS*. Footnotes were used as necessary to elaborate on text throughout this *SPD Supplemental EIS*. In addition, refer to the Summary, Section S.13, for a description of the organization of this *SPD Supplemental EIS*. Chapter 4, Figure 4–1 illustrates the relationship of the surplus plutonium disposition alternatives and options and the presentation of impacts. There have been no adjudicatory proceedings related to this *SPD Supplemental EIS*.

163-2 Chapter 3 of this *SPD Supplemental EIS* describes aspects of the affected environment relevant to the impact analyses, including the presence of environmental contamination, for each of the locations at which activities have been proposed. Evaluated risks and impacts are presented in Chapter 4, with additional information provided in the appendices, and are summarized in Chapter 2, Section 2.6. Appendix J, Section J.3.3.3, of this *SPD Supplemental EIS* describes the NRC recommendations developed in response to the March 11, 2011, accident at the Fukushima Dai-ichi Nuclear Power Station in Japan and the subsequent actions TVA has taken to further reduce the likelihood and severity of accidents at its nuclear plants. For further discussion, refer to Section 2.5, Topic B, of this CRD.

As discussed in Appendix J, Sections J.1 and J.2, of this *SPD Supplemental EIS*, continued assurance of the safe operation of commercial nuclear power reactors is the responsibility of the plant operator which operates under the independent regulatory oversight of NRC, including NRC regulations and license conditions. If the plant operator were to make a decision to use MOX fuel, it would be the joint responsibility of the plant operator and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely. For further discussion, refer to Section 2.5, Topics A and B, of this CRD.

The United States' policy on the use of nuclear power and the cost of implementing regulatory requirements to maintain safety at the country's nuclear power facilities, including those operated by TVA, are outside the scope of this *SPD Supplemental EIS*. This *SPD Supplemental EIS* does consider the potential effect on safety of using MOX fuel at the Browns Ferry and Sequoyah Nuclear Plants and generic nuclear power reactors. TVA is a cooperating agency for this *SPD Supplemental EIS* and, as such, is not required to declare a preferred alternative. TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose. TVA, as a cooperating agency, may adopt this *Final SPD Supplemental EIS* after independently reviewing the EIS and determining that its comments and suggestions have been satisfied (40 CFR 1506.3(c)).

Commentor No. 163 (cont'd): Ruth Thomas, Environmentalists, Inc.
Carol Urner, Women's International League for Peace and Freedom
Ellen Thomas, Proposition One Campaign

Additionally, consideration needs to be given to the costs of all these elaborate, complex, expensive precautions, all of which are risks and burdens being forced on us taxpayers without our approval. ***163-2 cont'd***

It is clear from the description of the processes needed to convert "surplus" plutonium pits (page B-7 of Volume 2) into MOX powder, most operations must be done in sealed glove boxes to obtain as close as possible to absolute containment. No mention is included regarding the cost of doing this. This, along with a number of other topics, are excluded from the SPDSEIS by means of labeling any discussion as "beyond the scope of consideration." ***163-3***

The DOE's proposal is in conflict with the laws of nature, and also is in conflict with the intent and provisions of the National Environmental Policy Act (NEPA), as well as the Clean Water Act, the Clean Air Act, and the goals of the Environmental Protection Agency. ***163-4***

The Scoping Comments of 2007 and 2010 include many examples of what is wrong with the idea of converting metal plutonium pits into mixed oxide fuel for nuclear reactors. These examples don't appear to be bringing about reconsideration on the part of DOE. ***163-5***

In addition, the DOE is relying on the Tennessee Valley Authority (TVA) to do the first full test of MOX use in the USA. The SPDSEIS document also reports that Energy Northwest (Hanford commercial reactor on the Columbia River) and Duke Energy are considering testing the fuel. However in actuality ***163-6***

* Northwest Energy Board decided not to pursue this option on July 26 2012 until at least 2028 when it might reconsider.the possibility of using MOX in its Hanford Reactor http://www.tri-cityherald.com/2012/07/26/2033353/fuel-study-will-not-go-ahead-in.html
* Duke energy tested the fuel for two of three cycles but declined to continue the process after problems arose. http://www.timesfreepress.com/news/2012/sep/12/chattanooga-meeting-on-mox-fuel-draws-a-crowd / Even the TVA Board is divided on testing MOX and has not yet agreed to proceed.
* Areva of France, which is building the multi-billion MOX fuel supply plant, has been producing and marketing MOX for at least 20 years. Customers for the fuel have included Japan where it was used in the No 3 reactor in Fukishima. That is the one where MOX fuel rods burned ferociously for days and spewed lethal plutonium dust into the atmosphere.

Very little is said about spent fuel pools, the lack of geological repository, nor does SPDSEIS explain why the Yucca Mountain plan was abandoned. Other concerns, uncertainties, and questions are classified by DOE as "beyond the scope" of the report. This practice by both the DOE and the NRC of excluding subjects from ***163-7***

163-3 Since announcement of this *SPD Supplemental EIS,* DOE has provided three opportunities (in 2007, 2010, and 2012) for the public to provide scoping comments. The public was invited to comment on the scope of the *Draft SPD Supplemental EIS* either in person at public meetings; by telephone; or in writing by U.S. mail, email, or through the *SPD Supplemental EIS* website. Public comments were considered in developing the alternatives and revising them between the *Draft* and *Final SPD Supplemental EISs*. Chapter 1, Section 1.6, of the *Draft SPD Supplemental EIS* described the public scoping process, including a summary of the comments received and responses to those comments; the scoping comment summary appears in Appendix L of this *Final SPD Supplemental EIS.*

Some of the comments received during the scoping periods and the comment period on the *Draft SPD Supplemental EIS* are what DOE considers, in accordance with CEQ regulations, not related to the scope or content of the proposed action. Such comments include, but are not limited to: general support for or opposition to the proposed action; opinions about global issues; U.S. policies, including regarding nuclear power or nonproliferation; comments on issues that have no connection to or bearing on the proposed action; actions that are not under DOE's control or purview; and cost; (for TVA) issues not affecting or affected by the potential use of MOX fuel in its reactors; and cost. Although cost is a factor that may be considered by decisionmakers, it is not a parameter that is required to be evaluated in an EIS.

163-4 This *SPD Supplemental EIS* was prepared in accordance with applicable CEQ and DOE NEPA regulations. In Chapter 4 of this *SPD Supplemental EIS*, DOE analyzes the potential impacts of the proposed activities on the air and water surrounding the potential sites for these activities, and none of these impacts are expected to exceed regulatory limits or standards.

163-5 As described in Chapter 1, Section 1.6, of this *Final SPD Supplemental EIS*, scoping comments received during the 2007, 2010, and 2012 scoping periods were considered in preparing this *Final SPD Supplemental EIS*.

163-6 This *SPD Supplemental EIS* makes no statement about future testing of MOX fuel at reactors operated by Energy Northwest or Duke Energy. DOE cannot speak for either entity or their intentions regarding the use of MOX fuel. TVA reactors are evaluated in this *SPD Supplemental EIS* because DOE and TVA have entered into an interagency agreement to evaluate the use of MOX fuel in the Sequoyah and Browns Ferry Nuclear Plants.

As described in Chapter 2, Section 2.5, in this *Final SPD Supplemental EIS*, TVA is a cooperating agency for this *SPD Supplemental EIS* and is not required to declare

Commentor No. 163 (cont'd): Ruth Thomas, Environmentalists, Inc.
Carol Urner, Women's International League for Peace and Freedom
Ellen Thomas, Proposition One Campaign

consideration and discussion has contributed to the waste of billions of dollars, waste of time, and loss of opportunity to work on better energy choices. ***163-7 cont'd***

In addition to these detrimental outcomes are the effects on cities and towns. For example, Columbia SC is now being forced to seek other drinking water sources because of the massive amount of water required to cool two new reactors at VC Summer nuclear plant. ***163-8***

We are in agreement with the DOE's statement (page 4-2, Volume 2) which concludes that the impact would be small from continuing to store surplus weapons plutonium at Pantex. We understand that the reason for this is that plutonium pits, unlike plutonium oxide, are a solid metal rather than a powder. ***163-9***

We encourage DOE's decision-makers to take into consideration all the comments which have been submitted. Our researchers will be studying the comments of Alliance for Nuclear Accountability, Institute for Environmental and Energy Research, and many others who responded through a group or as individuals. Based on this outpouring of input, we ask that the DOE reconsider its proposal to use weapons grade plutonium in mixed oxide fuel. ***163-10***

Until a plan is discovered which is an improvement over storing surplus plutonium pits in their solid metal form, we recommend that surplus plutonium pits be kept where they are, that they not be put through the processes which change plutonium into plutonium oxide, and that plutonium oxide not be transported. ***163-11***

We recognize the significance of the evidence being brought out. It is crucial that those of us with a holistic viewpoint be heard and engaged in energy decisions.

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a preferred alternative. TVA does not have a preferred alternative in this *Final SPD Supplemental EIS*. From a technical perspective, DOE believes that MOX fuel could potentially be used in any domestic commercial nuclear power reactor.

As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

Accident analyses for U.S. nuclear power reactors already consider the radiological impacts of accidents like the Fukushima accident in that the safety evaluations include evaluation of beyond-design-basis accidents. As discussed in Appendix J, Section J.3, the analysis in this *SPD Supplemental EIS* compares the accident results for partial MOX fuel and full LEU fuel cores to determine whether the use of MOX fuel in these TVA reactors would make any substantive difference in the potential risks associated with the accidents analyzed. The beyond-design-basis accidents include severe accidents with a subsequent loss of containment similar to the accident at Fukushima. The results show that the consequences of such an accident, should it occur, would be comparable, regardless of whether the reactor was using a partial MOX fuel core or a full LEU core. DOE does not believe that the accident at the Fukushima Dai-ichi Nuclear Power Station changes this conclusion. At the time of that accident, the Fukushima Dai-ichi Nuclear Power Station's Unit 3 was operating using a partial MOX fuel core. However, at least one authority has determined that the accident involved failures unrelated to the use of MOX fuel, and there is no evidence to suggest that the presence of MOX fuel in Unit 3 increased the consequences of the accident (ONR 2011). For further discussion, refer to Section 2.5, Topic C, of this CRD.

163-7 Storage of used fuel at TVA's Browns Ferry and Sequoyah Nuclear Plants was analyzed in the NEPA documents prepared for these reactors (refer to Appendix A, Section A.3, of this *SPD Supplemental EIS*). Appendix J, Section J.3.3, includes an analysis of beyond-design-basis accidents for the TVA reactors. Used fuel pool

accidents were considered when developing the accident analysis presented in this *SPD Supplemental EIS*; however, the consequences associated with such accidents would be subsumed by the other beyond-design-basis accidents presented in this *SPD Supplemental EIS*.

Examining the construction and operation of a geologic repository for used nuclear fuel and HLW is not within the scope of this *SPD Supplemental EIS*. As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel. In addition, as discussed in Appendix B, Section B.1.4, of this *SPD Supplemental EIS*, DWPF canisters containing vitrified plutonium with HLW would be stored in S-Area at SRS; these DWPF canisters would be managed in the same manner as other DWPF canisters containing HLW. DOE has terminated the program for a geologic repository for used nuclear fuel and HLW at Yucca Mountain, Nevada. Notwithstanding the decision to terminate the Yucca Mountain program, DOE remains committed to meeting its obligations to manage and ultimately dispose of used nuclear fuel and HLW. For further discussion, refer to Section 2.7, Topic A, of this CRD.

In this *SPD Supplemental EIS*, DOE considers four action alternatives for the disposition of 13.1 metric tons (14.4 tons) of surplus plutonium and four options for pit disassembly and conversion of 35 metric tons (38.6 tons) of surplus plutonium. The alternatives involve DOE facilities at LANL, SRS, and WIPP. DOE also analyzes the potential environmental impacts of using MOX fuel in TVA's Browns Ferry and Sequoyah Nuclear Plants, as well as in one or more generic reactors.

163-8 Chapter 4, Section 4.5.3.5.1, projects the cumulative water use at SRS under the alternatives addressed in this *SPD Supplemental EIS*, as well as past, present, and reasonable foreseeable future actions in areas surrounding the proposed activities. The annual cumulative water use is projected to represent no more than about 14 percent of the SRS available groundwater use. Drinking water sources in the Columbia, South Carolina, area would be unaffected by the proposed activities at SRS. A region of influence for each resource area was determined when analyzing impacts to the environment (refer to Chapter 3, Table 3–1, of this *SPD Supplemental EIS*). The city of Columbia, South Carolina, and the VC Summer Nuclear Plant are located outside of the SRS region of influence for any resource area, and therefore are not considered within the scope of this *SPD Supplemental EIS.*

163-9 DOE acknowledges the commentor's opinion.

Commentor No. 163 (cont'd): Ruth Thomas, Environmentalists, Inc.
Carol Urner, Women's International League for Peace and Freedom
Ellen Thomas, Proposition One Campaign

163-10 As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) evaluated numerous alternatives for disposition of surplus plutonium. DOE selected an approach for disposition of some of the plutonium declared surplus (68 FR 20134). As discussed in Section 2.2, Topic A, of this CRD, DOE's prior disposition decisions are not addressed in this *SPD Supplemental EIS,* but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. These alternatives address continued storage of this plutonium, use of this plutonium as MOX fuel, and preparation of this plutonium for disposal as waste. All of the action alternatives evaluated in this *SPD Supplemental EIS* are considered to render surplus plutonium into a proliferation-resistant form or result in proliferation-resistant disposal. DOE anticipates that about 2 metric tons (2.2 tons) of the additional surplus plutonium would contain too many impurities for use as MOX fuel.

163-11 DOE acknowledges the commentor's opinion.

Commentor No. 164: Don Hancock
Southwest Research and Information Center

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October 10, 2012

Sachiko McAlhany
NEPA Document Manager
SPD Supplemental EIS
U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324 VIA: spdsupplementaleis@saic.com

RE: Additional comments on the Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SEIS)

Dear Sachicko McAlhany:

Southwest Research and Information Center (SRIC) earlier today submitted primary comments. SRIC is aware that just this afternoon some references were posted on the NNSA SPD website. As noted in our primary comments on page 3, SRIC believes that the reference MPR 2011 must be available given that the DSEIS does not provide any adequate technical basis for the alternative locations for pit disassembly and conversion. SRIC immediately went looked for reference MPR 2011 - *Pit Disassembly and Conversion Project-Evaluation of Alternatives*, MPR-3651, Rev 0, November. Unfortunately, that important reference is still not publicly available as it is "Unclassified Controlled Nuclear Information (UCNI)." SRIC notes that UCNI is not classified information, and thus the document should be available. Alternatively, it certainly is possible to have a publicly available version of that alternative evaluation. DOE/NNSA has not complied with regulatory requirements regarding the pit disassembly and conversion reference. ***164-1***

Further, SRIC reiterates its primary comment #11 that the comment period must be extended in order to comply with regulatory requirements for references, including those just made available today. ***164-2***

Thank you for your careful consideration of, and response to, these and all other comments.

Yours truly,

Don Hancock

164-1 The period for submitting comments on the *Draft SPD Supplemental EIS* closed on October 10, 2012. On the same day, DOE posted the references on the *SPD Supplemental EIS* website at http://nnsa.energy.gov/aboutus/ouroperations/generalcounsel/nepaoverview/nepa/spdsupplementaleis. Nonetheless, the *Draft SPD Supplemental EIS* and the cited resources on which DOE relied to support the analysis in the *Draft SPD Supplemental EIS* were available to the public for the duration of the comment period. Copies of the cited reference materials were sent along with copies of the document to all of the reading rooms and libraries listed in the Summary, Section S.13, of the *Draft SPD Supplemental EIS* prior to the beginning of the public comment period. However, there are certain types of information that are exempt from public release; in the *Draft SPD Supplemental EIS*, the reference "MPR 2012" contained such protected information. In response to requests for this document, DOE prepared a redacted version, which is now available for public release. Despite the stated closing date of the comment period, DOE considered all comments received on the *Draft SPD Supplemental EIS*, including those received after the close of the comment period.

164-2 In response to multiple requests for more time to review and comment on the *Draft SPD Supplemental EIS*, DOE extended the originally scheduled comment period by an additional 15 days through October 10, 2012.

Commentor No. 165: Whitney Nieman

[redacted]

October 9, 2012

To: Sachico McAlhany, SPD Supplemental EIS Manager
From: Whitney Nieman, [redacted]

My response regarding the storage of more plutonium at Los Alamos National Labs (LANL) and subsequently at the Waste Isolation Pilot Project (WIPP) is ABSOLUTELY NO!

I ask again for LANL to redirect their mission away from nuclear weapons, toward life-sustaining technology. For the 21st century WAR IS OBSOLETE. Nuclear weapons and drones are so lethal and indiscriminate that they kill not only innocent civilians but [redacted] our environment without a sense of direct accountability. Since you have no doubt heard all the talking points against the Surplus Plutonium Disposition, I leave you with these wise words of 3 great Americans.

"Never has there been a good war or a bad peace."
– Benjamin Franklin
Statesman, diplomat, author, scientist, inventor

"May the conscience and the common sense of the peoples be awakened, so that we may reach a new stage in the life of nations where people will look back on war as an incomprehensible aberration of their forefathers."
– Albert Einstein, genius physicist

"Mankind must put an end to war or war will put an end to mankind."
– President John F. Kennedy

Please AWAKEN to a new Life-Sustaining Mission!

Thank you

165-1 **165-1** For further discussion, refer to Section 2.2, Topic B, and Section 2.3, Topic A, of this CRD.

165-2 **165-2** Examining the mission of DOE at LANL is not within the scope of this *SPD Supplemental EIS*.

Commentor No. 166: Ron Martinez, Chairman of the Board Regional Development Corporation

REGIONAL DEVELOPMENT CORPORATION

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SPD Supplemental EIS
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October 9, 2012

To the Attention of the U.S. Department of Energy:

As the Community Re-Use Organization for Northern New Mexico, the Regional Development Corporation (RDC) works in and with communities of Northern New Mexico on a daily basis. We would like to convey our strong support for the National Nuclear Security Administration's (NNSA) plan to convert excess Plutonium used in nuclear weapons to non-weapons applications. *166-1*

Our board is comprised of business leaders from Santa Fe, Los Alamos and Rio Arriba Counties. As such, we would like to communicate our support for efforts to allow Los Alamos National Laboratory (LANL) to render unused nuclear weapons Plutonium into forms that would be easier to store and ultimately be reused for peaceful purposes. We believe the NNSA plan to allow LANL to process excess Plutonium into a weapons form is in the best interest of national security and will benefit the economy of Northern New Mexico.

Northern New Mexico faces many economic challenges. The five county region surrounding LANL has a combined poverty rate of 20% which is higher than that of Appalachia, and a combined unemployment rate of 9.2% which has historically hovered as these levels even as national unemployment dips. The RDC believes the project as proposed will bring in additional revenue to New Mexico and will increase employment at the Laboratory. We are further aware of the Department of Energy's efforts to turn excess Plutonium into sources for energy and believe that this work will be beneficial to the regional economy, to the Lab and to the Nation. *166-2*

As the US Department of Energy's designated Plutonium Center of Excellence, LANL has the nation's foremost experts in the science, engineering and technology development across a broad range of plutonium-centric programs. We understand there are safety concerns associated with any kind of nuclear work; however, we believe that LANL has the expertise to securely and safely manage nuclear material.

If you have any questions, I hope you would feel free to contact our Executive Director, Kathy Keith, at 505-820-1226.

Sincerely,

Ron Martinez
Chairman of the Board
Regional Development Corporation

166-1 DOE acknowledges the commentor's opinion.

166-2 DOE acknowledges the Regional Development Corporation's support for expanded pit disassembly and conversion at LANL. As described in Chapter 4 and summarized in Chapter 2, Section 2.6, Table 2–3, DOE believes additional processing could be performed without substantially increasing the impacts on the surrounding environment.

Commentor No. 167: Louis A. Zeller, Executive Director Blue Ridge Environmental Defense League

Blue Ridge Environmental Defense League
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October 10, 2012

Ms. Sachiko McAlhany
SPD Supplemental EIS
U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324.

RE: SPD Supplemental EIS, DOE/EIS–0283–S2

Dear Ms. McAlhany:

On behalf of the Blue Ridge Environmental Defense League and our members in South Carolina, Georgia, Tennessee and Alabama, I submit the following additional comments regarding the Surplus Plutonium Disposition Supplemental Environmental Impact Statement noticed in the Federal Register on July 27, 2012.[1] Our previous comments were submitted on September 4th by Charles N. Utley.

As you know, the SPD Supplemental EIS analyzes the environmental impacts of an additional 14.4 tons of plutonium from dismantled nuclear warheads, the manufacture of 37.5 tons of plutonium fuel at SRS, and its use in commercial nuclear reactors operated by the Tennessee Valley Authority at Sequoyah in Tennessee and Browns Ferry in Alabama.[2]

Nuclear Contractor at SRS Disregards Health and Safety

Estimates of the costs of the plutonium fuel program construction project are now approximately $9.7 billion. The principal contractor for the plutonium fuel factory, and most likely for the proposed additional operations, is Shaw AREVA MOX Services, formerly known as Duke Cogema Stone and Webster. A report issued by the Safe Energy Communications Council before the name change entitled *The COGEMA File* recommends that, given the company's abysmal record, COGEMA should be barred from doing business in the United States. The report states, "COGEMA has chosen to disregard findings of extreme contamination and health effects resulting from its own reprocessing activities and has refused to abate its discharges as requested by European governments and mandated by international laws and treaties." [3]

[1] Federal Register Volume 77, Number 145, Pages 44222-44224, July 27, 2012
[2] Commercial nuclear fuel typically contains the oxide form of uranium. The nuclear industry's term for this experimental fuel is "MOX" because it is a mixed oxide containing both uranium and plutonium. But the *primary fissile isotope* of the fuel is plutonium, so we prefer the more accurate term "plutonium fuel."
[3] "The COGEMA File, Incidents impacting the environment, health and the law by the French nuclear company, COGEMA," by Linda Gunter, Safe Energy Communication Council, October 1, 2002

Esse quam videre

167-1

167-1 DOE acknowledges the commentor's opinion. The commentor has raised issues that are outside the scope of this *SPD Supplemental EIS*.

Commentor No. 167 (cont'd): Louis A. Zeller, Executive Director Blue Ridge Environmental Defense League

Legal Claim Involving Areva Fuel Fabrication [4]

Our investigation of filings at the Securities Exchange Commission revealed a legal dispute between TVA and Areva. TVA's 2006 10-K report states that on November 9, 2005, it received invoices totaling $76 million from Areva and an affiliated company, the successor to Babcock and Wilcox. In 1970, TVA had contracted with B&W for fuel fabrication services for its Bellefonte Nuclear Plant. Areva claimed that the 1970 contract required TVA to buy more fuel services from B&W than TVA actually purchased. In 2006 TVA received a letter from Areva which reduced the value of the claim to $26 million but did not provide further information or a reason for the reduction in the claim. At present, we have been unable to learn any more about this dispute. Therefore, pursuant to NEPA—specifically, Section 102 42 U.S.C. 4332—which states all federal agencies shall "identify and develop methods and procedures...which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations," we hereby request that DOE review the track record of Areva in the proposed area of work before making a final decision.

167-2

However, in light of what is already known about Areva/Cogema, we believe that the company represents a threat to public health in the Central Savannah River Area and should not qualify for any further work at SRS.

Russian-American Security Agreement: No Plutonium Fuel

For over a decade, the Blue Ridge Environmental Defense League has opposed the reprocessing of plutonium as civilian nuclear power fuel because it presents unsupportable risks to public safety and the environment. For about as long, we have worked with Russian non-governmental organizations who also support dismantling of nuclear weapons but who also call for abolition of the plutonium fuel program. Our joint opposition to plutonium fuel programs is based on the negative health and safety aspects of plutonium fuel in commercial nuclear power plants. Vladimir Slivyak, Ecodefense co-chair, stated:

> Using plutonium as a fuel for NPPs [nuclear power plants] may lead to nuclear accidents and plutonium pollution of the Russian territories. It also gives the possibility of nuclear material theft and proliferation. Plutonium must be immobilized and never used again.[5]

Our Russian counterparts and we share the common goals of eliminating both atomic weapons and the reprocessing of nuclear waste for use as fuel.

[4] Tennessee Valley Authority · 10-K · For 9/30/06, Filed On 12/15/06 3:11pm ET · SEC File 0-52313 · Accession Number 950144-6-11558, downloaded 10/9/12 at http://www.secinfo.com/dsVsf.vB99.htm#77is

[5] Antiatom.ru, available at http://www.antiatom.ru/entext/030528anc.htm

167-2 See the response to comment 167-1.

Commentor No. 167 (cont'd): Louis A. Zeller, Executive Director Blue Ridge Environmental Defense League

Risks of Sabotage and Terrorism

The plutonium fuel plan necessitates shipping nuclear weapons-usable materials over enormous distances which will increase the likelihood that such material could fall into the hands of malefactors. A report prepared by a special commission of International Physicians for the Prevention of Nuclear War and the Institute for Energy and Environmental Research states:

> Using plutonium as fuel on a large scale would be difficult to safeguard and would involve a high risk of diversion. In the case of plutonium from weapons, there would be a regular traffic of plutonium oxide from dismantlement and storage sites to fabrication facilities and reactors, with the risk of attack along transportation routes.[6]

The U.S. National Academy of Sciences stated that shipments of plutonium fuel will require security measures equivalent to those needed for transport of nuclear weapons. Harvard Law School and the United Kingdom Royal Commission on Environmental Pollution have also raised concerns about the security measures needed for plutonium as an article of commerce.

From Savannah River tons of plutonium in the form of mixed oxide fuel would be transported across hundreds of miles of isolated countryside to utility reactors in Alabama and Tennessee. This overland transport link presents a unique opportunity to those who might intercept and divert the fuel for weapons use. The freshly fabricated fuel rod assemblies would be the most desirable form for groups who would go after the plutonium for unlawful use in their own explosive devices. DOE's experts admit this vulnerability:

> [T]he unirradiated fuel contains large quantities of plutonium and is not sufficiently radioactive to create a self-protecting barrier to deter the material from theft....[7]

Fuel assemblies would each contain about 20 kilograms of plutonium. According to a technical analysis by the Natural Resource Defense Council, a one kiloton nuclear bomb can be made with one to three kg of plutonium.[8] Thus, plutonium fuel poses a security threat from the standpoint of its attractiveness to thieves.

[6] International Physicians for the Prevention of Nuclear War and The Institute for Energy and Environmental Research, Plutonium: Deadly Gold of the Nuclear Age, International Physicians Press, Cambridge Massachusetts, 1992, p.133-134
[7] Revised Conceptual Designs for the FMDP Fresh MOX Fuel Transport Package, Ludwig et al, ORNL/TM-13574, March 1998
[8] Thomas B. Cochran and Christopher E. Paine, *The Amount of Plutonium and Highly-Enriched Uranium Needed for Pure Fission Nuclear Weapons* at 6 (Revised April 13, 1995). This report was available to be downloaded September 9, 2012 at http://www.nrdc.org/nuclear/fissionw/fissionweapons.pdf.

167-3

167-3 The purpose of the Surplus Plutonium Disposition Program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally sound manner to ensure that it can never again be readily used in nuclear weapons. Central to the purpose of the Surplus Plutonium Disposition Program is protecting plutonium from terrorists, so appropriate safeguards and security measures are taken at facilities and during transportation to protect against unauthorized access to materials.

Although unirradiated (fresh) MOX fuel may not be sufficiently radioactive to be self-protecting, fresh MOX fuel is not an attractive target for terrorist attack because it is not readily usable for a nuclear device or dirty bomb. The plutonium in MOX fuel is blended with approximately 20 times as much depleted uranium as plutonium and is formed into ceramic pellets encased in metal cladding. Moreover, the MOX fuel is contained in large, heavy fuel assembly structures that would make theft extremely challenging. Without substantial physical dismantling and chemical separation, the plutonium in the MOX fuel cannot be used in a nuclear bomb. DOE would transport plutonium between DOE sites, as well as MOX fuel from SRS to a commercial domestic reactor, using the NNSA Secure Transportation Asset Program, as described in Appendix E. Under this program, security measures specific to the materials being transported would be implemented to protect them from diversion.

Commentor No. 167 (cont'd): Louis A. Zeller, Executive Director Blue Ridge Environmental Defense League

Use as Fuel Will Not Reduce Inventories of Plutonium

Allegedly, the purpose of plutonium oxide fuel is disposition or disposal. But this is not realistic. Nuclear reactors using standard uranium fuel produce plutonium where none existed before. A typical commercial reactor produces 500 pounds of plutonium a year. Government contractors have estimated that using plutonium oxide in commercial reactors would reduce the total plutonium by only 1%. *167-4*

Plutonium Fuel Hazardous for Generating Electric Power

BREDL's safety concerns are based on evidence that plutonium fuel rods fail at far lower temperatures, 400 to 570 degrees-F lower, than conventional uranium fuel rods. Also, the metal sheath, or cladding, which holds the fuel rod together may form balloons which block cooling water, leading to an uncontrolled core meltdown. *167-5*

TVA Nuclear Reactors Unsuitable

The Sequoyah power plant's nuclear reactors utilize ice condenser containments, baskets of borated ice, to reduce heat and pressure in the event of an accident. The containment buildings of ice condenser reactors are less expensive and less robust because of this construction method. Numerous problems with ice condensers have been identified. Sandia National Laboratories evaluated the reactor containment structures similar to those at Sequoyah Units 1 and 2 and found that if an accident involving hydrogen ignition occurs, the concrete containment will almost certainly fail.[9] Also, such systems are particularly vulnerable to reactor sump clogging.

At Browns Ferry, plant inspections done by the manufacturer indicate that the plant suffers from cracking of the control rods necessary for shutting down the reactor. Based on this information, the manufacturer predicts that the control rods will fail sooner. An NRC Information Notice (IN) issued in June 2011 states: *167-6*

> The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice (IN) to inform addressees that GE Hitachi Nuclear Energy (GEH) has discovered severe cracking in Marathon control rod blades (CRBs) near the end of their nuclear lifetime limits in an international BWR/6. As a result of investigations into the cracking, GEH has determined that the design life of certain Marathon CRBs may be less than previously stated and is revising the end-of-life depletion limits of these CRBs. The NRC expects that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems.[10]

[9] NUREG/CR-6427, Assessment of the Direct Containment Heating Issue for Plants With Ice Condenser Containments, April 2000

[10] NRC Information Notice 2011-13: Control Rod Blade Cracking Resulting in Reduced Design Lifetime, June 29, 2011, ADAMS Accession No. ML111380019

167-4 The use of MOX fuel in commercial nuclear power reactors would substantially reduce the quantity of fissile plutonium in MOX fuel assemblies and result in an overall reduction in the amount of plutonium in the irradiated fuel. Footnote 3 in Chapter 2 of this *SPD Supplemental EIS* describes a 60 percent reduction in plutonium-239 after irradiation for two cycles in a domestic commercial nuclear power reactor.

167-5 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. A 2007 report providing a review and interpretation of reactivity-induced accident experiments at the CABRI reactor in France, the NSRR test reactor in Japan, and the IGR and BIGR reactors in the Russian Federation concluded there is no evidence that MOX fuel behaves differently than LEU fuel in terms of failure propensity (Vitanza 2007).

This *SPD Supplemental EIS* analyzes the risks associated with the use of a partial MOX fuel core under various accident scenarios including failures that could lead to a core meltdown and concludes that the risks are comparable to those associated with the use of full LEU cores (see Chapter 4, Section 4.1.2.4, and Appendix J, Section J.3.2).

167-6 It is NRC's responsibility to regulate the operation of nuclear power reactors in the United States. However, as a courtesy to commentors, TVA provides the following discussion of safety issues at the Browns Ferry and Sequoyah Nuclear Plants.

The Browns Ferry and Sequoyah Nuclear Plants are designed and maintained to meet stringent NRC safety requirements for nuclear power reactors. Equipment, especially safety equipment, is regularly inspected, maintained, and replaced well before the end of its scheduled operating life. As discussed in Appendix J, Sections J.1 and J.2, of this *SPD Supplemental EIS*, continued assurance of the safe operation of these plants is the responsibility of the plant operator which operates under the independent regulatory oversight of NRC, including NRC regulations and license conditions. If the plant operator were to make a decision to use MOX fuel, it would be the joint responsibility of the plant operator and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely. For further discussion, refer to Section 2.5, Topics A and B, of this CRD.

Commentor No. 167 (cont'd): Louis A. Zeller, Executive Director Blue Ridge Environmental Defense League

Not only did 100% of the control rods inspected suffer from cracking, the damage was more widespread and more serious than previously known. The Information Notice continued:

> In August 2010, GEH, as part of its surveillance program to monitor Marathon CRB performance, visually inspected four discharged CRBs at an international BWR/6 and found cracks on all four CRBs. The cracks were much more numerous and had more material distortion than those observed in previous inspections of Marathon CRBs. The cracks were also more severe in that they resulted in missing boron-carbide capsule tube fragments from two of the inspected CRBs.[11]

167-6 cont'd

Both Sequoyah and Browns Ferry present unacceptable risks for the use of plutonium fuel. The abandoning of plutonium fuel tests by Duke Energy and the earlier withdrawal of Dominion Virginia Power from the program should provide ample warnings to TVA that plutonium fuel, experimental and unique in its use of weapons-grade alloys, is ill-suited for commercial use and should never be used.

167-7

Conclusion

The use of plutonium fuel in the commercial power sector presents unique risks of accidents and diversion. Further, because chemical processing facilities for plutonium fuel can also be used to make plutonium pits for nuclear weapons, there is no way to ensure that plutonium reprocessing facilities for electric power will not be turned to military use. Radioactive waste from the Cold War should not be transmuted into a plutonium-fueled economy.

167-8

Respectfully,

Louis A. Zeller
Executive Director, Blue Ridge Environmental Defense League

[11] *Id.*

Esse quam videre

The Sequoyah Nuclear Plant ice condenser containment design is one of three U.S. commercial PWR nuclear power reactor containment designs (the others are large dry ambient pressure and dry subatmospheric pressure). Although the design pressure of ice condenser containments such as Sequoyah is lower than dry PWR containments, the presence of ice as an energy-absorbing medium results in lower pressures associated with a design-basis loss-of-coolant accident. As shown in an NRC containment integrity report authored by Sandia National Laboratories (NRC 2006c), the safety margin from design pressure to any containment failure from overpressurization is actually larger for an ice condenser containment design than dry PWR containment designs. NRC identified an issue regarding severe accident hydrogen combustion in ice condenser containments in 2000, but this issue, identified as Generic Safety Issue 189, has been resolved. Each containment design has inherent design, operational, maintenance, and safety advantages and disadvantages; but all, including the ice condenser, have been reviewed and approved by NRC and are licensed for operation in accordance with all applicable safety regulations.

NRC evaluated the issue of PWR sump blockage, including the ice condenser containment design, in Generic Safety Issue 191 and issued recommendations in 2012 that were subsequently unanimously approved by the NRC commissioners and are being implemented by all licensees, including the Sequoyah Nuclear Plant (NRC 2012d, 2012e).

It is true that NRC issued an information notice in 2011 regarding unpredicted BWR control rod blade cracking for the Marathon design control rod blade (NRC 2011b). This issue was discovered by the BWR vendor, GE-Hitachi, and appropriately reported to NRC under 10 CFR Part 21. This issue potentially affects 20 other U.S. BWRs in addition to the Browns Ferry Nuclear Plant. As in numerous other examples over decades of NRC nuclear power reactor regulation, the process of a vendor notifying NRC of a potential safety issue and NRC issuing an information notice to potentially affected licensees provides assurance that licensees, including Browns Ferry, will monitor, maintain, and replace these control rod blades to maintain safety.

The commentor's issues on ice condenser performance, sump blockage, and control rod blade design lifetime are examples of subjects that are regularly addressed by NRC using a range of regulatory tools including analyses, tests, regulatory requirements, and information dissemination. None of these issues present unacceptable risks for the irradiation of MOX fuel in the Browns Ferry and Sequoyah Nuclear Plants.

Commentor No. 167 (cont'd): Louis A. Zeller, Executive Director
Blue Ridge Environmental Defense League

167-7 There are some minor differences between MOX fuel and LEU fuel, such as the amount of actinides in used MOX fuel rods would be higher than in used LEU fuel rods. These differences, however, are not expected to affect reactor safety or meaningfully increase the environmental consequences or risks associated with the use of a partial MOX fuel core. As summarized in Chapter 4 and described in detail in Appendices I and J of this *SPD Supplemental EIS*, the risks associated with using a partial MOX fuel core versus a full LEU fuel core in commercial nuclear power reactors are expected to be comparable. The risks associated with postulated accidents would be small. For further discussion, refer to Section 2.5, Topic B, of this CRD.

Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

167-8 See the responses to comments 167-3, 167-6, and 167-7 regarding plutonium diversion and accident concerns.

Under the PMDA (USA and Russia 2000), which entered into force in 2011, the United States and the Russian Federation agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. The United States is currently constructing MFFF at SRS to fabricate 34 metric tons (37.5 tons) of surplus plutonium into MOX fuel for subsequent irradiation in domestic commercial nuclear reactors. Additional surplus plutonium may be fabricated in to MOX fuel as the result of decisions to be made by DOE after publication of this *Final SPD Supplemental EIS*. Russia and the United States have been negotiating a verification agreement that will enable IAEA to independently verify that the objectives of the PMDA are met and MFFF is only used for peaceful purposes.

Commentor No. 168: Donivan R. Porterfield

October 10, 2012

Ms. Sachiko McAlhany
SPD Supplemental EIS NEPA Document Manager
U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874–2324

Dear Ms. McAlhany,

The following comments are in response to the invitation for public comments Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SPD Supplemental EIS; DOE/EIS–0283–S2).

I support the decision by DOE to not build a standalone Pit Disassembly and Conversion Facility in F-Area at SRS given the available abilities of the Los Alamos National Laboratory Technical Area 55, Savannah River Site (SRS) K-Area, H-Canyon/HB-Line, and MFFF at SRS. ***168-1***

Given the plutonium processing abilities of Los Alamos National Laboratory Technical Area 55 I believe that the non-pit plutonium that is proposed for disposition Waste Isolation Pilot Plant (WIPP) should instead be suitable processed to allow it to be used to produce MOX fuel at the MFFF. In effect I don't believe that any of the surplus plutonium should be simply be dispositioned at WIPP. ***168-2***

I regret that the final disposition of the irradiated MOX fuel will reflect a once through fuel cycle instead of modified open cycle or even closed cycle. Given the time that will pass before the irradiated fuel can be dispositioned I believe that is something that should be revisited when possible.

I believe that the EIS could have been more informative in conveying the ability of TVA or other reactors to consume the available amount of produced MOX fuel, i.e. is that a realistic disposition pathway. ***168-3***

I also regret that the public is unable to consider this EIS in the context of a clear and practiced national nuclear fuel cycle, i.e. the Administration and Congress acting upon the recommendations for the Blue Ribbon Commission.

Sincerely yours,

Mr. Donivan R. Porterfield
[redacted]

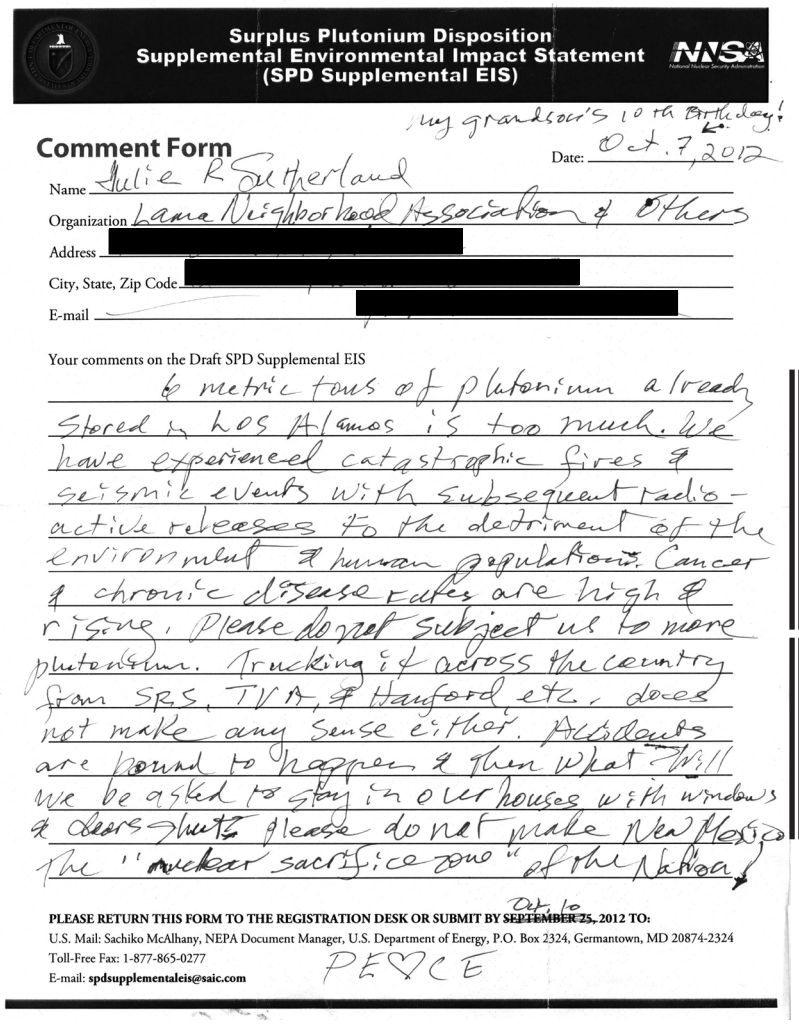
168-1 DOE acknowledges the commentor's opinion.

168-2 Under the MOX Fuel Alternative, all but 2 metric tons (2.2 tons) of this surplus plutonium would be fabricated into MOX fuel; the remaining 2 metric tons (2.2 tons) contain too many impurities to meet the criteria for feed for MFFF, and would be disposed of as CH-TRU waste at WIPP. Examining development of a modified open fuel cycle or a closed fuel cycle is not within the scope of this *Final SPD Supplemental EIS*.

168-3 TVA reactors are evaluated in this *SPD Supplemental EIS* because DOE and TVA have entered into an interagency agreement to evaluate the use of MOX fuel in the Sequoyah and Browns Ferry Nuclear Plants. From a technical perspective, DOE believes that MOX fuel could potentially be used in any domestic commercial nuclear power reactor. Because DOE projects that MOX fuel could be made available for use in other reactors, these other, unspecified, domestic commercial nuclear power reactors are analyzed as part of the "generic reactor" analysis in this *SPD Supplemental EIS* (see Appendix I, Section I.2).

Examining the construction and operation of a geologic repository for used nuclear fuel and HLW is not within the scope of this *SPD Supplemental EIS*. As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel. In addition, as discussed in Appendix B, Section B.1.4, of this *SPD Supplemental EIS*, DWPF canisters containing vitrified plutonium with HLW would be stored in S-Area at SRS; these DWPF canisters would be managed in the same manner as other DWPF canisters containing HLW. DOE has terminated the program for a geologic repository for used nuclear fuel and HLW at Yucca Mountain, Nevada. Notwithstanding the decision to terminate the Yucca Mountain program, DOE remains committed to meeting its obligations to manage and ultimately dispose of used nuclear fuel and HLW. For further discussion, refer to Section 2.7, Topic A, of this CRD.

Commentor No. 169: Julie R. Sutherland



Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SPD Supplemental EIS)

Comment Form

my grandson's 10th Birthday!

Date: Oct. 7, 2012

Name Julie R Sutherland

Organization Lama Neighborhood Association & Others

Address [redacted]

City, State, Zip Code [redacted]

E-mail [redacted]

Your comments on the Draft SPD Supplemental EIS

6 metric tons of plutonium already stored in LOS Alamos is too much. We have experienced catastrophic fires & seismic events with subsequent radio-active releases to the detriment of the environment & human populations. Cancer & chronic disease rates are high & rising. Please do not subject us to more plutonium. Trucking it across the country from SRS, TVA, & Hanford, etc., does not make any sense either. Accidents are bound to happen & then what? Will we be asked to stay in our houses with windows & doors shuts? Please do not make New Mexico the "nuclear sacrifice zone" of the Nation.

Oct. 16

PEACE

PLEASE RETURN THIS FORM TO THE REGISTRATION DESK OR SUBMIT BY ~~SEPTEMBER 25,~~ 2012 TO:

U.S. Mail: Sachiko McAlhany, NEPA Document Manager, U.S. Department of Energy, P.O. Box 2324, Germantown, MD 20874-2324

Toll-Free Fax: 1-877-865-0277

E-mail: **spdsupplementaleis@saic.com**

169-1

169-2

169-1 Chapter 3, Section 3.2.2, of this *SPD Supplemental EIS* describes geology and soils conditions at PF-4 at LANL, including the location of faults. As described in this section, there appear to be no active surface-displacing faults at TA-55; the closest mapped surface trace of faults associated with the Pajarito fault system lies about 3,300 feet (1,000 meters) to the east. Appendix F includes analyses of the environmental impacts and human health risks of expanded pit disassembly and conversion processes at PF-4.

Appendix D, Sections D.1.5.2.11 and D.2.9, of this *SPD Supplemental EIS* provide more-detailed information on accidents at PF-4, including consideration of natural phenomena hazards such as earthquakes and wildfires. Section D.1.5.2.11 describes the completed and planned seismic upgrades to PF-4. For further discussion, refer to Section 2.3, Topic B, of this CRD.

Chapter 3, Section 3.2.6, of this *SPD Supplemental EIS* presents information regarding human health in the potentially affected environment, including radiation exposure and risks, as well as health effects studies. Section 3.2.6.3 summarizes the health effects studies performed for the region around LANL. Table 3–37 presents cancer incidence rates for the United States, New Mexico, and nearby counties. In addition, information on environmental monitoring is provided in the environmental surveillance reports for LANL at http://www.lanl.gov/community-environment/environmental-stewardship/index.php.

As described in Appendix F and Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts and not substantially contribute to cumulative impacts at LANL.

169-2 Transportation risks are analyzed for all alternatives proposed in this *SPD Supplemental EIS*, including the threat of theft and diversion of radioactive materials. In developing the proposed action and reasonable options for pit disassembly and conversion and surplus plutonium disposition, DOE has determined that transportation of plutonium materials between sites cannot be avoided. The alternatives in this *SPD Supplemental EIS* were developed recognizing that plutonium materials are currently stored at multiple DOE sites and individual sites have their own specific capabilities with respect to pit disassembly and conversion and plutonium disposition. Appendix E of this *SPD Supplemental EIS* presents the transportation analysis methodology, assumptions, and results. The packaging to be used would meet all applicable regulatory requirements, as summarized in Appendix E, Section E.3. As presented in Section E.12, for all alternatives, it is unlikely that the transportation of radioactive material and waste would cause an

Commentor No. 169 (cont'd): Julie R. Sutherland

additional fatality as a result of radiation, either from incident-free operation or postulated transportation accidents. As shown in Chapter 4, Table 4–22, under all alternatives, the incident-free and accident radiological risks to the public from shipments of radioactive materials would be comparable, with no LCFs expected among the transportation crew or general public along the transportation routes. As described in Appendix E, Section E.6.2, DOE and its predecessor agencies have a successful 50-year history of transporting radioactive materials with no fatalities related to transportation of hazardous or radioactive cargo.

Appendix E, Section E.4, was added to this *Final SPD Supplemental EIS* to describe the emergency response actions that would occur in the event of an accident. Actions would be taken within the context of the Nuclear/Radiological Incident Annex (DHS 2008). Based on an initial assessment at the scene, their training, and available equipment, first responders would involve state and Federal resources as necessary. First responders and state and Federal responders would initiate actions in accordance with the DOT *Emergency Response Guidebook* (DOT 2012) to isolate the incident and perform any actions necessary to protect human health and the environment (such as evacuations or other means to reduce or prevent impacts to the public).

Commentor No. 170: Bonnie Bonneau
Legions of Living Light

Surplus Plutonium Disposition
Supplemental Environmental Impact Statement
(SPD Supplemental EIS)

Comment Form

Date: 9-30-12

Name Bonnie Bonneau

Organization Legions of Living Light

Address [redacted]

City, State, Zip Code [redacted]

E-mail

Your comments on the Draft SPD Supplemental EIS

Dear God I hope someone will read this who thinks, not like a scientist, but like a responsible citizen of planet earth. Best choice would be an alternative that stops all fabrication and new production of plutonium and other such heavy elements and using only this surplus reprocessed or reprocessable element into the infinity of unwritten history. Also want an immobilization alternative for all surplus and a mobile lab that can move from one storage site to the next and vitrify on site, limiting transportation to this moving vitrification lab. I do not like any of your alternatives. End these poison programs. now.

PLEASE RETURN THIS FORM TO THE REGISTRATION DESK OR SUBMIT BY SEPTEMBER 25, 2012 TO:
U.S. Mail: Sachiko McAlhany, NEPA Document Manager, U.S. Department of Energy, P.O. Box 2324, Germantown, MD 20874-2324
Toll-Free Fax: 1-877-865-0277
E-mail: **spdsupplementaleis@saic.com**

170-1

170-1 As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS,* but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. The action alternatives evaluated for the 13.1 metric tons (14.4 tons) of surplus plutonium are the Immobilization to DWPF Alternative, MOX Fuel Alternative, H-Canyon/HB-Line to DWPF Alternative, and WIPP Alternative. DOE is no longer producing plutonium.

170-2

170-2 An alternative featuring a mobile immobilization laboratory is not evaluated in this *SPD Supplemental EIS*. Immobilization is a complex process involving heavy equipment, substantial electricity requirements to power the melters, and challenging security requirements to protect the surplus plutonium. This type of capability is too large and complex to be developed as a mobile facility. For further discussion, refer to Section 2.2, Topic A, of this CRD.

Commentor No. 171: Dr. F. Taylor

From: Dr. F Taylor
Sent: Thursday, October 11, 2012 1:16 PM
To: nukewatchsouth@mindspring.com; spdsupplementaleis@saic.com; board@tva.gov
Subject: MOX SEIS: No Plutonium in TVA Reactors ~ Stop MOX and Study Alternatives

October 10, 2012

Ms. Sachiko McAlhany
SPD Supplemental EIS NEPA Document Manager U.S. Department of Energy P.O. Box 2324 Germantown, MD 20874-2324

RE: SUPPLEMENTAL SURPLUS PLUTONIUM DISPOSITION DRAFT ENVIRONMENTAL IMPACT STATMENT

Dear Ms. McAlhany,

Following are some of the serious concerns that must be analyzed but still are not addressed adequately:

1) The MOX plutonium fuel program appears destined to fail to secure plutonium because there are no reactors to irradiate MOX.

2) DOE has not outlined the operational schedule of the MOX plutonium fuel factory under construction at the Savannah River Site.

3) A comprehensive study on options to manage plutonium as waste is needed to effectively compare alternatives with MOX plutonium disposition program.

4) Inclusion of a "generic reactor" in the SEIS notice indicates that DOE is far from certain it can secure TVA's old reactors for experimental MOX use.

171-1

Respectfully submitted,

cc: Tennessee Valley Authority Board of Directors

Dr. F Taylor

171-1 The disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts as required by NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors, including, but not limited to five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants. These reactors are explicitly considered because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Section I.1). However, the MOX Alternative also analyzes irradiation in generic commercial nuclear reactors including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2), and is not dependent on TVA participation.

A detailed program schedule is not required to perform the environmental impacts analysis in this *SPD Supplemental EIS*. The actual production schedule for MFFF would depend on factors such as license conditions and the contracts received from customers to manufacture specific types of MOX fuel. As shown in Appendix B, Table B–2, MFFF is estimated to operate for 21 to 24 years, depending on the amount of surplus plutonium to be fabricated into MOX fuel.

Use of MOX fuel in one or more domestic commercial nuclear power reactors would be under the terms of NRC license(s). NRC would only issue a license agreement or license amendments to each applicable reactor operator when it is satisfied that the reactor can operate safely and within all design parameters. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

In this *SPD Supplemental EIS*, DOE evaluated the potential environmental impacts of a range of reasonable alternatives for the disposition of 13.1 metric tons (14.4 tons) of surplus plutonium, in accordance with the requirements of NEPA. As described in Chapter 2, Section 2.4, this *SPD Supplemental EIS* supplements the *SPD EIS* (DOE 1999) which tiers from the *Storage and Disposition PEIS* (DOE 1996). These parent documents considered additional alternatives for surplus plutonium disposition that do not need to be evaluated again in this *SPD Supplemental EIS*.

As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS,* but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of

Commentor No. 171 (cont'd): Dr. F. Taylor

additional surplus plutonium. The action alternatives evaluated for the 13.1 metric tons (14.4 tons) of surplus plutonium are the Immobilization to DWPF Alternative, MOX Fuel Alternative, H-Canyon/HB-Line to DWPF Alternative, and WIPP Alternative.

As discussed above, TVA reactors are evaluated in this *SPD Supplemental EIS* because DOE and TVA have entered into an interagency agreement to evaluate the use of MOX fuel in the Sequoyah and Browns Ferry Nuclear Plants. From a technical perspective, DOE believes that MOX fuel could potentially be used in any domestic commercial nuclear power reactor. Therefore, unspecified other domestic commercial nuclear power reactors are analyzed as part of the "generic reactor" analysis in this *SPD Supplemental EIS* (see Appendix I, Section I.2). The analysis in Appendix I of this *SPD Supplemental EIS* indicates that only minor modifications would be needed at existing commercial nuclear reactors to use MOX fuel.

As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. Use of MOX fuel in a commercial nuclear power reactor in the United States would require an amendment to the reactor's operating license. NRC would determine whether to issue a license amendment that would allow the reactor to use MOX fuel.

Commentor No. 172: Gretel Johnston
BEST/MATRR

Bellefonte Efficiency & Sustainability Team
B.E.S.T.
A local chapter of Blue Ridge Environmental Defense League - www.bredl.org

October 11, 2012

Sachiko McAlhany, NEPA Document Manager
SPD Supplemental EIS
U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324
Email: spdsupplementaleis@saic.com

Re: Surplus Plutonium Disposition:
SPD Supplemental EIS, DOE/EIS–0283–S2 Note: corrected copy of comments

Dear Ms. McAlhany,

Although we applaud both Russia and the U.S. for the motivation to remove a number of nuclear weapons from the world stage and DOE for taking on the challenge of disposing of these nuclear weapons, we believe that the only reasonable choice for the plutonium that DOE has presented is Option Number 1, Immobilization through Glass Vitrification. *172-1*

This is the only current option to prevent proliferation and secure the plutonium so that it can never be made into bombs again, and the most long term solution presented to protect the future from the destructive isotopes of this man-made radiation that will continue to remain dangerous for more than 100,000 years.

This Draft Environmental Impact Statement is a very nicely prepared document with massive amounts of well presented information, but the more we read about this issue, the less adequate the four Action Alternatives in this Draft SEIS appear to be, in terms of actions for fulfilling the stated goals. And we wonder why there is such a push to make this decision now, before more adequate options become available.

From what we understand, storing this plutonium as high level radioactive waste will cost tax-payers about 4 billion dollars, compared to these Plutonium MOX fuel options that will cost us some 17 billion dollars. It is not surprising that Areva, the nuclear fuel company that will be getting our taxpayers' money, is pushing to make this MOX sale. They want DOE and TVA to sign on the dotted line, but we taxpayers are the folks actually paying, so we need to take a good look at what we really are buying here. *172-2*

We are concerned that the cure may be worse than the disease, if we allow this weapons-grade plutonium to be used as MOX fuel in commercial nuclear reactors. Public health should be the number one concern for any U.S. government agency, and the risks with Weapons-Grade Plutonium MOX Fuel far outweigh the public benefits. Again, Immobilization is the reasonable alternative. *172-3*

On this 11th anniversary of September 11th, 2001, let's remember how completely blind-sided America was by that horrific day of terrorism. The most brilliant minds in our country could not have imagined what actually occurred that day. 9/11 is a humbling reminder that we cannot foresee the dangers ahead of us. We can study probabilities and make informed choices to try to prevent harm to the public, but we cannot predict the future. That's why human beings must make these decisions – not machines and not a company who wants a lucrative contract.

172-1 The commentor's preference is noted with respect to the 13.1 metric tons (14.4 tons) of surplus plutonium for which DOE is considering a disposition path in this *SPD Supplemental EIS*. All of the action alternatives evaluated in this *SPD Supplemental EIS* are considered to render surplus plutonium into a proliferation-resistant form or result in proliferation-resistant disposal. For further discussion, refer to Section 2.2, Topic A, of this CRD.

172-2 As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS,* but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium.

Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

172-3 Risks to the public are analyzed for all the proposed alternatives in this *SPD Supplemental EIS* and is among the factors that may be considered by the decision-maker when choosing an alternative. For further discussion, see the response to comment 172-4.

Commentor No. 172 (cont'd): Gretel Johnston BEST/MATRR

We are really concerned about the prospect of using this experimental Weapons-grade Plutonium MOX fuel in the aging Browns Ferry reactors, that were not designed for this hotter fuel, and that have had more than enough problems without adding additional stress factors.

172-4

We have read that Weapons-grade MOX fuel is harder to control in the reactor, and that it tends to produce hot spots that could compromise the fuel rod claddings, risking fires. We also read that this Weapons-grade Plutonium MOX fuel is far more toxic when released than uranium fuel.

We live in the Browns Ferry area and have some specific questions:

1. Have the number of unplanned partial and full shut-downs been determined for each of the three Browns Ferry Mark I reactors during their service lives, and have the corresponding risk factor increases for each reactor been calculated?
2. What about the known cracks in the faulty control rods? Have all those rods been replaced?
3. Has a program been implemented to replace Mark I parts and components in a timely matter, according to the manufacturer's recommendations and regular inspections?
4. Will Browns Ferry finally, after 37 years of non-compliance, be required to meet the industry-wide fire safety standards implemented after its candle fire in 1975?

172-5

5. Has a program been implemented to remove the over 3 million pounds of spent fuel from the raised cooling pools in a timely manner? Where is that published and documented?

172-6

6. Have calculations been made regarding the higher temperatures the MOX spent fuel will impose on the cooling pools as well as the reactors?

172-7

7. How can DOE or TVA justify putting millions of lives at risk by experimenting with this unproven plutonium fuel in aging commercial reactors, especially when that course will not meet DOE stated goals?

172-8

Again remembering the shock of the collapse of the World Trade Center Towers, and remembering Chernobyl and Fukushima, we urge you not to accept adding to the risk of nuclear power by experimenting with our commercial reactors. A study titled "Public Health Risks of Substituting Mixed-Oxide For Uranium Fuel," found a MOX Plutonium fuel release would result in significantly more Latent Cancer Fatalities per accident compared to a uranium core accident, and concludes, "The Department of Energy's plan to dispose of ex-warhead plutonium by using it in MOX fuel in four existing commercial nuclear reactors . . . will impose a significant risk on the public."[1] We must always remember that the public are husbands and wives, mothers and fathers, brothers and sisters, sons and daughters and friends. Please do not fail them by making a profit-driven, risky decision regarding a short-term solution to this more than 100,000 year problem. We urge you to only choose Immobilization through Vitrification.

172-9

Respectfully,

Gretel Johnston
for BEST/MATRR

Bellefonte Efficiency & Sustainability Team (BEST)
Mothers Against Tennessee River Radiation (MATRR)

MATRR.org – Because It Matters

CC: TVA Board of Directors board@tva.gov; NRC Commissioners NRCExecSec@nrc.gov

[1] Lyman, Edwin S., "Public Health Risks of Substituting Mixed-Oxide For Uranium Fuel," *Science & Global Security, 2001, Volume 9 pg. 61.*

172-4 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

Although there are differences in MOX fuel compared to LEU fuel, these differences are not expected to affect reactor safety. As summarized in Appendix J, Section J.2, of this *SPD Supplemental EIS*, use of MOX fuel within nuclear reactors could require some modifications to core design, reactivity control systems, fuel management procedures, and technical specifications. These modifications are specifically developed to prevent fuel hot spots. Many of these modifications are similar to those that have been previously implemented at other nuclear power reactors for nuclear fuel design changes (e.g., increasing the length of a fuel cycle). Further, as summarized in Chapter 5, Section 5.3.3, of this *SPD Supplemental EIS*, use of MOX fuel in TVA or other reactors would require an amendment to the reactor's operating license in accordance with 10 CFR Part 50.

172-5 TVA has examined this comment and provided collaborative support to DOE in providing the following responses (172-5 through 172-8):

As at all nuclear power reactors, every automatic or manual reactor shutdown that occurs is documented in plant operating records. Shutdowns are monitored, tracked and evaluated by both NRC and TVA to ensure there is no increase in safety risk (see the Reactor Oversight Process described at www.nrc.gov/reactors/operator-licensing/oversight-programs.html).

Nuclear power reactors, including the Browns Ferry Nuclear Plant, have extensive preventive maintenance programs that continually monitor the condition and performance of all safety-related components. Parts are maintained and replaced according to a prescribed maintenance program that is continuously evaluated and improved. All safety-related equipment and components at Browns Ferry are regularly inspected and monitored to ensure they can perform their safety

function. The control rods have been replaced as needed, well before the end of their service life. In 2006, NRC issued a license renewal safety evaluation report (NRC 2006a, 2006b) that documented an in-depth review of Browns Ferry, including its 10 CFR 50.65 maintenance rule compliance, and concluded that TVA should be granted a 20-year operating license renewal for Browns Ferry in accordance with 10 CFR Part 54. NRC approved the Browns Ferry license renewal request on May 4, 2006.

Over its 37 years of operation, the Browns Ferry Nuclear Plant has undergone numerous modifications, including to its fire protection equipment and programs. These fire protection modifications were reviewed and approved by NRC, which determined that Browns Ferry is in compliance with fire safety standards by continuing to approve the Browns Ferry operating license over 37 years of operation. The previously described Browns Ferry license renewal safety evaluation report (NRC 2006a, 2006b) documented the NRC review of fire protection rule compliance, which is codified in 10 CFR 50 Appendix R. For further discussion, refer to Section 2.5, Topic A, of this CRD.

172-6 Consistent with all other operators of LWRs in the United States, TVA utilizes water-filled pools to safely store used nuclear fuel after it is discharged from the reactor. To address the space limitations in water-filled pools until a decision is made for disposal of used nuclear fuel, TVA has initiated the use of dry storage casks, which require no electricity or water to cool the used fuel. NRC has determined that dry cask storage is a safe method for the long-term storage of used fuel.

The Sequoyah and Browns Ferry ISFSIs were granted NRC licenses on July 13, 2004, and August 21, 2005, respectively, to use Holtec HI-Storm 100S dry storage casks (NRC 2012c). As of January 2013, 40 dry used fuel storage casks, each containing 68 BWR fuel assemblies, have been filled and placed at the Browns Ferry ISFSI. Similarly, 32 dry used fuel storage casks, each containing 32 PWR fuel assemblies, have been filled and placed at the Sequoyah ISFSI. Plans for future transfer of used fuel to ISFSI casks have been formulated for the operating lives of the Sequoyah and Browns Ferry Nuclear Plants, based on the anticipated need for storage beyond that available in the wet storage pools (TVA 2013a). As part of the Fukushima lessons learned, TVA is evaluating the potential to transfer more used fuel from the storage pools into dry cask storage (see Appendix B, Section B.4, of this *SPD Supplemental EIS*).

Commentor No. 172 (cont'd): Gretel Johnston
BEST/MATRR

172-7 Calculations have been performed to determine and evaluate the different heat levels given off by MOX fuel and LEU fuel following irradiation in reactors (ORNL 2013). The heat levels of MOX fuel do not pose a risk to plant safety or operations. For further discussion, refer to Section 2.5, Topic B, of this CRD.

172-8 As discussed in the response to comment 172-1, all of the action alternatives evaluated in this *Final SPD Supplemental EIS* would result in the disposition of surplus plutonium in a proliferation-resistant form or result in proliferation-resistant disposal. Environmental impacts are expected to be minor, and there would be little offsite impact on the public from normal operations of surplus plutonium disposition facilities. Operation of surplus plutonium disposition facilities under the alternatives evaluated in this *SPD Supplemental EIS* would contribute little to cumulative effects, including health effects among the offsite population. For further discussion, refer to Section 2.2, Topic A, of this CRD.

As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. The analysis in this *SPD Supplemental EIS* supports DOE's conclusion that using MOX fuel in nuclear power reactors would be a safe and effective way to dispose of surplus plutonium from dismantled nuclear weapons. Under the MOX Fuel Alternative, once the plutonium is incorporated into MOX fuel and used in a nuclear power reactor, it would no longer be readily usable in a nuclear weapon. In this respect, if TVA decides to seek a license amendment from NRC to use MOX fuel in its reactors, which would only be issued by NRC once it was satisfied that the proposed change would not involve an unreviewed environmental or safety question, it would help eliminate a nuclear weapons proliferation risk.

172-9 Since the publication of the report cited by the commentor, a number of additional technical studies and analyses related to reactor accidents and the use of MOX fuel have been released (NRC 2012a; ORNL 2013; SNL 2010, 2011). The results reported in this *Final SPD Supplemental EIS* are consistent with this more recent information and the application of later versions of the advanced computer codes used in the report cited by the commentor. The analysis included in this *Final SPD Supplemental EIS* uses updated nuclear cross sections and fuel and reactor design parameters for the Browns Ferry and Sequoyah Nuclear Plants (ORNL 2013). As indicated in Appendix J, Section J.4, of this *SPD Supplemental EIS*, a 2011 study

by Sandia National Laboratories found that release fractions from a partial MOX fuel core are similar to those of a full LEU fuel core. For further discussion, refer to Appendix J of this *SPD Supplemental EIS*.

The environmental impacts (including human health risks) of the alternatives for surplus plutonium disposition would be similar. Environmental impacts are expected to be minor, and there would be little offsite impact on the public from normal operations of surplus plutonium disposition facilities. Operation of surplus plutonium disposition facilities under the alternatives evaluated in this *SPD Supplemental EIS* would contribute little to cumulative effects, including health effects among the offsite population. For further discussion, refer to Section 2.2, Topic A, of this CRD.

Commentor No. 173: Joni Arends, Executive Director, Concerned Citizens for Nuclear Safety and Robert H. Gilkeson, Registered Geologist

From: Joni Arends
Sent: Friday, October 12, 2012 3:31 PM
To: spdsupplementaleis@saic.com; Rhgilkeson@aol.com
Subject: Gilkeson & CCNS SPD SEIS comments
Attachments: Gilkeson CCNS SPD SEIS comments.pdf; DNFSB Revised Reprt 09-01-12.pdf

Good afternoon,

Please find attached the comments of Robert H. Gilkeson, Registered Geologist, and Concerned Citizens for Nuclear Safety (CCNS) about the Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SPD SEIS), along with the attached August 13, 2012 letter from Gilkeson and CCNS to the Members of the Defense Nuclear Facilities Safety Board.

We note that the Council on Environmental Quality regulations require that the comment period be extended for 45 days because the reference documents were not made available "for the full minimum public comment period." 46 FR 18034. *173-1*

Please send two of the SPD SEIS CDs which were sent to the Reading Rooms to CCNS (address below). Thank you.

Sincerely,

--

Joni Arends, Executive Director
Concerned Citizens for Nuclear Safety
107 Cienega Street
Santa Fe, NM 87501
505 986 1973
www.nuclearactive.org

173-1 In response to multiple requests for more time to review and comment on the *Draft SPD Supplemental EIS*, DOE extended the originally scheduled comment period by an additional 15 days, through October 10, 2012. The *Draft SPD Supplemental EIS* and the cited references on which DOE relied to support the analysis in the *Draft SPD Supplemental EIS* were available to the public for the duration of the public comment period. Copies of the cited reference materials were sent along with copies of the document to all of the reading rooms and libraries listed in the Summary, Section S.13, of the *Draft SPD Supplemental EIS* prior to the beginning of the public comment period. However, there are certain types of sensitive information that cannot be posted at publicly accessible locations and may be exempt from public release, including UCNI, OUO, PII, and proprietary information. This information was not posted on the project website or provided to the reading rooms and libraries.

Commentor No. 173 (cont'd): Joni Arends, Executive Director, Concerned Citizens for Nuclear Safety and Robert H. Gilkeson, Registered Geologist

Robert H. Gilkeson, Registered Geologist, and
Concerned Citizens for Nuclear Safety

October 10, 2012

By email to: spdsupplementaleis@saic.com

Sachiko McAlhany, NEPA Document Manager
SPD Supplemental EIS
U.S. Department of Energy
P. O. Box 2324
Germantown, MD 20874-2324

Dear Ms. McAlhany:

Robert H. Gilkeson, Registered Geologist, and Concerned Citizens for Nuclear Safety (CCNS) provide the following general comments and specific comments about the mischaracterized seismic hazard and underestimated values for ground motions at the Plutonium Facility (PF-4) at Los Alamos National Laboratory (LANL) for the *Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (draft SPD SEIS)*, DOE/EIS-0283-S2, July 2012.

General Comments

First, we learned today that Russia is planning on walking away from the Nunn-Lugar Agreement. The purpose of the agreement is to decommission Russian nuclear, biological and chemical weapons. The current agreement expires in June 2013.

It is logical that the next agreement with Russia to fall will be the one to "dispose of" 34 metric tons of surplus weapons-grade plutonium. In 2000, the U.S. chose two parallel disposition strategies for surplus weapons-grade plutonium. One track was to make experimental mixed oxide plutonium fuel (MOX) for use in unspecified nuclear reactors. The other was a cheaper, quicker, safer track to immobilize plutonium in high-level nuclear waste. In 2002, the Department of Energy (DOE) dropped the cheaper immobilization option, without a public process. DOE has spent billions of taxpayer dollars building a MOX fuel fabrication plant at the Savannah River Site (SRS). Commonly known as the "MOX factory to nowhere," it has no customers and no production schedule. If Russia walks away from this agreement, there will be no purpose and need for the SPD SEIS.

173-2

173-2 Under the PMDA (USA and Russia 2000), which entered into force in 2011, the United States and the Russian Federation agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. Russia plans to irradiate its MOX fuel in fast reactors (BN-600 and BN-800) under certain nonproliferation conditions. To that end, Russia has successfully irradiated 21 prototypic MOX fuel LTAs in its BN-600 fast reactor; completed over 50 percent construction of the BN-800 fast reactor; completed formal siting of its MOX fuel fabrication facility; established an integrating contracting office for implementation of PMDA activities; and actively participated with the United States and the IAEA in negotiating a verification agreement that will enable IAEA to independently verify that the objectives of the PMDA are met. More information on the PMDA is located on the U.S. State Department website at www.state.gov/r/pa/prs/ps/2010/04/140097.htm.

DOE's decision (68 FR 20134 and 68 FR 20134) through the *SPD EIS* (DOE 1999) to fabricate 34 metric tons (37.5 tons) of surplus plutonium into MOX fuel at MFFF is consistent with the PMDA and outside the scope of this *SPD Supplemental EIS*.

Commentor No. 173 (cont'd): Joni Arends, Executive Director, Concerned Citizens for Nuclear Safety and Robert H. Gilkeson, Registered Geologist

Second, the reference documents were not available on the *draft SPD SEIS* website until today. This morning the references were listed as "coming soon." This is unacceptable. DOE and the National Nuclear Security Administration (NNSA) must update their compliance with the Council on Environmental Quality (CEQ) regulations to reflect the electronic communication methods of the 21st century.

CEQ regulations clearly state:

> No material may be incorporated by reference unless it is reasonably available for inspection by potentially interested persons with the time allowed for comment. 40 CFR §1502.21.

CEQ further explained that requirement:

> Care must be taken in all cases to ensure that material incorporated by reference, and the occasional appendix that does not accompany the EIS, are in fact available for the full minimum public comment period. 46 FR 18034.

173-3

The reading rooms are not available to "potentially interested persons" nationwide. For this reason alone, the reference documents should have be promptly posted on the *draft SPD SEIS* website when the Summary, Chapters 1 through 10 and Appendices A through K for the *draft SPD SEIS* was posted. Because the minimum public comment period is 45 days, arguably the comment period should be extended for 45 days from whenever references are available, which is today. The CEQ requires that the comment period, therefore, shall be extended to November 24, 2012.

Even so, Joni Arends, Executive Director of CCNS, had trouble accessing the documents in the reading rooms. She described her experience in an email to you and Carol Borgstrom yesterday:

> Further, the email this morning stated that "cited references are available in the reading rooms and libraries listed on pages S-56 and S-57 of the Draft SPD Supplemental EIS Summary." Because of the unavailability of the reference documents on the SPD website in violation of the CEQ regulations, this afternoon I went to the Santa Fe Public Library, located at 145 Washington Avenue and tried to locate about a dozen of the reference documents. After 20 minutes, the Librarian was able to find the FedEx envelope with two CDs in it. The CDs contain the References (disk 1 of 2) and (disk 2 of 2), Summary, Chapters, Appendices and Data Call. I looked at the CDs and many of the documents were available.

173-4

173-3 See the response to comment 173-1 regarding the availability of cited references to the public during the public comment period.

173-4 The period for submitting comments on the *Draft SPD Supplemental EIS* closed on October 10, 2012. On the same day, DOE posted the references on the *SPD Supplemental EIS* website at http://nnsa.energy.gov/aboutus/ouroperations/generalcounsel/nepaoverview/nepa/spdsupplementaleis. Nonetheless, the *Draft SPD Supplemental EIS* and the cited resources on which DOE relied to support the analysis in the *Draft SPD Supplemental EIS* were available to the public for the duration of the comment period. Copies of the cited reference materials were sent along with copies of the document to all of the reading rooms and libraries listed in the Summary, Section S.13, of the *Draft SPD Supplemental EIS* at the beginning of the public comment period. However, there are certain types of sensitive information that cannot be posted at publicly accessible locations and may be exempt from public release, including UCNI, OUO, PII, and proprietary information. This information was not posted on the project website or provided to the reading rooms and libraries. DOE considered all comments received on the *Draft SPD Supplemental EIS*, including those received after the close of the comment period.

Shortly after receipt of the cited email from the commentor, DOE responded to the commentor to help resolve the issues raised with respect to accessing reference materials. It was determined that what was believed to be damaged or modified documents were actually documents that had been redacted pursuant to Federal law to protect the PII of individuals. Additional DVDs containing reference material were express mailed to the commentor on October 15, 2012, as requested.

Chapter 3, Section 3.2.6.3, of this *SPD Supplemental EIS* lists the health effects studies performed in the region around LANL, including the LAHDRA final report (CDC 2010). This document was included in the *Draft SPD Supplemental EIS* and was cited as "ChemRisk et al. 2010." Neither the June 2009 Draft Final LAHDRA report nor the November 2011 commentary summary are specifically cited in the *Draft SPD Supplemental EIS* and are not included among the references for this *Final SPD Supplemental EIS*.

However, many documents were damaged or modified and I was unable to open them. For example:

012 AE Response-011212 LA-UR-12-00200.pdf
013 AE Response-103111 LA-UR-11-06207.pdf
014 AE Response-111811 WM capabilities.pdf
016 PF-4 Response-031512_4.xlsx

Even so, the CDs Concerned Citizens for Nuclear Safety (CCNS) received with the paper copies of the SPD SEIS documents [in July] did not include the References and Data Call. It doesn't make sense that the References and Data Call were not included on these CDs as well. We have been waiting to look at reference documents in order to provide informed public comments about the SPD SEIS.

Again, because the reference documents were not posted on the SPD website in a timely manner and the CDs contained damaged or modified documents, they were not made available.

CCNS respectfully requests, therefore, an extension of time to provide informed public comments about the Surplus Plutonium Disposition [Supplemental] Environmental Impact Statement until 45 days following the time the reference documents are made available in a readable form. As this type of error could lead to litigation over the adequacy of notice and lack of compliance with the CEQ regulations, CCNS contends that it is in the best interests of the public and the Department of Energy and the National Nuclear Security Administration to simply issue an extension of the comment deadline. Your prompt response is greatly appreciated.

173-4 cont'd

Despite calls to the National Environmental Policy Act (NEPA) office at DOE Headquarters today, CCNS has not received an official response to the email.

With respect to the reference documents, key documents regarding Los Alamos National Laboratory (LANL) were not included. Those documents include:

Centers for Disease Control and Prevention Draft Final Report of the Los Alamos Historical Document Retrieval and Assessment (LAHDRA) Project, June 2009

Centers for Disease Control and Prevention Final Report of the Los Alamos Historical Document Retrieval and Assessment (LAHDRA) Project, November 2010.

Response side of this page intentionally left blank.

Commentor No. 173 (cont'd): Joni Arends, Executive Director, Concerned Citizens for Nuclear Safety and Robert H. Gilkeson, Registered Geologist

Centers for Disease Control and Prevention, Community Summary of the CDC's Los Alamos Historical Document Retrieval and Assessment (LAHDRA) Project, November 2010

173-4 cont'd

We include the Draft Final Report of the LAHDRA Project because it states clearly that there are historic and on-going environmental justice issues at LANL. For example,

> If airborne plutonium releases from DP West Building 12 stacks between 1948 and 1955 were as high as the 1956 reports by the Lab's industrial hygiene staff indicate, **plutonium releases from LANL could easily exceed the independently reconstructed airborne plutonium release totals from the production plants at Hanford, Rocky Flats and Savannah River combined,** even without the other sources and other years at LANL included. Emphasis Supplied. p. ES-11.

173-5

The amount of plutonium released into the environment alone from LANL requires that DOE/NNSA withdraw its consideration of LANL as an alternative site for the SPD SEIS.

Further, DOE/NNSA is not in compliance with NEPA and should not proceed with a *Final SPD SEIS*. The SPD SEIS to support decisions about surplus plutonium disposition is tiered from the December 1996 *Storage and Disposition of Weapons-Usable Fissile Materials Programmatic EIS (Storage and Disposition PEIS).* However, the surplus plutonium disposition program of the *SPD SEIS* is fundamentally changed from the program and alternatives discussed in the *Storage and Disposition PEIS*. Therefore, DOE/NNSA must issue for public comment a new Storage and Disposition PEIS or a Supplemental PEIS describing the surplus plutonium disposition program and its alternatives before it can proceed with an *SPD SEIS*.

Moreover, the *SPD SEIS* program is greatly changed from the *Storage and Disposition PEIS* in several ways. First, the *Storage and Disposition PEIS* considered and eliminated the alternative of disposing of surplus plutonium at the Waste Isolation Pilot Plant (WIPP) (pages 2-10 to 2-15). Nonetheless, the *Draft SPD SEIS* includes WIPP as the preferred alternative for disposition of surplus plutonium that is not suitable for MOX fuel fabrication.

173-6

Second, the *Storage and Disposition PEIS* did not include LANL as a pit disassembly or conversion location (pages 2-89 to 2-95). Nonetheless, the *Draft SPD SEIS* includes LANL as a pit disassembly and conversion action alternative.

Third, the *Storage and Disposition PEIS* included sites for up to 50 years of long-term storage (pages 2-2 to 2-7). However, storage at SRS and Pantex could be

173-5 Chapter 3, Section 3.2.6.3, of this *SPD Supplemental EIS* lists the health effects studies performed in the region around LANL, including the LAHDRA project. As indicated in the LAHDRA final report (CDC 2010), "The LAHDRA project's primary purpose was to identify all available information concerning past releases of radionuclides and chemicals from the Los Alamos National Laboratory," (the vast majority of the releases occurred between the 1940s and the 1970s). This *SPD Supplemental EIS* analyzes the potential environmental impacts from operation of facilities at LANL that employ current technologies and practices that minimize the releases of radioactive materials and hazardous chemicals to the environment to protect workers, the public, and the environment, as evidenced by the reporting in LANL's Annual Site Environmental Reports and NESHAPs reports. As shown in Chapter 4 of this *SPD Supplemental EIS,* the potential environmental releases associated with the normal operation of proposed surplus plutonium disposition activities at LANL are very small and pose minimal risk to the public.

173-6 DOE believes that the decision to prepare this *SPD Supplemental EIS* complies with CEQ and DOE regulations and guidance. For further discussion, refer to Section 2.1, Topic A, of this CRD.

Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In the *Draft SPD Supplemental EIS*, the MOX Fuel Alternative was DOE's Preferred Alternative for surplus plutonium disposition. DOE's preferred option for disposition of surplus non-pit plutonium that is not suitable for MOX fuel fabrication was disposal at WIPP. DOE's preferred option for pit disassembly and conversion of surplus plutonium metal, regardless of its origins, was to use some combination of facilities at TA-55 at LANL and K-Area, H-Canyon/HB-Line, and MFFF at SRS, rather than to construct a new stand-alone facility.

In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this SPD Supplemental EIS. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a Federal Register notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

The direct disposal of 50 metric tons (55 tons) of surplus plutonium was eliminated from further analysis in the *Storage and Disposition PEIS* (DOE 1996:2-13) because it would exceed the capacity of WIPP when added to DOE's inventory of TRU

necessary for more than 50 years, given that the disposition program as described in the *Storage and Disposition PEIS* has not been implemented.

Thus, at least three important elements of the current program were not considered in the PEIS, leading to the unavoidable conclusion that the program has dramatically changed, and a new PEIS or supplemental PEIS is required before the *SPD SEIS* can proceed.

And finally, so much taxpayer funding has been misspent on this proposal. It is a true democratic travesty.

Specific Comments about the Seismic Hazard at LANL Detailing:

**** Deficiencies in Knowledge of Seismic Hazard for Proposed Upgrades to the 1970's Era Plutonium Facility (PF-4) at LANL, proposed to be used in the SPD SEIS***

(1) Need for Field Studies That Comply With the Industry Standards Required by Presidential Executive Order 12699,

(2) Need for Expansion and Calibration of the Seismic Network at LANL, and

(3) Key Future Studies Described in the LANL 2007 Probabilistic Seismic Hazard Analysis (PSHA) Report Must Be Done NOW

Use of the Plutonium Facility (PF-4) at Technical Area 55 (TA-55) at LANL is proposed as an alternative in the *SPD SEIS*. Even so, there are a number of very important seismic issues that are NOT being addressed by DOE, NNSA and the Defense Nuclear Facilities Safety Board (DNFSB). *See* July 18, 2012 DNFSB letter to NNSA regarding the seismic hazard at PF-4; and September 28, 2012 response by NNSA to DNFSB's July 18, 2012 concerns.

> The timely identification and remediation of any structural vulnerabilities will have profound implications for ensuring public health and safety. The Board believes that NNSA's current approach for assessing the Plutonium Facility's seismic behavior is not adequately defined, and is technically inadequate in several aspects. Timely action must be taken to fully understand if additional building modifications are required to eliminate or mitigate any remaining structural vulnerabilities in the design.
>
> The 1970's-era design and construction of the Plutonium Facility lacks the structural ductility and redundancy that would be required by

173-6 cont'd

173-7

waste. In response to comments on the *Draft SPD Supplemental EIS*, DOE expanded the WIPP Alternative to include potential disposal of all 13.1 metric tons (14.4 tons) of the surplus plutonium for which a disposition path is not assigned. Disposal at WIPP of 13.1 metric tons (14.4 tons) of surplus plutonium, which is approximately 26 percent of the amount considered in the *Storage and Disposition PEIS*, could potentially be accomplished within WIPP's capacity and, therefore, is considered to be a reasonable alternative in this *Final SPD Supplemental EIS* (see Chapter 4, Section 4.5.3.6.3). A description of WIPP's capacity and the process that would be used to dispose of surplus plutonium as CH-TRU waste at WIPP is contained in Appendix B, Sections B.1.3 and B.3, and the discussion of impacts associated with this alternative on WIPP capacity is included in Chapter 4, Section 4.5.3.6; the environmental impacts of shipping waste to WIPP are described in Appendix E. For further discussion, refer to Section 2.2, Topic B, of this CRD.

The use of LANL to support pit disassembly and conversion has been ongoing. In 1998, DOE completed an environmental assessment of a proposed pit disassembly and conversion demonstration project at LANL (DOE 1998a). The *SPD EIS* (DOE 1999) acknowledged these activities, and the *LANL SWEIS* (DOE 2008) included the impacts associated with these ongoing activities. In this *SPD Supplemental EIS,* DOE is now considering an expansion of these activities and has included an evaluation of all of the environmental impacts associated with this proposal (see Appendix F and the various sections in Chapter 4 that include impacts analyses related to LANL).

As described in Appendix B, Table B–2, 40 years of storage of surplus non-pit plutonium is analyzed under the No Action Alternative. Storage for fewer years is analyzed under the action alternatives. DOE's alternatives for surplus plutonium disposition would complete these activities within the 50-year storage period previously analyzed.

173-7 DOE does not agree with the commentor's opinion about DOE's compliance with NEPA or about the need for a new or supplemental PEIS on plutonium storage and disposition. Appendix D, Section D.1.5.2.11, of this *SPD Supplemental EIS* addresses concerns raised by DNFSB. Regarding the referenced supporting document, DOE has considered it and believes the description of geology and soils in Chapter 3, Section 3.2.2, of this *SPD Supplemental EIS* sufficiently contemplates the seismic conditions at LANL, including the location of faults near PF-4. As described in this section, there appear to be no active surface-displacing faults at

Commentor No. 173 (cont'd): Joni Arends, Executive Director, Concerned Citizens for Nuclear Safety and Robert H. Gilkeson, Registered Geologist

> modern building codes in force today. This lack of ductility and redundancy makes the Plutonium Facility susceptible to catastrophic structural failure if subjected to the strong seismic ground motions identified in the most recent probabilistic seismic hazard analysis conducted by NNSA's contractor. The analysis identifies ground motions up to five times greater than the original design basis in the frequency band of interest for the Plutonium Facility. DNFSB July 18, 2012 letter to The Honorable Daniel B. Poneman, Deputy Secretary of Energy.

173-7 cont'd

The ground motions for the Design Basis Earthquake (DBE) are actually greater than the "five times greater than the original design basis." This is because the most recent PSHA did not include the concealed buried active faults known to be present approximately 800 feet west and 2,000 feet east of PF-4. *See* attached August 13, 2012 letter from Gilkeson and CCNS to the DNFSB Board, which are incorporated by reference into these comments.

We know that DOE and NNSA do not follow Presidential Executive Orders, Nuclear Regulatory Commission (NRC) regulations, industry standards, laws, regulations, their own Orders, Standards and Directives and common sense with respect to the seismic hazard at LANL. At a minimum DOE and NNSA have admitted that PF-4 does not provide safety to the public or workers from the calculated maximum seismic event.

173-8

> NNSA will execute its line management decision-making in a completely transparent manner and will clearly document its decisions and the basis for the decisions in the PF-4 seismic project execution plan. NNSA and [Los Alamos National Security, LLC] LANS will also document in the PF-4 Safety Basis the rationale for selecting needed structural upgrades and how the selected upgrades provide adequate protection for the public in both the short and long term. September 28, 2012 response by NNSA to DNFSB's July 18, 2012 concerns.

We note that Enclosure 4 "Preliminary Sequence and Projected Timing of Planned FY 13 Activities" to the September 28, 2012 NNSA letter, that there is no schedule for development of the PF-4 Safety Basis, and the completion of the proposed seismic upgrades or estimate cost for the proposed upgrades. There is only a schedule for the preparation of a prioritized plan [initial update in November 2012], which will be part of a revision to the Project Execution Plan. And there are no cost estimates, or whether the upgrades will be cost prohibitive.

173-9

The prohibitively high cost for the proposed Chemistry and Metallurgy Research Replacement (CMRR) Nuclear Facility, right next door to PF-4, was evidence that

TA-55; the closest mapped surface trace of faults associated with the Pajarito fault system lies about 3,300 feet (1,000 meters) to the east.

The commentor has not directed DOE, with any specificity, to statements within the referenced supporting document to which DOE should respond. Nonetheless, on page 11 of the referenced document, the document quotes a small portion of a response made by DOE to a comment made on the draft version of the *Final Supplemental Environmental Impact Statement for the Nuclear Facility Portion of the Chemistry and Metallurgy Research Building Replacement Project at Los Alamos National Laboratory, Los Alamos, New Mexico* (DOE/EIS-0350-S1) (DOE 2011b). This response addresses a similar assertion regarding a concealed buried fault located west and east of CMRR-NF, which was planned to be constructed adjacent to PF-4. A more complete reading of the response acts to refute the commentor's assertion and is provided as follows (DOE 2011b: Volume 2, Section 3, p. 3-462):

"The fault shown 800 feet (240 meters) west of the proposed CMRR-NF, by Vaniman and Wohletz (1990) and Wohletz (2004), is an inferred fault, meaning that the fault is interpreted to be present at some depth below the location at which it is mapped; however, no evidence for surface-rupturing faults was found along that mapped trace. The work of Vaniman and Wohletz helped spur the LANL Seismic Hazards Program to conduct detailed, site-specific studies around TA-55 (for example, Gardner et al. 1998, 1999, 2008) to determine the presence or absence of surface-rupturing faults, using detailed investigative methods. These methods included conventional geologic mapping at 1:1,200 scale, high-precision total station geologic mapping of Bandelier Tuff subunit contacts to identify faults, and large-scale trenching investigations at the site of the proposed CMRR-NF. Gardner et al. (1998, 1999) identified no faults or offsets along geologic contacts suggesting the presence of a fault at TA-55. Although Gardner et al. (2008) did observe some fractures and small faults confined within units of the tuff, they concluded that fractures and faults exposed at the proposed CMRR site formed very shortly after emplacement of the tuff, 1.26 million years ago, as a result of cooling and compaction, and the structures identified at the proposed CMRR-NF site pose no independent seismic surface rupture hazard. No evidence for active faulting was identified by Gardner et al. (1998, 1999, 2008) near the proposed CMRR-NF, as inferred by the early study of Vaniman and Wohletz (1990) and Wohletz (2004)."

Appendix D, Sections D.1.5.2.11 and D.2.9, provide more-detailed information about accidents at PF-4, including consideration of natural phenomena hazards such as earthquakes. To be conservative, the accident analysis in this *Final SPD Supplemental EIS* considers the current state of PF-4 without future seismic

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seismic upgrades to the existing 1970's-era PF-4 are also prohibitively expensive and probably not even technically possible. *173-9 cont'd*

For the reasons stated above and in the attachment, all plutonium operations at LANL must cease NOW. In the interest of public health and protection of the environment, NO new missions may be imposed upon LANL. *173-10*

Please contact us with any questions or comments. We look forward to your response.

Sincerely,

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Attachment: August 13, 2012 letter from Robert H. Gilkeson, Registered Geologist, and Concerned Citizens for Nuclear Safety to the Members of the Defense Nuclear Facilities Safety Board

upgrades. As described in Appendix D and summarized in Chapter 2, Section 2.6, Table 2–3, no LCFs are estimated among the public for the maximum design-basis accident at PF-4, should one occur, and up to 3 LCFs are estimated among the public for the maximum beyond-design-basis accident evaluated for PF-4, should one occur. As described in Chapter 4 and summarized in Table 2–3, risks to the public are expected to be minor from both normal operations and potential accidents under any proposed alternative.

173-8 DOE disagrees with the commentor's characterization of DOE/NNSA behavior. DOE facilities are operated in compliance with applicable laws, regulations, Executive Orders, and DOE Orders, Standards, and Directives. DOE believes that PF-4 can continue to be safely operated. As described in Appendix F and summarized in Chapter 4 and Chapter 2, Section 2.6, Table 2–3, environmental impacts and risks to the public are expected to be minor from both normal operations and potential accidents for the evaluated pit disassembly and conversion options at PF-4. For further discussion, refer to Section 2.3, Topic A, of this CRD.

173-9 A detailed schedule for the seismic upgrades is not required to perform the environmental impacts analyses in this *SPD Supplemental EIS*. Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD. DOE further disagrees with the commentor's characterizations regarding a dissimilar proposal (CMRR-NF) that is outside the scope of this *SPD Supplemental EIS*.

173-10 The purpose of the continuing operation of LANL is to support DOE's core mission as directed by Congress and the President, which includes maintaining a safe and reliable nuclear weapons stockpile. Carrying out this mission requires operational use of plutonium. Because a cessation of activities involving plutonium would thus be counter to national security policy as established by the Congress and the President, ending these activities at LANL is not considered in this *SPD Supplemental EIS*. Pit disassembly and conversion is an ongoing, rather than new, activity at LANL, and this *SPD Supplemental EIS* addresses the environmental impacts of both current and proposed expanded pit disassembly and conversion operations. For either level of operation, and as described in Chapter 4 and supporting appendices of this *SPD Supplemental EIS*, the environmental impacts and human health risks from normal pit disassembly and conversion operations at PF-4 at LANL would be low.

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Robert H. Gilkeson, Registered Geologist, and
Concerned Citizens for Nuclear Safety

August 13, 2012

By email to: andrewt@dnfsb.gov and johnb@dnfsb.gov

The Honorable Peter S. Winokur, Chairman
The Honorable Jessie Hill Roberson, Vice Chair
The Honorable John E. Mansfield, Board Member
The Honorable Joseph F. Bader, Board Member
Defense Nuclear Facilities Safety Board (DNFSB)
625 Indiana Avenue, NW, Suite 700
Washington, DC 20004

Re: Preliminary draft comments for the August 13, 2012 Meeting with the DNFSB in Albuquerque, New Mexico [NOTE: Revised on September 1, 2012]

**** Deficiencies in Knowledge of Seismic Hazard for Proposed Upgrades to the 1970's Era Plutonium Facility PF-4 at Los Alamos National Laboratory (LANL)***

**** (1) Need for Field Studies That Comply With the Industry Standards Required by Presidential Executive Order 12699, (2) Need for Expansion and Calibration of the Seismic Network at LANL, and (3) The Key Future Studies Described in the LANL 2007 Probabilistic Seismic Hazard Analysis (PSHA) Report Must Be Done NOW***

Dear Chairman Winokur, Vice-Chair Roberson and Members Mansfield and Bader:

The maximum power and destructive ground motions from the design basis earthquake (DBE) for the proposed seismic hazard upgrades to the LANL nuclear weapons facility Plutonium Facility (PF-4) at Technical Area-55 (TA-55) are greatly underestimated because of the many mistakes and omissions in the three LANL Probabilistic Seismic Hazard Analysis (PSHA) Reports published over the years from 1995 through 2009. The three PSHA do not comply with the 1990 Presidential Executive Order 12699 for the seismic hazard to be characterized with the detailed field investigation requirements in the four industry standards that were published over the period from December 2, 2004 through July 31, 2008. And DOE, LANL and the Defense Nuclear Facilities Safety Board (DNFSB) were on notice about the industry standards because their staffs were on the committees to establish those standards.

Because the location of PF-4 is very near to the proposed Chemistry & Metallurgy Research Replacement (CMRR) Nuclear Facility, we reference the final CMRR Supplemental Environmental Impact Statement for documentation. DOE/EIS-0350-S1, August 2011. 2011 DOE final CMRR SEIS.

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- **DOE Order 420.1B requires the seismic hazard upgrades for the PF-4 to be in compliance with Presidential Executive Order 12699 (1990), and therefore, in compliance with the four industry standards. The requirement in DOE Order 420.1B follows:**

DOE ORDER 420.1B (Approved: 12-22-05, Change 1: 4-19-10) SUBJECT: FACILITY SAFETY

DOE ORDER 420.1B Chapter IV. Natural Phenomena Hazards (NPH) Mitigation

From Page IV-1 IN DOE ORDER 420.1B:

(2) The design and construction of new facilities and major modifications[3 (see footnote below)] to existing facilities and SSCs [structures, systems and components] must address—

(a) potential damage to and failure of SSCs resulting from both direct and indirect NPH [natural phenomena hazards] events;

(b) common cause/effect and interactions resulting from failures of other SSCs; and

(c) compliance with seismic requirements of E.O. 12699, Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction (as amended by E.O. 13286, Amendment of Executive Orders, and Other Actions, in Connection With the Transfer of Certain Functions to the Secretary of Homeland Security, January 5, 1990) [Emphasis supplied].

Footnote 3: Major modifications are those which could substantially change the safety basis. See 10 CFR Part 830 and associated guidance for additional information on major modifications to hazard category 1, 2, and 3 nuclear facilities and DOE-STD-1189, Integration of Safety into the Design Process (Chapter 8).

- **The 1990 Presidential Executive Order 12699 *Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction* requires the engineering design for the seismic hazard upgrades to the PF-4 to be based on industry standards as follows:**

  From Executive Order 12699 Section 1. The purposes of these requirements are to reduce risks to the lives of occupants of buildings owned by the Federal Government and to persons who would be affected by the failures of Federal buildings in earthquakes, to improve the capability of essential Federal buildings to function during or after an earthquake, and to reduce earthquake losses of public buildings, all in a cost-effective manner. A building means any structure, fully or partially enclosed, used or intended for sheltering persons or property.

  Each Federal agency responsible for the design and construction of each new Federal building shall ensure that the building is designed and constructed in accord with appropriate seismic design and construction standards. This requirement pertains to all building projects for which development of detailed plans and specifications is initiated subsequent to the issuance of the order. Seismic design and construction standards shall be adopted for agency use in accord with sections 3(a) and 4(a) of this order [Emphasis supplied].

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From Executive Order 12699 Section 3(a): Sec. 3. Concurrent Requirements. (a) In accord with Office of Management and Budget Circular A - 119 of January 17, 1980, entitled "Federal Participation in the Development and Use of Voluntary Standards," nationally recognized private sector standards and practices shall be used for the purposes identified in sections 1 and 2 above unless the responsible agency finds that none is available that meets its requirements [Emphasis supplied].

- **The detailed field investigations and independent expert peer review required by the four industry standards have not been performed. The four standards are the following:**

- ***Seismic Design Criteria for Structures, Systems, and Components in Nuclear Facilities,*** American Society of Civil Engineers (ASCE), ASCE/SEI 43-05. July, 2005.
- ***American National Standard-Categorization of Nuclear Facility Structures, Systems, and Components for Seismic Design,*** American Nuclear Society (ANS). ANSI/ANS-2.26-2004. December 2, 2004. Reaffirmed May 27, 2010.
- ***American National Standard-Criteria for Investigations of Nuclear Facility Sites for Seismic Hazard Assessments,*** ANSI/ANS-2.27-2008. July 31, 2008.
- ***American National Standard-Probabilistic Seismic Hazards Analysis,*** ANSI/ANS-2.29-2008. July 31, 2008.

➢ **The LANL PSHA Reports did not reference the above Industry Standards. The engineering design of the proposed seismic hazard upgrades to the PF-4 are not safe because of errors and omissions in the necessary calculations of the seismic hazard because the LANL PSHA do not comply with the criteria in the industry standards. An important example is that the extensive field investigations required by ANSI/ANS-2.27-2008 were not done.**

The LANL 2007 and 2009 PSHA Reports did not comply to Executive Order 12699 and the 2005 DOE Order 420.1B that require PSHA to meet the requirements of ANSI/ANS-2.29-2008 ***Probabilistic Seismic Hazards Analysis*** for PSHA to be based on detailed knowledge acquired from field investigations. From page 1 in ANSI/ANS-2.29-2008:

> This standard provides criteria and guidance for performing a probabilistic seismic hazard analysis (PSHA) for the design and construction of nuclear facilities. . . This standard does not address criteria, procedures, or methods for collecting information and data required to perform a PSHA. These are specified in ANSI/ANS-2.27-2008, ***Criteria for Investigations of Nuclear Facility Sites for Seismic Hazard Assessments.***

The LANL PSHA did not comply with the requirements in the four industry standards for the seismic hazard assessment at the LANL plutonium facility PF-4

1) to include site-specific field investigations of all faults that were active in the past 1.8 million years for a distance of up to 40 km (24 miles) from the PF-4 ***(see the first very serious omission on page 5);***

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2) to include site-specific field investigations of the active concealed faults located ~800 ft west and ~2,000 ft east of the PF-4 ***(see the second very serious omission on page 8);***

3) to be based on the markedly greater ground motions from synchronous earthquakes on the faults in the PFS ***(see the third very serious omission on page 11);***

4) to be based on earthquakes with a return period of 10,000 years ***(see the fourth very serious omission on page 13);***

5) to include field investigations of the subsurface velocity profile for seismic waves through the Bandelier Tuff and an appropriate distance into the underlying dacite reference rock. **Instead, the unacceptable velocity profile from a very different DOE Site was used for the velocity profile at LANL** ***(see the fifth very serious omission on page 14);***

6) for operation of a reliable network of seismographs to record earthquake motions that are essential for calculation of the important parameter kappa. LANL did not operate a reliable network of seismographs ***(see the sixth very serious omission on page 17);***

7) to provide an accurate value for kappa which is essential for accurate knowledge of ground motions at the PF-4 from earthquakes ***(see the seventh very serious omission on page 18)***;

8) because important knowledge for accurate assessment of the seismic hazard was to be provided by "future studies" which were not performed up to the present time ***(see the eighth very serious omission on page 20);***

9) to provide a robust kinematic model for the calculation of the seismic hazard upgrades at the PF-4. The robust kinematic model does not exist ***(see the ninth very serious omission on page 24);*** and

10) to be confirmed by an independent peer review that was not provided ***(see the tenth very serious omission on page 24).***

- **Background for the Volcanic and Seismic Setting for the Los Alamos National Laboratory (LANL) on the Pajarito Plateau in North-Central New Mexico.**

LANL is located within an intracontinental seismically active subduction zone, named the Rio Grande Rift. A tectonic map of the network of faults in the Rio Grande Rift is in Figure 1. Figure 1 shows that a super volcano, the Valles Caldera, sits to the west of LANL; it is similar to the super volcano that formed Yellowstone National Park and surrounding areas. Both super volcanoes are now collapsed calderas and have "youthful" fault systems on their flanks because of the huge volcanic eruptions. Geologists expect both super volcanoes to erupt at some time in the future. To the east of the 40-square mile laboratory is the Rio Grande, a source of drinking water for Santa Fe and Albuquerque.

At LANL, two powerful eruptions 1.6 and 1.25 million years ago from the super volcano deposited the volcanic Bandelier Tuff with a thickness of 700 ft at the location of the LANL nuclear facility PF-4. The location of the PF-4 is displayed on Figure 3. The thick volcanic ash deposits in the Bandelier Tuff buried and reenergized the pre-existing network of faults dating from the Mid-Miocene approximately 16 million years ago. The Bandelier Tuff was

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deposited during the Quaternary Period which extends from 1.8 million years ago to the present.

The two networks of faults in the vicinity of LANL that were included in the PSHA for the PF-4 and for the other existing LANL nuclear weapons facilities are displayed on Figure 2 and include the Pajarito Fault System (PFS) and the Embudo Valley Fault System / Southwest to the north of the PFS.

The three LANL PSHA considered the PFS to be 30 miles long and greater than 6 miles wide with the five fault segments displayed on Figures 2 and 3. The LANL 2007 Probabilistic Seismic Hazard Analysis (PSHA) Report on page 5-9 describes the PFS as follows:

> As defined here, the PFS includes five fault segments: the main element is (1) the 36-km-long Pajarito fault (PAF), the main east-dipping segment to the south; secondary elements include (2) the 12-km-long Santa Clara Canyon fault (SCC), the main east-dipping segment to the north; (3) the Rendija Canyon (RC) and Guaje Mountain (GM) faults, two shorter west-dipping segments that extend between the PAF and SCC; and, (4) the Sawyer Canyon fault, a short west-dipping segment that is outboard and subparallel to the RC and GM. *See Figures 2 and 3.*

We provide ten very serious omissions to the seismic analyses below for the proposed seismic hazard upgrades to the PF-4.

- **The first very serious omission is that the LANL PSHA did not include the detailed characterization of all active faults at the 40-square mile facility and in the region surrounding LANL up to 40 km (24 miles) from the PF-4.**

The industry standard ANSI/ANS-2.27-2008 requires detailed characterization of all active faults within 40 km (24 miles) of the PF-4. For example, from Table 1 in ANS-2.27-2008 :

> [c]haracterize in detail all Quaternary faults and volumetric source zones within 40 km [24 miles of the site].

The red circle on Figure 1 displays the Quaternary Faults within 40 km of LANL. However, the LANL PSHA only included the Embudo Valley Fault System/Southwest to the north of the PFS, and the PFS as described in the excerpt above without the Sawyer Canyon Fault (see discussion below on page 6 about the omission of the Sawyer Canyon Fault).

ANSI/ANS-2.27-2008 requires detailed field investigations of all faults displayed on Figure 1 that are within a 40-km (24-mile) distance of the PF-4 but the required field investigations were not performed for the following faults displayed on Figure 1: (1) the Nambe Fault at Santa Fe, (2) the La Bajada Fault, (3) the San Francisco Fault, (4) the San Felipe Fault Zone, (5) the Jemez Fault, (6) the Cahones Fault, (7) the Santa Clara Canyon Fault (see Figure 2), (8) the Puye Fault Zone, and (9) the Pojoaque Fault. A 3.5 magnitude earthquake occurred

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on the active Pojoaque Fault on October 17, 2011. ***See the discussion on page17 about the failure of the LANL seismic network to accurately measure the power of this earthquake.***

The decision to not include the Sawyer Canyon Fault in the LANL PSHA was described in the 2007 PSHA as follows on page 5-9:

> In this study we modeled the Sawyer Canyon fault as a separate rupture source for simplicity and because it is north of LANL and dips away from the lab (see Table 5-1 for parameters of the Sawyer Canyon fault, No. 2028), as were done previously in the characterization of Wong *et al.* (1995). We believe this simplifying assumption is slightly conservative, but is justified by the minor role of the Sawyer Canyon fault within the PFS and the need to simplify an already extremely complex model. In addition, this allows us to focus on the PFS fault segments that are much more significant to LANL because of their proximity and geometry.

The very uncertain termination of the Sawyer Canyon Fault approximately 4 miles north of the PF-4 is displayed on Figure 2. The termination is based on field mapping of displacements mapped at land surface. However, the Sawyer Canyon Fault may extend a great distance to the south toward LANL as a concealed active fault as does the Guaje Mountain (GM) fault. The requirement in ANSI/ANS-2.27-2008 to characterize the active concealed faults in the Bandelier Tuff is described below on page 8.

The required field investigations for the GM Fault were not performed. The DOE 2011 final SEIS admits that detailed field mapping has not been performed for accurate knowledge of the distance from the PF-4 to the key GM Fault as follows:

> Detailed geologic mapping of the area between the mapped southern termination of the Guaje Mountain Fault [GM Fault on Figure 3] and the northern side of Los Alamos Canyon [a north-south distance greater than 6,300 ft] has not yet been undertaken (DOE Response to Comment 315-5).

In the above statement, DOE admits the very serious omission of detailed field mapping for location of the GM Fault. Nevertheless, the DOE 2011 final SEIS misrepresents the key GM Fault to terminate at a distance 2 ½ miles north of the proposed CMRR-NF. In fact, the GM Fault is the fault segment on Figure 3 at land surface in Los Alamos Canyon within a distance of 4,000 ft from the PF-4. In addition, the large zone of intense fractures ~800 ft west of the PF-4 on Figure 4 is evidence of ground shaking from the close location of a concealed active fault that is probably the RC Fault, but is possibly the GM Fault. The best information is that the GM Fault is the concealed active fault located ~2,000 ft east of the PF-4 (see Figures 3A and 3B).

The DOE 2011 draft SEIS admits another very serious omission that large regions at LANL have not been mapped for seismic hazards as follows:

> Large eastern and southern areas of LANL have not yet been mapped in detail for seismic hazards (p. 3-22).

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The required field investigations for accurate knowledge of the seismic hazard were not done. Indeed, the DOE response 315-5 to the comment of Gilkeson and Arends on this topic in the DOE 2011 final SEIS Volume 2 show that the location of surface faults was the only concern for the assessment of the seismic hazard at the existing LANL nuclear weapons facilities, including PF-4. But as documented above, large areas of LANL are not mapped even for surface faults. The DOE Comment Response 315-5 follows:

> **DOE Comment Response 315-5:** Lewis et al. (2009) states that the southern extent and amount of displacement on the Guaje Mountain fault are not well constrained. Detailed geologic mapping of the area between the mapped southern termination of the Guaje Mountain fault and the northern side of Los Alamos Canyon has not yet been undertaken. That said, studies have completed detailed geologic mapping of LANL from Los Alamos Canyon to the north to Pajarito Canyon to the south, and from the Pajarito fault escarpment to the west to TA-46 to the east (for example, Gardner et al. 1999; Lavine et al. 2003). These studies carefully looked for the presence or absence of **surface faulting** associated with the Rendija Canyon and Guaje Mountain faults within LANL property. Geologic mapping at LANL to identify **surface faulting** is summarized by Animation 1 in Lewis et al. (2009).
>
> Lewis et al. (2009) shows that the Rendija Canyon fault trends southward to Los Alamos Canyon, then splays southwesterly into a broad zone of deformation in LANL's TA-3. **Surface faulting** from the Rendija Canyon fault was not identified due south of Los Alamos Canyon, including at TA-55. The **surface expression** of the Guaje Mountain fault is not visible south of Pueblo Canyon, including within LANL property.
>
> Using the data presented in Lewis et al. (2009), as a comprehensive, peer-reviewed report and map of the Pajarito fault system, the following can be stated with respect to distances from the center of the proposed CMRR-NF:
>
> • the nearest geologic structure with lateral continuity is associated with the [surface expression of] the Rendija Canyon fault, located approximately 3,300 feet (1,000 meters) west-northwest of the center of the proposed CMRR-NF [approximately 2,500 ft away from the PF-4]. This geologic structure is located within the "horsetail" splay of the Rendija Canyon fault, in the western portion of TA-64, exhibits 3 feet (1 meter) of down-to-the-west displacement, and has a mapped length of approximately100 feet (30 meters).
>
> • the location at the north side of Los Alamos Canyon, where the Rendija Canyon fault changes its trend from southerly to southwesterly, is located approximately 6,250 feet (1,900 meters) north of the center of the proposed CMRR-NF.
>
> • the mapped southern termination of the Guaje Mountain fault, north of Pueblo Canyon, within the Los Alamos townsite, is approximately 13,000 feet (3,960 meters) north-northeast of the center of the proposed CMRR-NF.
>
> These data presented above, which are consistent with those provided in Chapter 3, Section 3.5, Geology and Soils, of the *CMRR-NF SEIS*, correspond to data used to

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calculate design-basis earthquake ground motions for the CMRR-NF [and for the PF-4] [Emphasis supplied].

The above DOE comments show the concern in the LANL PSHA Reports and in the DOE 2011 SEIS was only for faults with surface ruptures although Presidential Executive Order 12699 (re. ANS-2.27-2008) required detailed investigations of the concealed faults in the Bandelier Tuff. The LANL reports issued in 1985 (Dransfield and Gardner), 1990 (Vaniman and Wohletz), and 2004 (Wohletz) show there was knowledge of the concealed active Rendija Canyon fault at a location ~800 ft west of the PF-4 and the concealed active Guaje Mountain (GM) fault at a location ~2,000 ft east of the PF-4. Nevertheless, the close locations of the two concealed faults were omitted from the seismic hazards assessment for the PF-4. This issue is discussed below in the second very serious omission. For the GM fault, an additional mistake in the above comments is that Figure 3 shows the GM fault to be a surface expression in Los Alamos Canyon at a location ~4,000 ft north of the PF-4. The claim by DOE that the GM fault terminates based on surface expression at a distance of ~13,000 ft north of the proposed CMRR-NF (~11,00 ft north of PF-4) is incorrect.

- **A second very serious omission is that the proposed seismic upgrades for the PF-4 did not include the concealed active Rendija Canyon (RC) and Guaje Mountain (GM) Faults that were recognized in LANL reports as close to the PF-4.**

DOE and the LANL scientists admit that the active GM Fault is much closer to the proposed CMRR-NF and the PF-4 than the 13,000 ft (2 ½ mile) distance on Figure 3 that was used to calculate the seismic hazard at the PF-4. As described above, the GM Fault is the 1,800-ft long unnamed fault segment on Figure 3 present at land surface in Los Alamos Canyon 4,000 ft north of the PF-4. A very important fact is that three LANL reports published in 1985, 1990 and 2004 identified that the RC Fault is the concealed active fault ~800 ft west of the PF-4 and the GM Fault is the concealed active fault located ~2,000 ft east of the PF-4 (See Figures 3A, 3B, 4 and 5). Omission of the close locations of the active concealed faults in the seismic hazard analysis for the PF-4 threatens workers, the public and the environment because of the much greater ground motions at the PF-4 from the close locations of the concealed active faults.

And Presidential Executive Order 12699 regarding the four Industry Standards requires inclusion of the concealed active faults known to be close to the PF-4 in the engineering design for the proposed upgrades to the 1970's era nuclear weapons facility at PF-4. As described above on page 2, the DOE Order 420.1B approved on December 22, 2005 required the seismic hazard assessment for the LANL nuclear weapons facility PF-4 to be in compliance with Executive Order 12699 which required a PSHA to comply with ANSI/ANS-2.27-2008 for geological, seismological and geophysical investigations of concealed faults and specifically the concealed active faults close to the PF-4 as follows:

> ***Fault location*:** Quaternary fault traces shall be defined, and locations shall be shown in map view with sufficient detail to determine source-to-site distance. In the case of concealed or blind faults, the location of the shallowest extent of the fault shall be indicated on the fault maps [Emphasis supplied] (p. 10 in ANS-2.27-2008).

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> The potential for surface fault rupture and associated deformation shall be determined. This assessment shall include the evaluation of both primary faults that reach the ground surface as well as secondary ground deformation (e.g., faulting, folding, tilting, warping, etc.) related to concealed or blind faults that do not reach the ground surface [Emphasis supplied]. The investigation of a site and its vicinity for surface faulting shall include the following:
>
> (1) Examination for potential Quaternary surface faults at the site or for Quaternary faults that trend toward the site [e.g., RC and GM Faults];
>
> (2) evaluation of the activity and origin of any Quaternary faults detected at the site or in the site vicinity that trend toward the site and the history of their displacement by the use of appropriate and accepted techniques and methods;
>
> (3) Evaluation of the width of the Quaternary fault zone, including areas of possible secondary ground deformation [e.g., the zones of intense fractures above the concealed RC and GM faults (see Figure 5)] (p.15 in ANS-2.27-2008).

The detailed field investigations including geophysical surveys and drilling of core holes required by ANSI/ANS-2.27-2008 to determine the location and depth to the concealed active RC and GM Faults close to and possibly below the LANL nuclear facility PF-4 were not performed. The omission of the required geophysical and drilling investigations is a serious issue because the DOE 2011 final SEIS admits in Response 241-14 (p. 3-466) that the LANL scientists have successfully used surface seismic reflection methods in 1979 to map the southward presence of the concealed RC and GM Fault toward the PF-4 as follows:

> **241-14** Early seismic reflection studies [in 1979] by Dransfield and Gardner (1985) found evidence of the Rendija Canyon and Guaje Mountain faults below the ground surface, south of respective mapped surficial traces.

Figure 4 is map 1 in the 1985 LANL report by Dransfield and Gardner. The map shows the locations of the two east-west seismic reflection lines; line 1 in Los Alamos Canyon and line 2 in Mortandad Canyon. The two seismic lines reliably detected the concealed active RC and GM Faults to be present below Mortandad Canyon located ~ 1,500 ft to the north of the PF-4. Further, the detailed mapping of zones of intense fractures in the Bandelier Tuff by Wohletz (2004) (see Figure 5) confirmed that the concealed active RC Fault is located ~ 800 ft west of the PF-4 and the concealed active GM Fault is located ~2,000 ft east of the PF-4.

The most recent rupture for the GM Fault is dated in the Late Quaternary approximately 4,200 years ago according to detailed field mapping and age dating in the LANL 2007 PSHA. The great potential for an earthquake on the RC and/or GM Fault to cause a surface rupture at the PF-4 is similar to the new fault scarp in the picture on the next page because of the mapped large displacement on historical earthquakes on the GM Fault as described below in footnote 9 to Table 5-10 in the LANL 2007 PSHA Report:

> **From Footnote 9.** Data from trenches at Chupaderos and Cabra Canyons suggest vertical displacements of 1.5 to >2 m respectively, for the youngest event on the GM (Gardner *et al.*, 2003). The penultimate event at Chupaderos Canyon resulted in

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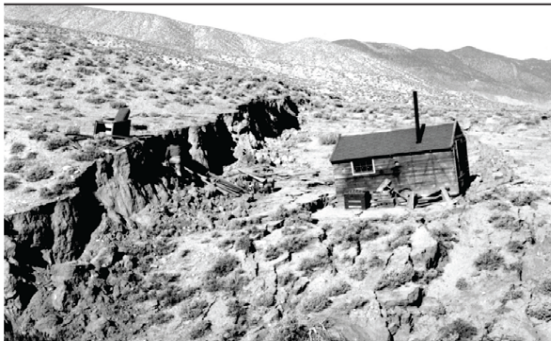
about 0.5 m of vertical offset, but it appeared to be dominated by strike-slip and net slip estimates could not be constrained (Gardner *et al.*, 2003). Displacement data from terrace profiles in Rendija Canyon are permissive of 1.0 to 2.5 m [up to 8.25 ft] of displacement per event on the GM (Wong *et al.*, 1995) [the LANL 1995 PSHA Report].

The above Footnote 9 shows that very powerful large vertical displacements of greater than 8 feet have occurred during earthquakes on the GM Fault and very importantly, some rupture motions have been along the north-south strike of the fault. This is a thrust rupture which increases the potential for an earthquake on the GM to propogate laterally along strike toward the PF-4 and to cause large ground motions and even a surface rupture at locations where the active RC and GM faults are presently concealed in the subsurface.

There is a great danger for an earthquake to cause surface ruptures of the RC and GM Faults and great damage to the LANL nuclear weapons facility PF-4. Earthquakes on the concealed faults may cause ruptures at land surface close to and possibly below the PF-4 similar to the new fault scarp in the picture below that was created by the 1954 Dixie Valley earthquake where there was no evidence of faulting prior.



Source. Cover photo – "Earthquakes in Nevada and How to Survive Them" – Nevada Bureau of Mines and Geology Special Publication E-16, Seventh Edition, January 2010.

The evidence that proves the fault in the above picture is new is that the fault is between the cabin and the outhouse. The toppled over outhouse is shown on the upthrown side of the fault that has a vertical displacement of greater than six ft. The DOE 2011 final SEIS admits that the fault displayed in the above picture is a new fault scarp as follows in Response 241-14 as follows:

In the photograph of the fault scarp that formed during the 1954 Dixie Valley earthquake the vertical free face that offsets the alluvial fan surface is indeed a fresh

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surface rupture that occurred during the 1954 earthquake. The surface rupture occurred on a pre-existing late Quaternary fault (Caskey et al. 2004). This is not to say that new faults cannot form. However, they are much less likely than reactivation of pre-existing faults.

The active RC and/or GM Faults concealed below TA-55 are "pre-existing faults" that may cause large ground motions and a surface rupture below or very close to the nuclear facility PF-4 as shown on the above picture of the fresh surface rupture that occurred from the 1954 Dixie Valley Earthquake.

The DOE 2011 draft SEIS recognized the importance for the engineering design of the seismic hazard upgrades for the PF-4 to include the seismic hazard from the concealed active faults in the Bandelier Tuff on page 3-22 as follows:

> Additionally, faults are only shown in areas where such faults are exposed or inferred. The end of a fault line on a map [i.e., the map in Figure 3 used for the seismic hazard in the LANL 2007 and 2009 PSHA] does not necessarily indicate truncation of a fault, but may be indicative of the end of surface exposure or lack of evidence of a fault at that location. This scenario is common in urbanized areas or in areas where faults have been buried by younger sediments. [e.g., the faults in the PFS were buried by the younger Bandelier Tuff]. Confirmation of the presence or absence of a fault at a particular site, that is, at the end of mapped fault lines, may require further site-specific detailed geologic investigations, even though mapping may already have occurred at that location [Emphasis supplied]

The DOE final 2011 SEIS admitted that there was evidence for a concealed active fault very close to the nuclear facility PF-4 in Response to Comment 241-10 as follows:

> The fault shown 800 feet (240 meters) west of the proposed CMRR-NF, by Vaniman and Wohletz (1990) and Wohletz (2004), is an inferred fault, meaning that the fault is interpreted to be present at some depth below the location at which it is mapped; however, no evidence for surface-rupturing faults was found along that mapped trace.

There is firm evidence of concealed active faults ~800 ft west and ~2,000 ft east of the PF-4. The concealed faults are a great seismic hazard that was not included in the engineering design for the seismic hazard upgrades to the PF-4 because the concern was only for mapped surface ruptures for the faults in the PFS. The concern at LANL only for surface ruptures does not comply with the industry standards established by Presidential Executive Order 12699 to characterize concealed faults.

- **A third very serious omission is that the LANL 2007 PSHA Report shows that synchronous earthquakes at LANL produce much greater ground motions than the single earthquake used for the engineering design of the seismic hazard upgrades for the LANL Nuclear Facility PF-4.**

The design basis earthquake (DBE) for the engineering design of the seismic hazard upgrades for the PF-4 is incorrectly based on simultaneous ruptures from a single earthquake of maximum magnitude M 7.0 at a distance of 1 mile away from the PF-4. The

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single earthquake was estimated to produce unacceptable low values for maximum horizontal and vertical ground motions of 0.47 g (acceleration of gravity) and 0.51 g, respectively. For example, from page 3-28 in the 2011 final SEIS:

> Based on the 2009 [PSHA] study, the TA-55 horizontal and vertical peak ground acceleration values for a 2,500-year return period are 0.47 *g* and 0.51 *g*, respectively, a reduction from the 2007 [PSHA] study (LANL 2009b). These ground accelerations were based on the latest geologic data, including that published in Lewis et al. (2009) and documented in the 2007 probabilistic seismic hazard analysis (LANL 2007a). Expected maximum magnitudes for the various rupture scenarios of the Pajarito fault system range from **M** 6.5 to 7.3. The 2007 analysis assumed that the dominant earthquake that controlled the seismic analysis was a single **M** 7.0 earthquake, at a close-in distance [of 1 mile].
>
> The 2009 updated [PSHA] study refined the estimate for the dominant earthquake, determining that a range in magnitude of **M** 6.0 to **M** 7.0 was more appropriate at close distances [as close as 1 mile] .

The horizontal and vertical ground motion values used for the proposed seismic hazard upgrades for the nuclear facility PF-4 are obviously incorrect and much too low because of

1) the DOE 2011 final SEIS incorrectly described the RC fault to terminate based on surface expression ~2,500 ft north-northwest of the PF-4 (see discussion above on page 7);

2) the DOE 2011 final SEIS incorrectly described the GM fault to terminate based on surface expression ~11,000 ft north-northeast of the PF-4 (see discussion above on page 7). However, Figure 3 shows the surface expression of the GM fault as being within ~4,000 ft of the PF-4;

3) moreover, Figures 3A, 3B, 4 and 5 show the close distance of the concealed active RC and GM faults ~800 ft west and ~2,000 ft east of the PF-4, respectively; and

4) the calculated maximum value of **M** 7.3 for a single earthquake in the 2007 PSHA is markedly greater than the maximum value of **M** 7.0 that was used for the engineering design of the seismic hazard upgrades for the PF-4. For example, from page 3-23 in the DOE 2011 final SEIS Vol 1:

> Although large historical earthquakes have not occurred on the Pajarito fault system, geologic evidence indicates that it is seismically active and capable of producing large surface-faulting earthquakes of moment magnitude (**M**) 6.5 to 7.3 (LANL 2007a; Lewis et al. 2009).

A very important fact is that the 2007 PSHA on page 7-3 described ruptures from synchronous earthquakes to produce much greater ground motions at the PF-4 than simultaneous ruptures from a single earthquake as follows:

> The [seismic] hazard from synchronous versus simultaneous rupture is shown on Figure 7-53. The hazard is higher for synchronous rupture because the ground

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> motions will be larger from seismic slip involving two subevents versus more uniform slip in a single albeit larger simultaneous event.

Figure 7-53 in the 2007 PSHA (see Figure 6 in this report) presents the results from computer modeling that show synchronous earthquakes to produce 75% greater ground motions at the PF-4 than the values used for the engineering design of the seismic hazard upgrades from a single earthquake of **M** 7.0. A very serious mistake is that even the insufficient data and discussion in the LANL 2007 PSHA show that the DBE should be based on **synchronous earthquakes** that produce estimated horizontal and vertical ground motions at the PF-4 with minimum values of 0.82 g and 0.89 g, respectively for earthquakes with a return period of 2,500 years.

- **A fourth very serious omission is that the ANS Industry Standards require the engineering design of the seismic hazard upgrades for the PF-4 to be based on the much greater ground motions from synchronous earthquakes with a return period of 10,000 years.**

➢ **However, the peak horizontal and vertical ground motions for the engineering design of the seismic hazard upgrades to the LANL nuclear weapons facility PF-4 were incorrectly based on a single earthquake with a return period of 2,500 years.**

The ASCE and ANS Industry Standards require the design for seismic hazard upgrades to the PF-4 to be based on the much greater ground motions for earthquakes with a return period of 10,000 years. For example, from page 11 in ANSI/ANS-2.26-2004 [Reaffirmed on May 27, 2010]:

> The design requirements in ANSI/ASCE/SEI 43-05 for SDC-3 [seismic design category-3], SDC-4, and SDC-5 have been selected to be more demanding than the building codes. The objective is for SSCs [structures, systems and components] designed to SDC-3 criteria to have the probability of failing to perform their safety function to be $<1 \times 10^{-4}$/year [an earthquake return period of 10,000 years].

A June 17, 2009 memo by Walter Silva and Ivan Wong, two of the authors of the LANL 2007 and 2009 PSHA, described the significantly greater ground motions at the proposed CMRR-NF for earthquakes on a return period of 10,000 years and 100,000 years as follows:

> I am not aware of any NRC [Nuclear Regulatory Commission] licensing activity with hazard similar to Los Alamos, with the site located on the hanging wall [of a large fault with >650 ft vertical displacement during the Quaternary] and within 5 km of an active **M** 6.5+ source and with 10-4 [10,000 year recurrence] horizontal peak acceleration of about 1g. This far exceeds the maximum horizontal peak acceleration of about 0.5g in the empirical V/H [vertical/horizontal] ratios. I suspect (hopeful) the NRC would closely examine empirical V/H ratio at 0.5g applied at 1.0g and above. (Recall for the DRS [Design Response Spectra] at 10-4 the UHRS [Uniform Hazard Response Spectra] is required at 10-5 [100,000 year recurrence] which is at about 2g for CMRR).

➢ **The engineering design of the proposed seismic hazard upgrades for the PF-4 is based on peak acceleration values of ~ 0.5 g and not the remarkably higher values of up to 2 g described in the above Silva and Wong (2009) memo.**

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In addition, the concern in the Silva and Wong (2009) memo is for a ***single*** earthquake and not for the much greater destructive power from the ***synchronous*** earthquakes which may occur at the PF-4 according to the following discussion on page 5-17 in the 2007 PSHA:

> The **MS** 7.2 1932 Cedar Mountain, [Nevada] earthquake included a **M** 6.8 subevent followed by a **M** 6.6 subevent, and it was likely a synchronous rupture. Another example of a synchronous rupture that is a possible analog for the PFS is the **M** 7.3 1959 Hebgen Lake, [Montana] earthquake, which involved multiple discrete faults and two subevents: a mb 6.3 event followed 5 seconds later by a mb 7.0 event (Doser, 1985). This is a good possible analog for the PFS because 1) it occurred in a region adjacent to a Quaternary caldera {Yellowstone Lake], as does the PFS; 2) it clearly involved multiple overlapping but distinct faults (rupture segments) with complex geometries, including opposing dips like the PFS; 3) it was dominantly extensional; and, 4) it had large displacements, as is suggested for the PFS. It should be noted however, that larger subevents do not always occur first and the subevents can be similar in size. Admittedly, our review here is not comprehensive. Nevertheless, the Hebgen Lake analog provides useful guidance in defining subevents for synchronous ruptures on the PFS [Emphasis supplied].

The above discussion documents that LANL recognizes that the DBE for the proposed seismic hazard upgrades to the PF-4 must be for synchronous earthquakes that produce much greater ground motions than in the current proposed engineering design. Table 5-11 in the 2007 PSHA lists estimated maximum magnitudes of M 6.96 and M 7.08 for the subevents for synchronous earthquakes in the PFS but the table omits the calculation of the much higher combined magnitude (see Figure 7). This is a serious omission.

Nevertheless, Figure 7-53 in the LANL 2007 PSHA (see Figure 6) presents the results from the LANL computer models that show the synchronous earthquakes produce power for ~ 75% more destructive peak accelerations (i.e., ground motions) at the PF-4 for earthquakes on a return period of 2,500 years and ~ 50% more destructive ground motions for a return period of 10,000 years. **It is a serious omission that the engineering design of the proposed seismic hazard upgrades for the PF-4 was not based on the very great ground motions from synchronous earthquakes for a return period of 10,000 years which produce estimated ground motions of ~1.5 g according to Figure 7-53 in the LANL 2007 PSHA Report.**

- **A fifth very serious omission is that the detailed field investigations with measurements in boreholes approximately 800-900 ft deep that are required by Industry Standard ANSI/ANS-2.27-2008 for accurate knowledge of the velocity profile below TA-55 were not performed. Instead, the engineering design for the proposed CMRR-NF and the upgrades for the existing PF-4 were based on the velocity profile from an entirely different geologic setting at the DOE Savannah River Site.**

The inappropriate use of the Savannah River velocity profile was an issue discussed on page 4 in the Confirmatory Studies Steering Committee (CSSC) memorandum dated June 17, 2009 in Appendix A in the LANL 2009 PSHA as follows:

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> **Comment [from the CSSC].** On page 3-5 (first paragraph), a short description of layer correlations used in the randomization process is provided. It appears that this model is the same as the one developed from the deep soil site at the Savannah River Site. If so, its appropriateness for application to the LANL site needs to be provided.
>
> **Response [from LANL].** The correlation model developed from velocity data acquired at the proposed NPR facility at the Savannah River Site (SRS) was **assumed** to be appropriate for application to LANL. With only six velocity surveys at CMRR, four to a depth of about 150 ft and only two beyond about 500 ft deep across the CMRR site preclude any meaningful statistical analysis of velocity variability and corresponding demonstration of statistical equivalence in soil variability between CMRR and the Savannah River NPR site [Emphasis supplied].

In the above response, DOE/LANL did not provide an appropriate reason to use the totally inappropriate Savannah River Site velocity profile in uniform alluvium to calculate ground motions for the engineering design of the proposed CMRR-NF and the seismic hazard upgrades for the PF-4 at LANL TA-55. The geology below TA-55 is layers of the volcanic rock Bandelier Tuff with large changes in velocity between the layers. The hard, intact volcanic rock below the Bandelier Tuff at an estimated depth of 750-800 ft is dacite.

The unfractured continuous layer of dacite has a significantly higher velocity than the Bandelier Tuff. It is documented in the scientific literature that there is an impedance contrast between a dense high velocity layer such as the dacite and the overlying less dense and lower velocity Bandelier Tuff. This phenomenon has been observed to increase the severity and duration of ground shaking from earthquakes. Thus prediction of ground motions at LANL TA-55 from future earthquakes and the assessment of seismic hazard suffer as a result of the large uncertainties in the velocity profile below TA-55.

A serious issue is that the LANL CSSC recognized that it was a mistake to use the velocity profile from the Savannah River Site to calculate the ground motions at the proposed CMRR-NF. But the CSSC only required LANL to accurately report in the LANL 2009 PSHA the source for the highly inappropriate velocity profile as follows on page 3 in the August 31, 2009 memorandum from the CSSC in Appendix A in the LANL 2009 PSHA:

> ***CSSC Observation-4. Appropriateness of applying Savannah River model to LANL.*** In Section 3.1.1.1 (first paragraph under the title "Site Aleatory Variability), the same description of the correlation model used in the CMRR site-response calculations is provided as in the draft report. That model was based on extensive CPT velocity data taken at the Savannah River Site. It is our opinion that the final report should clearly indicate what correlation model was used in these current calculations [e.g., the velocity profiles from the DOE Savannah River Site]. In addition, it is not obvious that the model, based on data from a site with no significant layer variability and with relatively uniform increase in velocity with depth, is appropriate for application to a site where there are distinct layers of tuffs, formed at different geologic times by different processes, and apparent significant velocity variability [Emphasis supplied].

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It is alarming that the CSSC did not require an accurate velocity profile for the engineering design of the proposed CMRR-NF and for the seismic upgrades to the existing facilities at TA-55 including the 1970's era nuclear weapons facility PF-4. The concern of the CSSC was incomplete requiring only for LANL to admit that "the current calculations" were inappropriately based on the velocity profile from the DOE Savannah River Site.

Another very serious issue is that the DNFSB also recognized that the velocity profile from the DOE Savannah River Site should not be used to calculate the ground motions for the nuclear weapons facilities at TA-55. However, the DNFSB only required DOE to address this mistake at an unspecified date in the future. The pertinent excerpt on page 1 in the DNFSB June 23, 2009 memorandum in Appendix B in the LANL 2009 PSHA follows:

> Other ground motion topics and issues:
> • The response to the [CSSC] Peer Review Panel (Comment O-4 [in the above memorandum dated June 17, 2009]) discusses the soil layer-to-layer correlation model [e.g., the Savannah River velocity profile] used in the Probabilistic Seismic Hazard Analysis (PSHA). While the PSHA has included two base case profiles, in part to address layer-to-layer correlation uncertainty, LANL is encouraged to improve their approach to layer-to-layer correlation [i.e., inappropriate use of the velocity profile from the DOE Savannah River Site]. Actions to improve this correlation should be included in the LANL Long Term Seismic Program Plan. [Emphasis supplied].
>
> • LANL is requested to provide a schedule for developing the LANL Long Term Seismic Program Plan.

In Summary, it is alarming that the DNFSB and the CSSC did not require an accurate velocity profile for the engineering design of the proposed CMRR-NF and for the seismic upgrades to the existing nuclear weapons facility PF-4 at TA-55.

There must be accurate knowledge of the velocity profile below the nuclear weapons facility PF-4 through the ~700-ft thick Bandelier Tuff and an appropriate distance into the dacite below the tuff. This accurate knowledge is essential because an earlier boring at TA-55 shows there is a 56-ft thick layer of very weak volcanic ash in the Bandelier Tuff below the PF-4 with the following properties:

> The apparent cementation is actually weak welding caused by vapor-phase minerals that form fragile connections between the volcanic ash particles that constitute the matrix of this unit. This weak welding is easily broken by even slight disturbance. The properties of [this unit] Qbt3L that are most problematic to nuclear facility construction are those that affect the seismic response of the unit, specifically, the estimated seismic wave velocities (the speed at which seismic waves travel) associated with this rock type [Emphasis supplied] (p. 3-21 in 2011 final SEIS).

There is unacceptable poor knowledge of the frequency and speed at which seismic waves travel through the weak layer of ash and the other layers in the ~700-ft thick Bandelier Tuff below the PF-4 because the detailed site-specific field investigations required by the Presidential Executive Order 12699 (Re. Industry Standard ANS-2.27-2008) for accurate

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knowledge of the seismic wave velocities were not done. Instead, the 2009 PSHA admits that the assumed ground motions at TA-55 were calculated from the seismic wave velocities measured in the entirely different geologic setting of uniform alluvial sediments at the DOE Savannah River Site.

- **Ground motions are much more powerful at LANL TA-55 than those in March 2011 that destroyed the nuclear power reactors in Fukushima, Japan.**

The ground motions that destroyed the nuclear power reactors in Fukushima, Japan in March 2011 were measured at 0.52 g which was above the power plants engineering design of 0.46 g. The 0.52 g ground motions measured at Fukushima are nearly identical to the much too low ground motions in the proposed engineering design of the seismic hazard upgrades to the LANL nuclear weapons facility PF-4 at LANL TA-55.

In summary, the public has grave concerns that it is not possible for the seismic hazard upgrades at the PF-4 to certify that the 1970's era nuclear weapons facility provides safety to the workers and the public because of the very high seismic hazard at LANL that is described in this report.

- **A sixth very serious omission is that LANL has not operated a reliable network of seismographs.**

Accurate data from a reliable network of seismographs is needed to calculate "kappa," a key seismic hazard parameter, which is required for accurate knowledge of the ground motions for the engineering design of the seismic hazard upgrades for the PF-4. And DOE Order 420.1B, Paragraph 3d, requires the installation and operation of a reliable network of seismographs as instrumentation to detect and record earthquakes. From page IV-2:

> Paragraph 3d. **Seismic Detection.** Facilities or sites with hazardous materials must have instrumentation or other means to detect and record the occurrence and severity of seismic events.

Nevertheless, the LANL 1995 and 2007 PSHA described the overall failure of LANL to operate and maintain a reliable network of seismographs at any time. The 1995 PSHA on page 11-5 described the requirements for a seismic network as follows:

> Currently there are only a few strong motion recorders operating at the LANL. A key element in assessing strong ground shaking, the effects of the subsurface geology on such motions, and the structural response of facilities to shaking are strong motion data…. We believe that the capability to record potential future ground shaking at LANL is inadequate compared to other major DOE facilities. One or more strong motion recorders should be installed at each major [LANL] facility with some instruments at free-field sites [Emphasis supplied].

The capability to record ground shaking at LANL is still inadequate. There are still only a few strong motion recorders operating at LANL. The incorrect low value of **M** 3.0 recorded by the LANL seismograhs for the October 17, 2011 **M** 3.5 earthquake close to LANL near

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Pojoaque, NM is proof that the LANL network is out of calibration. According to the USGS, an **M** 3.5 earthquake is greater than 15 times more powerful than an **M** 3.0 earthquake.

- **A seventh very serious omission is that there is not accurate knowledge of the key parameter kappa. The need for accurate knowledge of kappa was the recommended future study #5 in Section 10 of the LANL 2007 PSHA as follows:**

  Conduct additional studies to better constrain kappa. Kappa is a key parameter in assessing the hazard at LANL (Section 6.2). Focused efforts should be made to evaluate kappa using data from the LANL seismographic network. Improvements in the network may be necessary to improve data quality [Emphasis supplied].

The "recommended future study" for accurate knowledge of kappa was not performed and new efforts to evaluate kappa using the data from the LANL seismograph network was not discussed in the 2009 PSHA Update. In addition, the 2009 PSHA omits that the 2007 PSHA reported the kappa values of 0.035 sec and 0.08 sec to be unreliable. The 2007 PSHA used the unreliable kappa value of 0.035 sec for ground motion calculations because this was the most conservative of the two unreliable values. In addition, the value was close to the kappa value of 0.04 sec measured for rock sites in Western North America in a 1995 Report by Silva and Darragh for the Electric Power Research Institute.

Further, the 2009 PSHA Update does not describe the need to improve the seismograph network at LANL for accurate knowledge of kappa. Instead, the 2009 PSHA on page 4-1 describes both of the unreliable kappa values as ***"viable site kappa values"*** as follows:

> There were a number of likely conservative assumptions made in the development of the design basis ground motions. These assumptions include . . . analysis using the most conservative of ***two viable site kappa values*** [Emphasis supplied].

The above description in the 2009 PSHA is a misrepresentation of the two unreliable values for kappa because of the poor quality of the data collected from the LANL seismograph network. The 2007 PSHA Report did not describe the two kappa values of 0.035 sec and 0.08 sec as viable. Instead the excerpts below from page 6-2 and 6-3 in the 2007 report describe the reasons the two kappa values are unreliable as follows:

> In the 1995 study, seven small earthquakes (including two possible explosions) were well enough recorded at three 3-component stations of the LANL Seismographic Network to be analyzed [Emphasis Supplied]. Magnitudes (MD coda duration) ranged from about 0.0 to 1.5, and epicentral distances from about 2 to 81 km. Two of the events, on 26 October and 27 October 1989, may have been local explosions but were included because of the small amount of useable data. Seismographic stations ATE, PLS, and PFM (Figure 6-5) were selected on the basis of similarity of subsurface site conditions to those at LANL, i.e., located on Bandelier tuff. The stations were equipped with Mark Products L4-C and L4-3D seismometers with 1-Hz nominal frequency, low-pass filtered at 30 Hz. In this study, an attempt was made to evaluate any recorded earthquakes since the completion of the 1995 study. However, only two additional events were recorded at any of the three stations [Emphasis Supplied]: an earthquake of MD 2.5 on 19

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March 1998 and one of MD 2.0 on 31 August 2000. For all the seismic events (Table 6-2), the velocity recordings [from the poorly calibrated LANL seismographs] were corrected for gain and instrument response and differentiated to produce acceleration time histories [Emphasis supplied].

Because these events are so small, their source corner frequencies are very high (20 to 30 Hz), resulting in an ambiguity in kappa estimates [Emphasis supplied]. If the Fourier amplitude spectra at high frequency (5 to 20 Hz) are not corrected for the source corner-frequency being beyond the bandwidth over which the spectral slope (kappa) is estimated, the resulting kappa values have an average of about 0.035 sec (corrected for path Q) (Wong *et al.*, 1995), close to the WNA average of 0.04 sec (Silva and Darragh, 1995). This approach is equivalent to assuming an anomalously low stress drop (< 1 bar). Assuming a stress drop of 60 bars and correcting the Fourier amplitude spectra results in a significantly larger kappa estimate of about 0.08 sec (Appendix D). Because any one seismic event was recorded at only a few sites (generally two, Table 6-2), and also because there was considerable uncertainty in the computed distances and depths as well as in the measured amplitudes *(because of uncertainty in the reliability of instrumental calibrations)*, full inversions (Silva *et al.*, 1996) to estimate kappa and stress drop were not successful. Ideally, the resulting ambiguity in kappa, 0.035 sec versus 0.08 sec, should be treated as epistemic variability, with hazard computed for both kappa values, weights applied, and then the weighted hazard computed. As a practical matter, doubling all analyses was not considered a viable option and the conservative value of 0.035 sec was adopted after consultation with the Steering Committee [Emphasis supplied].

The above excerpts from the 2007 PSHA document the unacceptable poor knowledge of the very important parameter kappa for the calculation of the seismic hazard at the proposed CMRR-NF and at the existing LANL nuclear weapons facilities. There is great uncertainty in both kappa values because of the poor quality of the data collected from the LANL seismograph network.

The incorrect description in the 2009 PSHA Update that the kappa values of 0.035 and 0.08 sec are ***"two viable site kappa values"*** is a very serious mistake that must be corrected. The recommendation in the 2009 PSHA to calculate the seismic hazard at the proposed CMRR-NF and at the existing LANL nuclear weapons facilities including the PF-4 using both of the highly uncertain kappa values should **not** be performed.

Yucca Mountain Tuff is an analog for the Bandelier Tuff. The best information on the range for the value of kappa at LANL TA-55 are the kappa values measured for the Yucca Mountain Tuff at the proposed DOE Nuclear Waste Repository at Yucca Mountain, Nevada. The median and mean values for kappa measured at six seismic stations installed on Yucca Mountain Tuff are 0.027 sec and 0.029 sec, respectively. The range in the six values was from 0.0206 sec to 0.0397 sec [From page 36 ***in*** University of Nevada – Los Vegas: Technical Report **–** ***"Measurement of the Parameter Kappa, and Reevaluation of Kappa for Small to Moderate Earthquakes at Seismic Stations in the Vicinity of Yucca Mountain, Nevada."*** Report Document Identifier: TR-07-007 Task ORD-FY04-006].

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It is important to note that the median and mean values for kappa in the Yucca Mountain Tuff (0.027 sec and 0.029 sec, respectively) are lower than the two unreliable values for kappa in the LANL PSHA reports. The values calculated for earthquake ground motions increase as the values of kappa decrease. Accordingly, the use of the epistemic uncertainty process to calculate a value for kappa from the unreliable values of 0.035 and 0.08 sec will bias low the ground motion values that are used for the design basis earthquake for seismic upgrades to the PF-4.

A safe and cost effective engineering design for the seismic hazard upgrades to the PF-4 is not possible without accurate knowledge of kappa at TA-55 and this knowledge does not exist at this time. In fact, the statement below from page 4-1 in the 2009 PSHA Update reveals a scheme to use the two unreliable values of kappa for the engineering design of the seismic hazard upgrades for the PF-4:

> Evaluate the impact of the alternate kappa value (0.08 sec) that was estimated from the LANL seismic data but not used because of time and budget constraints (Wong *et al.*, 2007). The [seismic] hazard results from the alternate kappa estimate should be incorporated as **epistemic uncertainty** and appropriate weights should be developed with the Steering Committee [Emphasis supplied].

It is unacceptable to use the unreliable kappa values of 0.08 sec and 0.035 sec for calculation of the seismic hazard at the existing LANL nuclear weapons facility PF-4. An accurate value for kappa must be determined from the acquisition of site-specific data from a reliable network of seismographs and subsequent analysis to ensure that ground motions for the design basis earthquake at the PF-4 are based on accurate scientific knowledge.

In summary, a concerted effort is required to improve the ability of the LANL seismograph network for acquisition of reliable data for calculation of an accurate value for kappa. The need for improvements in the network was identified in the Recommended Future Studies in the 2007 PSHA but apparently the improvements have not been made.

- **An eighth very serious omission is that the six Recommended Future Studies in the LANL 2007 PSHA Report have not been followed.**

Much additional fieldwork is required for accurate knowledge of the seismic hazard and to understand the engineering design for the seismic upgrades to the existing nuclear facilities at TA-55 including the PF-4. **The LANL 2007 PSHA recommended essential studies to improve knowledge of the seismic hazard to be performed in the "future."** The essential studies have not been performed. A copy of the six 2007 PSHA Recommendations for Future Studies are attached to this draft report. Some of the key studies that were not done are described in this draft report as the ten very serious omissions. The very serious omissions number 7 and 8 were described as future studies in the LANL PSHA. In addition, the LANL 2007 PSHA described the need for field investigations as future studies.

The current engineering design for the seismic hazard upgrades for the PF-4 is based on guesses, assumptions and data from other DOE sites in completely different geologic settings, including the Savannah River Site located in South Carolina.

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An additional example of "future studies" in the LANL 2007 PSHA is that fieldwork was required for accurate site-specific values for:

(1) the shear velocity of the unfractured dacite reference rock at an estimated depth greater than 750 ft below the PF-4, and

(2) the actual depth below the PF-4 to the continuous layer of unfractured dacite.

Instead, the LANL 2009 PSHA Report used assumed values for both important parameters for calculating the seismic hazard at the existing LANL nuclear weapons facilities including the PF-4. The 2007 PSHA admitted there was no reliable value for the shear velocity in the dacite in Section 10 as follows:

> **Recommended Future Study #6.** Conduct VS [Vs - Shear Velocity] measurements of dacite. There is no reliable Vs data for the dacite (Section 4.2.3) and thus velocity data would confirm the [assumed] value used in this study [Emphasis supplied].

The LANL 2007 PSHA admitted there was no reliable Vs data for the dacite reference rock below the PF-4 for a safe and cost effective engineering design for the required seismic hazard upgrades to the nuclear weapons facility. The LANL 2007 PSHA Report used an assumed value of 5,600 ft/sec for the shear velocity of the volcanic dacite below TA-55 because of the very low value of 2,950 ft/sec that was measured in the only borehole at TA-55 that was drilled a short distance into the dacite. The 2007 PSHA Report recommended additional field work to measure the shear velocity of the dacite below TA-55, but this was not done for the 2009 PSHA Update Report.

An important omission is that the 2009 PSHA did not mention there was no reliable data for the Vs of the dacite. Instead, the 2009 PSHA on page 3-12 described the dacite reference rock below the proposed CMRR-NF as follows:

> The dacite outcrop hazard reflects the firm rock conditions which underlie the surficial soils at the LANL. The material has a VS [Vs] of about 5,600 ft/sec and occurs at a depth of about 750 ft at CMRR [at TA-55].

The Kleinfelder 2007 Geotechnical Report on page 29 described the requirement for the geotechnical study of the dacite reference rock to drill two borings deep into the dacite at locations below the proposed plutonium CMRR-NF [close to the PF-4] at TA-55 as follows:

> Deep seismic characterization (DSC) borings were drilled to characterize the complete geologic column down to the "basement" bedrock level at TA-55. Three DSC borings were identified in the G/SIP but only two of these borings were drilled. Two deep borings were deemed necessary to provide ***corroborative characterization*** of the deeper portions of the geologic column for the site selected by LANL for the CMRR Facility. The third boring, DSC-3, was identified as an alternate and would have been drilled only if the original (and currently planned) site for the CMRR Facility were deemed not viable [Emphasis supplied].

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The objectives of the two boreholes were to:

(1) measure the depth to the top of the continuous layer of reference rock dacite below the proposed CMRR-NF and

(2) the Vs of the dacite in the continuous layer.

Neither objective was accomplished because the geotechnical investigation only drilled one borehole a short distance of 43.5 ft into the extensively fractured dacite. Borehole DSC-1B was the only borehole drilled into the dacite below the location of the proposed CMRR-NF. The Kleinfelder 2007 Geotechnical Report describes the extensively fractured dacite in borehole DSC-1B as follows:

> The basement rock of this site was encountered in boring DSC-1B at a depth of about 697.5 ft (El 6597.5) and consists of Tschicoma dacitic lava (dacite). At least three distinct flows were identified in the 43.5 ft of basement rock penetrated at the bottom of boring DSC-1B, but the total thickness is probably several hundred feet The upper boundary is heavily fractured and vesicular, which reduces the overall rock mass stiffness [Emphasis supplied].

The Kleinfelder 2007 Geotechnical Report describes the video log in borehole DSC-1B as follows:

> Through the dacite the borehole wall was very blocky and irregular, retaining a cylindrical shape in only a few locations to 733 ft, where slough had backfilled the hole. The over break through the dacite appeared to be at least one borehole diameter beyond the borehole wall.

.

The omission of drilling a minimum of two boreholes at locations close to the PF-4 for continuous velocity profiles through the entire thickness of the Bandelier Tuff and for measurement of the Vs of the *in situ* continuous layer of unfractured dacite is unacceptable and must be corrected for the following reasons:

(1) The design basis earthquake (DBE) for TA-55 was based on the velocity profile from a totally different geologic setting of uniform alluvium at the DOE Savannah River Site;

(2) The depth to unfractured dacite and the Vs for unfractured dacite are assumed values for the assessment of the seismic hazard at the PF-4. The statement in the 2009 PSHA that the dacite "has a Vs of about 5,600 ft/sec and occurs at a depth of about 750 ft at CMRR" does not mention that actual knowledge of the Vs and depth to the top of the unfractured dacite below the proposed CMRR-NF does not exist. The Vs of 5,600 ft/sec is an assumed value because of the low Vs value of 2,950 ft/sec that was measured in the extensively fractured dacite in the only borehole that was drilled a short distance into the dacite; and

(3) The depth to the top of the dacite with an "assumed" high Vs was determined by inappropriate and unreliable computer modeling as described on page 3-5 in the LANL 2009 PSHA as follows:

> For the CMRR analyses, the velocity profiles were randomized [in a computer model] with depth to basement (taken as dacite) randomized [in a computer model]

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from about 600 ft to about 900 ft, assuming a uniform distribution (Wong *et al.*, 2007) and resulting in a mean depth to dacite of 750 ft [Emphasis supplied].

In summary, the above statement is one example of many that the study of the seismic hazard at the proposed $6 billion CMRR-NF and the existing nuclear weapons facility PF-4 was a work of very expensive assumptions and not scientific fact. Accurate velocity profiles from land surface to the depth of an accurately measured Vs in the dacite reference rock are important requirements for accurate calculation of the horizontal and vertical ground motions at the proposed CMRR-NF and at the PF-4. **However, accurate velocity profiles do not exist at the present time because a sufficient number of boreholes drilled to an appropriate depth into the dacite have not been provided as required in the Industry Standard ANSI/ANS-2.27-2008.**

Another example of "future studies" is that the LANL 2007 PSHA admits there is much uncertainty on the geometry (i.e., angle of dip and "sense of slip") for the active faults in the PFS at this time as follows:

> It is noteworthy that the fault dips are the most poorly constrained part of the model due to the lack of subsurface structural data [Emphasis supplied] (page 5-12).
>
> Very few kinematic data regarding fault-slip direction are available for the PFS [Pajarito Fault System]. Slip directions measured on the RC and GM indicate dominantly normal slip with rakes that are typically between 80° and 90°, but occasionally range as low as 70° (Karen Carter, personal communication 1994, cited in Wong *et al.*, 1995, Table 7-1, footnote 9). Unfortunately, slip direction data are lacking on the PAF [Pajarito Area Fault – the primary and most important fault in the PFS], but with its similar northerly strike one would expect slip directions similar to the RC and GM. In contrast, the SCC [Santa Clara Canyon Fault] strikes northeast and could have a larger component of oblique slip, although data are lacking to check this hypothesis [Emphasis supplied] (page 5-11).

The above statements show that the required field investigations were not done. The industry standard ANSI/ANS-2.27-2008 requires detailed field investigations with the following methods:

> Geological, seismological, and geophysical investigations to characterize fault sources shall address the uncertainty in the following factors:
>
> ***Fault dip and down-dip width*:** Example approaches to evaluate the angle of dip are . . . seismic reflection profiles, where available.
>
> ***Sense of slip (i.e., style of faulting)*:** The horizontal and vertical components of displacement and fault dip shall be assessed to properly classify the sense of slip on a fault.
>
> ***Concealed and blind faults*:** The location, dimensions, and rate of slip of concealed and blind faults shall be evaluated. Concealed and blind potential seismic sources can be identified and characterized by a combination of subsurface interpretations

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> [e.g., balanced cross sections, seismic reflection data] coupled with evidence for geologically young deformation [e.g., the zones of intense fractures close to the proposed CMRR-NF on Figure 4], geodetic measurements (e.g., global positioning system (GPS) and interferometric synthetic aperture radar surveys), and seismicity studies (e.g., focal mechanism analysis) (p. 10).

The detailed field investigations for accurate knowledge of the dip and "sense of slip" for the faults with surface displacements on Figure 3 and the concealed faults on Figure 4 have not been performed. However, the 1985 LANL report by Dransfield and Gardner shows that seismic reflection surveys will provide important information on the geometry of the discrete faults in the PFS.

- **A ninth very serious omission is that the calculation of the seismic hazard at TA-55 requires a robust kinematic model that does not exist.**

The LANL Seismic Hazards Geology Team described the need for a robust kinematic model of the PFS in a 2009 paper published in the journal *Geosphere* as follows:

> Despite the importance of understanding the geometry of the [PFS] fault system and potential linkage among faults for purposes of seismic hazard analysis, a robust kinematic model of the fault system is lacking (*Geosphere;* June 2009; v. 5; no. 3; p. 252).

The DOE 2011 final SEIS Response to Comment 241-9 agreed with the need for a robust kinematic model as follows:

> It is nevertheless prudent to consider such interactive fault models (kinematic and dynamic) in the future for possible application to the Pajarito Fault System [Emphasis supplied].

It is a requirement at this time as mandated by Presidential Executive Order 12699 to have a robust kinematic model of the PFS for the engineering design of the seismic hazard upgrades for the PF-4. Currently, the very expensive engineering design is being performed without a robust kinematic model.

- **A tenth very serious omission is that the independent expert peer review process required by the Office of Management and Budget *2004 Final Information Quality Bulletin for Peer Review* and by the Presidential Executive Order 12699 Re: Industry StandardANSI/ANS-2.27-2008 was not provided for the assessment of the seismic hazard at the proposed CMRR-NF.**

The Defense Nuclear Facilities Safety Board (DNFSB) described the importance of independent peer review of the entire process to assess the seismic hazard at the proposed CMRR-NF in the February 2011 DNFSB *Twenty-first Annual Report to Congress* as follows:

> The Board continues to stress to DOE the importance of adequate review, including independent peer review, of both the acquisition of site-specific data and

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subsequent analysis to ensure that ground motions for design basis earthquakes [DBE] are based on accurate scientific knowledge (p. 63).

Independent peer review has not been done.

Conclusion: Our review has determined that the required accurate scientific knowledge for a safe and cost-effective design of the seismic hazard upgrades to the 1970's era plutonium nuclear weapons facility PF-4 does not exist at this time.

- **Due to the great underestimation of the seismic hazard at the 40-square mile LANL Site and specifically at the PF-4 nuclear weapons facility site described in this draft report and the LANL reports that describe the Pajarito Fault System (PFS) as youthful and growing in power, a moratorium on all things nuclear at LANL must be declared, and:**

  (1) in order to protect human health and the environment, safe storage of the six metric tons (13,228 pounds) of plutonium proposed for storage at the proposed CMRR-NF must be addressed now;

  (2) new DOE proposed projects that involve large inventories of plutonium must not be performed at the PF-4 which lacks the structural ductility and redundancy required by modern building codes for seismic hazard. For example, the PF-4 should not be considered as a suitable nuclear facility for the new DOE initiative for disposition of surplus weapons-usable plutonium;

  (3) stop all spending for the engineering design of the proposed seismic hazard upgrades to the PF-4 because there is not sufficient knowledge of the seismic hazard for a safe design;

  (4) require DOE to conduct the necessary fieldwork in order to determine the seismic hazard at LANL and the DBE for the seismic hazard upgrades to the PF-4; and

  (5) require DOE and LANL to install the necessary calibrated network of seismographs that will provide knowledge of kappa;

  (6) set a timeline for delivery of the LANL Long Term Seismic Program Plan.

Additional information and testimony--contact preparers of this report:

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The six recommendations for future studies in the LANL 2007 PSHA Report

The only "future study" performed was the recalculation of the seismic hazard using the Next Generation Attenuation (NGA) ground motion attenuation relationships. However, this future study should not have been performed because of the many deficiencies in accurate knowledge of the seismic hazard at the LANL Site and specifically at TA-55.

SECTION TEN — **Recommendations for Future Studies**

Based on the studies completed to date, the following are recommendations for future investigations. The results of such studies will aid in refining specific seismic source and site parameters, which have been incorporated into the PSHA, and reduce their associated uncertainties.

- Recalculate the hazard using the NGA ground motion attenuation relationships. Four relationships are now available for use and they display significant differences with the earlier generation of relationships, i.e., the ones used in the current study (Section 6.1). It would be prudent to evaluate the impact of these new relationships on the LANL hazard after they have had time to be fully vetted.
- Conduct additional detailed/high-precision mapping and displacement measurements along the SCC segment of the PFS, similar to what has been done on the PAF segment of the PFS. The purpose of this would be threefold: (1) better define fault trace geometry for the SCC and verify the gap between the PAF and SCC; (2) better define long-term displacements and slip rates for the SCC; and (3) identify potential paleoseismic trenching sites.
- Conduct paleoseismic trenching studies of the SCC to determine the timing and size of prehistoric surface-faulting earthquakes. This will help better define rupture models and scenarios for the PFS. It may also help better determine maximum magnitudes and recurrence intervals for rupture scenarios.
- Reevaluate the entire dataset for the RGR fault slip rate analysis using only data for complete seismic cycles and more complete documentation of long-term data (both displacements and applicable time periods). This more robust analysis will likely reduce slip rate uncertainties and result in a more symmetric RGR slip rate distribution.
- Conduct additional studies to better constrain kappa. Kappa is a key parameter in assessing the hazard at LANL (Section 6.2). Focused efforts should be made to evaluate kappa using data from the LANL seismographic network. Improvements in the network may be necessary to improve data quality.
- Conduct V_S measurements of dacite. There is no reliable V_S data for the dacite (Section 4.2.3) and thus velocity data would confirm the value used in this study. Measuring the velocity of the dacite beneath the laboratory requires deep boreholes and so although not ideal, shallow velocity surveys where the rock outcrops is probably the only economical alternative.

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The reports that we have reviewed include the following:

American Nuclear Society, 2004. "*American National Standard-Categorization of Nuclear Facility Structures, Systems, and Components for Seismic Design ,"* ANSI/ANS-2.26-2004. December 02, 2004. Reaffirmed on May 27, 2010.

American Nuclear Society, 2008. "*American National Standard-Criteria for Investigations of Nuclear Facility Sites for Seismic Hazard Assessments,"* ANSI/ANS-2.27-2008. July 31, 2008.

American Nuclear Society, 2008. "*American National Standard-Probabilistic Seismic Hazards Analysis,"* ANSI/ANS-2.29-2008. July 31, 2008.

DNFSB 21st Report to Congress Defense Nuclear Facilities Safety Board (DNFSB) TWENTY-FIRST ANNUAL REPORT TO CONGRESS – FEBRUARY 2011

DOE 2011 draft SEIS Draft Supplemental Environmental Impact Statement for the Nuclear Facility Portion of the Chemistry And Metallurgy Research Building Replacement Project at Los Alamos National Laboratory, Los Alamos, New Mexico DOE/EIS-0350-S1 April 2011.

DOE 2011 final SEIS Final Supplemental Environmental Impact Statement for the Nuclear Facility Portion of the Chemistry And Metallurgy Research Building Replacement Project at Los Alamos National Laboratory, Los Alamos, New Mexico DOE/EIS-0350-FSEIS August 2011.

DOE Order 420.1B. Approved: 12-22-05 Review: 12-22-07 Chg. 1: 4-19-10. **SUBJECT:** FACILITY SAFETY.

DOE-STD-1020-2011. "*Natural Phenomena Hazards Analysis and Design Criteria for DOE Facilities,"* 2011.

DOE-STD-1189, *Integration of Safety into the Design Process,* March, 2008.

Dransfield, B. J. and J. N. Gardner, 1985. "*Subsurface Geology of the Pajarito Plateau, Espanola Basin, New Mexico,"* LA-10455-MS, Issued May 1985.

Gardner et al., 2008. "*Fault Geology and Structure of the Chemistry and Metallurgy Research Facility Replacement Site, Los Alamos National Laboratory, New Mexico"* by Jamie N. Gardner, Emily S. Schultz-Fellenz, Florie A. Caporuscio, Claudia J. Lewis, Richard E. Kelley and Mary K. Greene. LA-14378, Issued: October 2008.

Interagency Committee on Seismic Safety in Construction (ICSSC), 1995. *ICSSC Guidance on Implementing Executive Order 12941 on Seismic Safety of Existing Federally Owned or Leased Buildings.* ICSSC Report 5, October 1995.

Kleinfelder 2007 Geotechnical Report. Geotechnical Engineering Report Chemistry and Metallurgy Research Facility Replacement (CMRR) Project Los Alamos National Laboratory, Kleinfelder Project No. 19435, Rev 0.

LANL 2009 PSHA Report Update. Salmon, M., I. Wong, M. Dober. 2009. Interim Report – Update of the probabilistic seismic hazard analysis and development of CMRR seismic

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design ground motions Los Alamos National Laboratory, New Mexico (LA-UR-11-03814): URS Corporation, December 4, 2009. Oakland, California, URS Corporation, 1 volume.

LANL 2007 PSHA Report. Wong, I., Silva, W., Olig, S., Dober, M., Gregor, N., Gardner, J., Lewis, C., Terra, F., Zachariasen, J., Stokoe, K., Thomas, P., and Upadhyaya, S., 2007, Update of the probabilistic seismic hazard analysis and development of seismic design ground motions at the Los Alamos National Laboratory: Oakland, California, URS Corporation, 1 volume.

LANL 1995 PSHA Report. Wong, I., Kelson, K., Olig, S., Kolbe, T., Hemphill-Haley, M., Bott, J., Green, R., Kanakari, H., Sawyer, J., Silva, W., Stark, C., Haraden, C., Fenton, C., Unruh, J., Gardner, J., Reneau, S., and House, L., 1995, Seismic hazards evaluation of the Los Alamos National Laboratory: Oakland, California, Woodward-Clyde Federal Services, 3 volumes.

Lavine et al., 2005. "*Evaluation of Faulting at the Chemistry and Metallurgy Research Facility Replacement (CMRR) Site Based on Examination of Core from Geotechnical Drilling Studies, TA-55, Los Alamos National Laboratory*" by Alexis Lavine, Jamie N. Gardner and Emily N. Schultz LA-14170 Issued: January 2005.

Lewis et al., 2009, "*Fault interaction and along-strike variation in throw in the Pajarito fault system, Rio Grande rift, New Mexico*" in the June, 2009 issue of *Geosphere* by Claudia J. Lewis, Jamie N. Gardner, Emily S. Schultz-Fellenz, Alexis Lavine, Steven L. Reneau - *LANL* and Susan Olig - *URS Corporation,* LA-UR-06-2158.

Nuclear Regulatory Commission (NRC), 1997. "*Recommendations for Probabilistic Seismic Hazard Analysis: Guidance on Uncertainty and Use of Experts-Main Report*" - NUREG/CR-6372 UCRL-ID—122160. Prepared by Senior Seismic Hazard Analysis Committee (SSHAC) R. J. Budnitz (Chairman), G. Apostolakis, D. M. Boore, L. S. Cluff, K. J. Coppersmith, C. A. Cornell and P.A . Morris.

Presidential Executive Order 12699, January 5, 1990. *Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction.*

Presidential Executive Order 12941, December 1, 1994. *Seismic Safety of Existing Federally Owned or Leased Buildings.*

University of Nevada – Los Vegas: Technical Report, December 5, 2007. ***"Measurement of the Parameter Kappa, and Reevaluation of Kappa for Small to Moderate Earthquakes at Seismic Stations in the Vicinity of Yucca Mountain, Nevada."*** Report Document Identifier: TR-07-007 Task ORD-FY04-006

Vaniman, D. and Wohletz, K., 1990. "Results of Geological Mapping and Fracture Studies: TA-55 Area", Unpublished Memo Report, Report EES1-SH90-17, Los Alamos National Laboratory, Los Alamos, NM.

Wohletz, K.H., 2004. "Tuff Fracture Characterization Along Mortandad Canyon Between OU-1114 and OU-1129", Report LA-UR-04-8337, Los Alamos National Laboratory, Los Alamos, NM (as cited in Kleinfelder 2007 Geotechnical Report).

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Figure 1. Tectonic Map of the LANL Region. **Source:** Figure 3-2 *in* LANL 2007 PSHA Report.

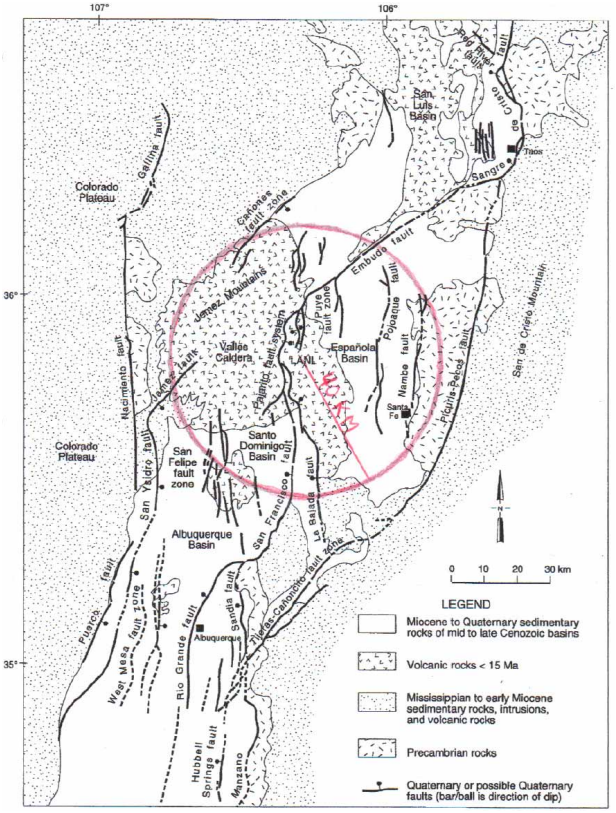

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Figure 2. Map of the Pajarito Fault System and Embudo Fault System – Southwestern Section in Northern New Mexico showing faults with surface displacements. **Note:** The concealed active faults are not displayed on the map (see figures 3A, 3B, 4 and 5.
Source: Figure 5-4 in LANL 2007 PSHA Report.

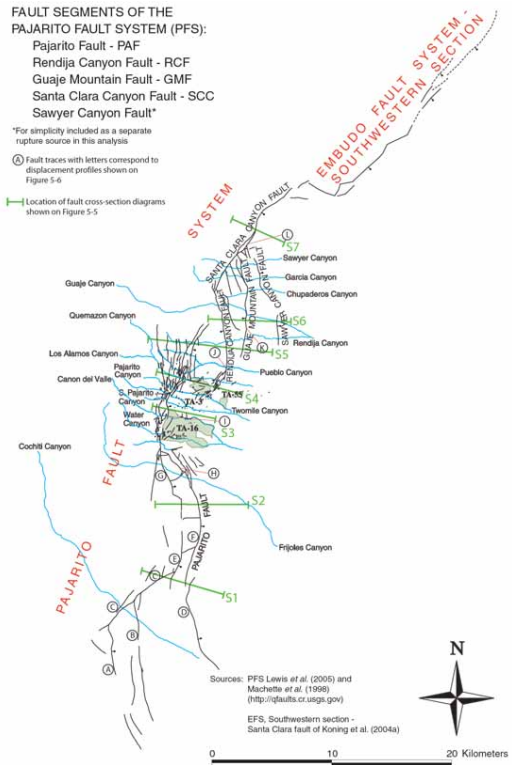

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Figure 3. ***"Figure 3-5. Mapped Faults in the Los Alamos National Laboratory Area"*** in the DOE 2011 final Supplemental Environmental Impact Statement (SEIS) for the proposed CMRR-NF at LANL TA-55. **Note:** The map displays only the faults exposed at land surface. The ground motions in the 2007 and 2009 LANL PSHA assumed the Guaje Mountain (GM) Fault terminated 2 ½ miles north of TA-55. But the map below shows the GM fault to be present at Los Alamos Canyon 4,000 ft north of TA-55. Also see the extensive concealed faults as extensions of the RC and GM Faults on Figures 3A and 3B.

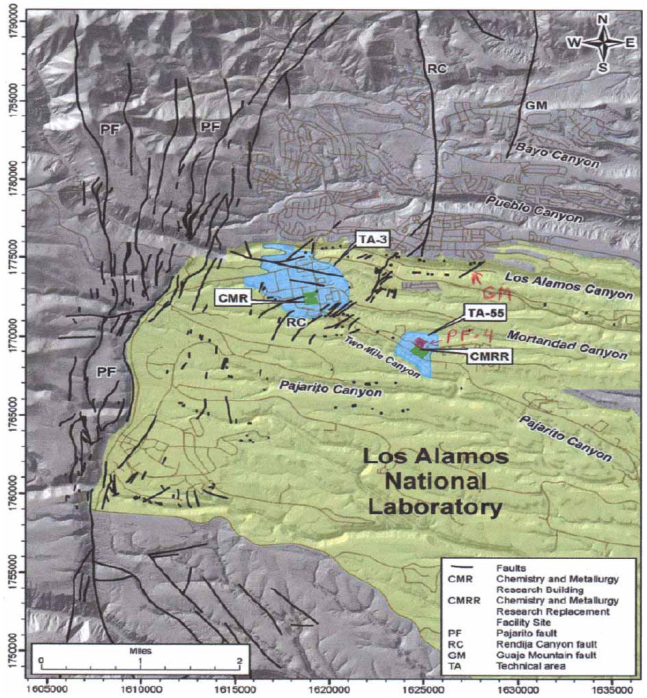

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Figure 3A. One possible scenario for the concealed active RC Fault located ~800 ft west of the PF-4 and the concealed active GM Fault located ~2,000 ft east of the PF-4.

Note: The concealed faults are displayed in red and dashed where inferred. The concealed faults were not included in the seismic hazard analysis for the PF-4. *See Figures 4 and 5.*

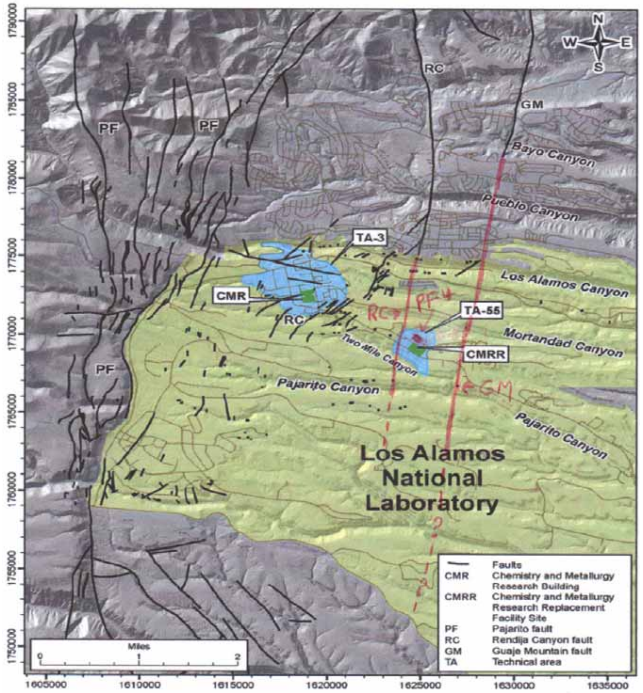

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Figure 3B. A second possible scenario for segments of the concealed active GM Fault located ~800 ft west and ~2,000 ft east of the PF-4. In this scenario, the concealed active RC Fault is located ~1,400 ft northwest of the PF-4.

Note: The concealed faults are displayed in red and dashed where inferred. The concealed faults were not included in the seismic hazard analysis for the PF-4. But LANL Reports published in 1985 and 2004 show the concealed faults close to the PF-4. *See Figures 4 and 5.*

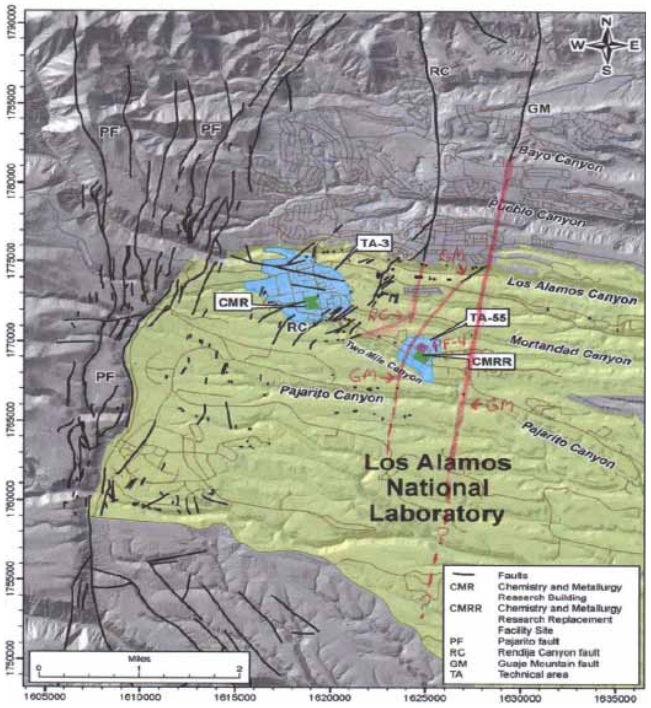

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Figure 4. Map showing the locations of the two east-west seismic reflection lines; line 1 in Los Alamos Canyon and line 2 in Mortandad Canyon.

Source: Map 1 *in*1985 LANL Report by Dransfield and Gardner (LA-10455-MS).

Note: The two 1979 seismic lines reliably detected the concealed active RC Fault to be present within ~800 ft to the west of the PF-4 and the concealed active GM Fault to be present within ~2000 ft to the east of the PF-4. The detailed mapping of zones of intense fractures in the Bandelier tuff in 2004 (see Figure 5) confirmed that the concealed RC and GM Faults identified by the two seismic reflection lines were active faults.

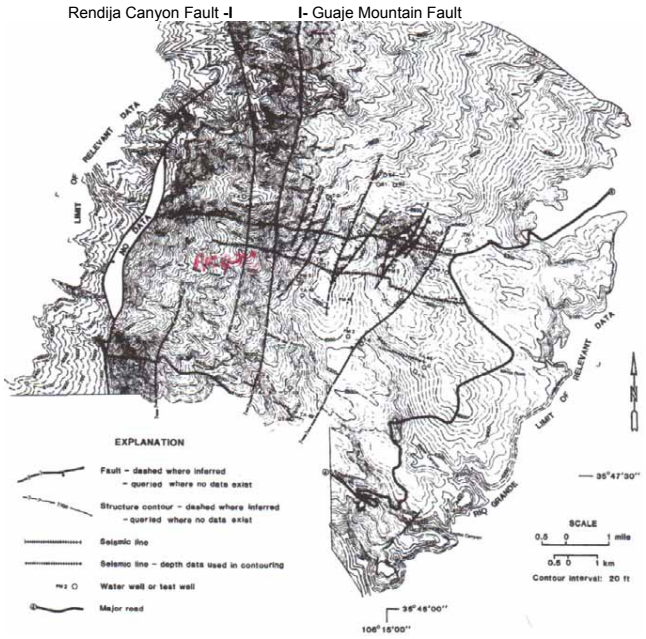

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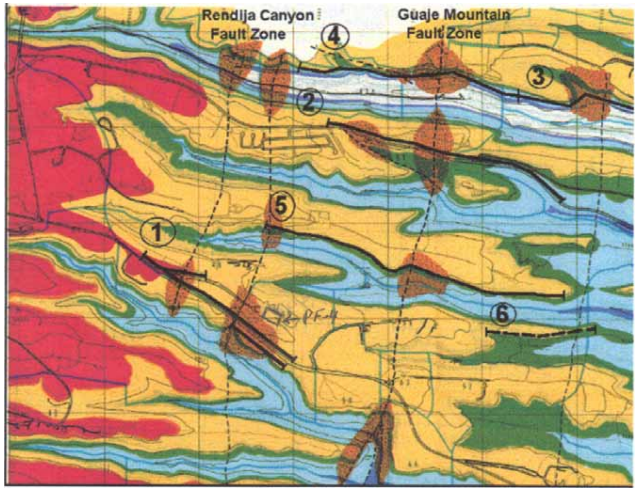
Figure 5. Map showing the zones of intense fractures at land surface in the Bandelier Tuff.

Source: Figure 14 in ***Tuff Fracture Characterization Along Mortandad Canyon Between OU-1114 and OU-1129,*** (LANL Report No. LA-UR-04-8337, 2004) by K. H. Wohletz,
- The north-south trending fault ~800 ft west of the PF-4 is the inferred location of the buried active Rendija Canyon (RC) Fault.
- The north-south trending fault zone ~2,000 ft east of the PF-4 is the inferred location of the buried active Guaje Mountain (GM) Fault. The close locations of the buried active RC and GM faults were not considered in the engineering design for the seismic upgrades to the 1970's era LANL Plutonium Facility PF-4.



Scale 0---------- 2000 ---------- 4000 feet
- The north-south dashed black lines show trend of inferred faults - - - - - - - - -
- The brown patches along dashed black lines are zones of intense fractures
- The circled numbers 1 to 6 have no relation to zones of intense fracture

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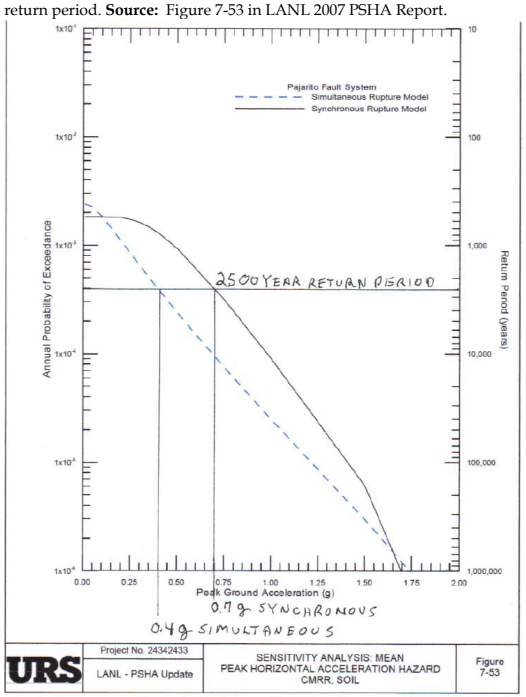
Figure 6. Comparison of the larger seismic hazard from synchronous versus simultaneous ruptures at the LANL Plutonium Nuclear Facility PF-4 at LANL TA-55 for a 2,500 year return period. **Source:** Figure 7-53 in LANL 2007 PSHA Report.



The above computer model in Figure 7-53 shows a much larger relative horizontal ground acceleration of 0.7g for synchronous ruptures of the PFS compared to a lower value of 0.4g for simultaneous ruptures of the PFS. Figure 7-53 shows that the Mean Peak Horizontal Ground Acceleration Seismic Hazard at the PF-4 is 75% larger for the multiple ruptures from synchronous earthquakes in the PFS for a return period of 2,500 years.

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Figure 7. Weighted Mean Maximum Magnitudes for Synchronous Rupture Scenarios of the Pajarito Fault System. **Note:** The table shows the maximum magnitudes for the first and second subevents but does not show the greater maximum magnitude for the combined events. **Source:** Table 5-11 *in* LANL 2007 PSHA Report.

Table 5-11
Weighted-Mean Maximum Magnitudes for Synchronous Rupture Scenarios of the Pajarito Fault System

Rupture Scenario (Rupture Source[1])	Displacement[2] (m)	Assigned Weight	Displacement-Based Magnitude[3]	Segment(s) of 1st Subevent	1st Subevent Cumulative Rupture Length[4] (km)	1st Subevent Length-Based Magnitude	1st Subevent Weighted Mean Maximum Magnitude[5]	Segment(s) of 2nd Subevent	2nd Subevent Cumulative Rupture Length[4] (km)	2nd Subevent Length-Based Magnitude	2nd Subevent Weighted Mean Maximum Magnitude[5]
RS-e (PAF + RC + GM + SCC +EFS/SW)	1.5	0.20	7.26	PAF	36.1	6.89	**7.03**	RC+GM+SCC+EFS/SW	41.7	6.96	**7.08**
	2.6	0.60									
	3.7	0.20									
RS-f (PAF + RC + SCC)	1.5	0.20	7.22	PAF	36.1	6.89	**7.02**	RC+SCC	22.9	6.66	**6.88**
	2.3	0.60									
	3.1	0.20									
RS-g (PAF + GM + SCC)	1.0	0.10	7.17	PAF	36.1	6.89	**7.00**	GM+SCC	15.7	6.47	**6.75**
	1.5	0.20									
	2.0	0.40									
	3.0	0.30									
RS-h (PAF + RC + GM + SCC: Partial Floating Rupture)	***1.5***	0.30	7.01	Northern PFS[6]	26.8[7]	6.74	**6.85**	RC	9.2[7]	6.20	**6.52**
	2.5	0.40									
	5.5	0.30									

1 PAF = Pajarito fault; RC = Rendija Canyon fault; GM = Guaje Mountain fault; SCC = Santa Clara Canyon fault; EFS/SW = southwestern section of the Embudo fault system. Geometries are shown on Figures 5-9c through 5-9d.
2 Values in ***Bold italics*** indicate maximum displacements, all others are average displacements.
3 Weighted-mean moment magnitude calculated using empirical relations of Wells and Coppersmith (1994) as discussed in footnote 10 of Table 5-4.
4 Cumulative rupture length is straight-line distance summed for each fault segment, irregardless of gaps or overlaps.
5 Weighted-mean calculated using 0.6 weight for length-based and 0.4 weight for displacement-based magnitudes. Weighted mean values (in **bold**) are preferred (weighted 0.6) with ± 0.3 values weighted 0.2.
6 Synchronous rupture for this floating scenario only occurs at northern end of PFS, from the intersection of fault traces E and F on Figure 5-3 to the northern end of the SCC.
7 Length for 1st subevent determined by subtracting length of 2nd subevent (assumed to be same as RC length, 9.2 km) from total length of 36 km assumed for RS-h simultaneous type of rupture.

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Commentor No. 174: Jay Coghlan, Executive Director, and Scott Kovac, Operations and Research Director, Nuclear Watch New Mexico

From: Jay Coghlan
Sent: Monday, October 15, 2012 3:33 AM
To: spdsupplementaleis@saic.com
Subject: NWNM SPD SEIS comments
Attachments: NWNM-PuSEISComments10-14-12.pdf

Greetings:

Attached are Nuclear Watch New Mexico¹s comments on the draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement.

Acknowledgement of receipt and readability of the attached PDF is appreciated.

Please note our new mailing address below.

Thank you,

Jay Coghlan

Jay Coghlan, Executive Director
Nuclear Watch New Mexico
903 W. Alameda, #325
Santa Fe, NM 87501
Phone and fax: 505.989.7342 cell: 505.920.7118 jay@nukewatch.org www.nukewatch.org
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Response side of this page intentionally left blank.

Commentor No. 174 (cont'd): Jay Coghlan, Executive Director, and Scott Kovac, Operations and Research Director, Nuclear Watch New Mexico

nuclear watch new mexico

October 14, 2012

Ms. Sachiko McAlhany
NEPA Document Manager
SPD Supplemental EIS
National Nuclear Security Administration
U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324

Via email to spdsupplementaleis@saic.com

Dear Ms. Sachiko McAlhany:

Thank you for this opportunity to comment on the draft *Surplus Plutonium Disposition Supplemental Environmental Impact Statement* (SPD dSEIS) issued pursuant to the National Environmental Policy Act (NEPA) by the Department of Energy's semi-autonomous National Nuclear Security Administration.

Our mission statement is:

> Through comprehensive research, public education and effective citizen action, ***Nuclear Watch New Mexico*** seeks to promote safety and environmental protection at regional nuclear facilities; mission diversification away from nuclear weapons programs; greater accountability and cleanup in the nation-wide nuclear weapons complex; and consistent U.S. leadership toward a world free of nuclear weapons.

In that vein, we want to make it clear from the start that we are strong advocates for the permanent disposition of plutonium that could be used again in nuclear weapons. However, we strongly oppose the federal government's chosen method of disposal, which is NNSA's Mixed Oxide program for use of plutonium in commercial nuclear power plants.

We believe the MOX program should be terminated because:

- It is a financial boondoggle, generating the usual exorbitant cost overruns that are the rule with NNSA and its contractors.
- There are no utilities signed up for MOX fuel.
- If ever used, MOX fuel will have to be another subsidy paid for by the American taxpayer for the failing nuclear power industry.
- MOX fuel inherently raises contamination risks should nuclear power plant accidents occur, as they inevitably will overtime.

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http://www.facebook.com/NukeWatch.NM

174-1

174-1 DOE and TVA acknowledge the summary comments made by Nuclear Watch New Mexico. Specific responses to these comments are provided in the following responses in the order presented in the comment letter.

Commentor No. 174 (cont'd): Jay Coghlan, Executive Director, and Scott Kovac, Operations and Research Director, Nuclear Watch New Mexico

- MOX fuel fabrication will vastly increase the transportation of plutonium around the country and needlessly strain NNSA's existing nuclear facilities.
- Contrary to its stated rationale, the MOX program will arguably be a proliferating program instead of a nonproliferation program since it will introduce plutonium to the global market.
- Further, MOX may well block other critically needed NNSA nonproliferation programs from receiving increased funding, and encourage Russia to use MOX fuel in a breeder reactor that could produce more plutonium than it consumes.
- Finally, the MOX Program prevents this country from pursuing other safer and less expensive disposition methods.

174-1 cont'd

We take the right to submit these comments four calendar days late given that the National Nuclear Security Administration posted online the reference documents integral to this NEPA process only on the deadline day for public comment. This is unacceptable agency behavior, and parts of our comments substantially rely upon one of those reference documents. We have been through this before, having successfully pressured NNSA to post reference documents online for both the 2008 Los Alamos National Laboratory Site-Wide Environmental Impact Statement and the 2008 Complex Transformation Programmatic Environmental Impact Statement. NNSA knows better by now, and should have automatically posted the reference documents at the same time that it electronically posted the SPD dSEIS. Moreover, this should be true for all of NNSA's and DOE's future NEPA processes.

174-2

Introduction

The Department of Energy's semi-autonomous National Nuclear Security Administration (NNSA) released the SPD dSEIS on July 27, 2012. Since 1994, the Department of Energy (DOE) has spent millions of dollars and held dozens of public meetings and hearings on how to handle up to 34 metric tons of surplus plutonium so that it could no longer be used in nuclear weapons. Russia also agreed to address the amount of plutonium from its nuclear weapons program. But both "disposition" programs have failed to date, as plutonium has yet to be placed into a form to prevent its future use in nuclear weapons, nor is there any likelihood for such a result in the next few years. While not acknowledging its failure, NNSA now is proposing for the first time that up to an additional 13.1 metric tons of plutonium should be shipped to Los Alamos National Laboratory (LANL) and the Waste Isolation Pilot Plant (WIPP).

NNSA's preferred alternative is to have the Savannah River Site (SRS) process 6 metric tons of plutonium and ship it to WIPP for disposal with other contact-handled transuranic wastes. Some or all of 7.1 metric tons of plutonium in "pits" – the triggers for nuclear bombs – would be shipped from the Pantex Plant near Amarillo, Texas to LANL to be disassembled and converted. The resulting plutonium oxide powder would then be shipped to SRS to be fabricated into plutonium-uranium mixed oxide (MOX) fuel to be used in the Sequoyah (Tennessee) and/or Browns Ferry (Alabama) Nuclear Plants operated by the Tennessee Valley Authority (TVA). After responding to public comments, DOE intends to release the *Final SEIS* and Record of Decision (ROD) in early 2013. DOE then plans to begin implementing the chosen alternatives soon thereafter.

174-2 The period for submitting comments on the *Draft SPD Supplemental EIS* closed on October 10, 2012. On the same day, DOE posted the references on the *SPD Supplemental EIS* website at http://nnsa.energy.gov/aboutus/ouroperations/generalcounsel/nepaoverview/nepa/spdsupplementaleis. Nonetheless, the *Draft SPD Supplemental EIS* and the cited resources on which DOE relied to support the analysis in the *Draft SPD Supplemental EIS* were available to the public for the duration of the comment period. Copies of the cited reference materials were sent along with copies of the document to all of the reading rooms and libraries listed in the Summary, Section S.13, of the *Draft SPD Supplemental EIS* prior to the beginning of the public comment period. However, there are certain types of sensitive information that cannot be posted at publicly accessible locations and may be exempt from public release, including UCNI, OUO, PII, and proprietary information. This information was not posted on the project website or provided to the reading rooms and libraries. Despite the stated closing date of the comment period, DOE considered all comments received on the *Draft SPD Supplemental EIS*, including those received after the close of the comment period.

Commentor No. 174 (cont'd): Jay Coghlan, Executive Director, and Scott Kovac, Operations and Research Director, Nuclear Watch New Mexico

A New Programmatic EIS Is Needed
Unfortunately, NNSA is not in compliance with NEPA and should not proceed to a final supplemental environmental impact statement. This is because the SPD SEIS is "tiered" off the 1996 *Storage and Disposition of Weapons-Usable Fissile Materials Programmatic EIS* (underlined for emphasis), using that broader but now outdated document as its foundation. NNSA's new proposals are now so fundamentally different from the program and alternatives discussed in the 1996 *Storage and Disposition Programmatic EIS* that a new or supplemental programmatic environmental impact statement is needed. It then follows that after sound programmatic decisions are made that there has be follow-on NEPA processes that analyze implementation and potential impacts at the site-specific level. This is especially true given the extreme range of variance in the potential plutonium throughput at the newly included LANL and SRS facilities, ranging from a low of two metric tons to a high of 35 metric tons or more.

This SPD dSEIS is the fifth in a series of draft and final environmental impact statements analyzing what to do with surplus plutonium. In none of the first four EISs was WIPP considered a suitable site for any of the plutonium. The 1996 *Programmatic EIS* and Record of Decision (ROD) stated that LANL's surplus plutonium would be shipped to Pantex or SRS. The 1999 *SPD Final EIS* and 2000 ROD stated that LANL would fabricate MOX lead assemblies for tests, but that plan was dropped in 2003. Plans at SRS include a $6 billion (and rising) cost for the MOX Fuel Fabrication Plant that is under construction, but is years behind schedule. A standalone companion Plutonium Disassembly and Conversion Facility was considered, but is now being abandoned because of exploding costs. The 1996 and 2000 RODs stated that some of the plutonium was to be immobilized and disposed in a high-level waste repository and the rest used for MOX. In 2002, the immobilization program was cancelled "due to budgetary constraints," even though thousands of public comments had opposed MOX and supported immobilization of all the plutonium. *174-3*

Now, as *prima facie* evidence of the need for fresh programmatic review, for the first time additional plutonium is to be shipped to LANL instead of shipped out for disposition. Also for the first time WIPP is proposed to dispose of 6 tons of plutonium. This all involves dramatically increased transportation and program operations between additional interlocking sites within DOE's national nuclear complex. Therefore, NNSA must issue for public comment a new draft Storage and Disposition Programmatic EIS or a Supplemental PEIS describing and analyzing the currently proposed surplus plutonium disposition program. It must also include, as required by NEPA, all credible alternatives to that proposal before the Department can proceed with a lesser SPD Supplemental EIS(s). A program Record of Decision then needs to flow from that programmatic review, after which site-specific NEPA review will need to be conducted so that potential local impacts can be determined.

Under the SPD dSEIS' "**Preferred Alternative**" NNSA states "DOE's preferred option for pit disassembly and the conversion of surplus plutonium metal, regardless of its origins, to feed for MFFF [MOX Fuel Fabrication Facility) is to use some combination of facilities at Technical Area 55 at Los Alamos National Laboratory and K-Area, H-Canyon/HB-Line, and MFFF at SRS, rather than to construct a new stand-alone facility." This is a result of the cancellation of the proposed Pit Disassembly and Conversion Facility, which like virtually all major NNSA projects ran into runaway cost estimates. *174-4*

174-3 DOE does not agree with the commentor's opinions about DOE's compliance with NEPA and about the need for a new programmatic EIS on surplus plutonium storage and disposition. DOE believes that the decision to prepare this *SPD Supplemental EIS* complies with CEQ and DOE regulations and guidance. For further discussion, refer to Section 2.1, Topic A, of this CRD.

The direct disposal of 50 metric tons (55 tons) of surplus plutonium was eliminated from further analysis in the *Storage and Disposition PEIS* (DOE 1996:2-13) because it would exceed the capacity of WIPP when added to DOE's inventory of TRU waste. In response to comments on the *Draft SPD Supplemental EIS*, DOE expanded the WIPP Alternative to include potential disposal of all 13.1 metric tons (14.4 tons) of the surplus plutonium for which a disposition path is not assigned. The disposal at WIPP of 13.1 metric tons (14.4 tons) of surplus plutonium, which is approximately 26 percent of the amount considered in the *Storage and Disposition PEIS*, could potentially be accomplished within WIPP's capacity and, therefore, is considered to be a reasonable alternative in this *Final SPD Supplemental EIS* (see Chapter 4, Section 4.5.3.6.3). A description of WIPP's capacity and the process that would be used to dispose of surplus plutonium as CH-TRU waste at WIPP, as analyzed in this *Final SPD Supplemental EIS*, is contained in Appendix B, Sections B.1.3 and B.3.

Transportation risks are analyzed for all alternatives proposed in this *SPD Supplemental EIS*. As shown in Chapter 4, Table 4–22, under all alternatives, the radiological risks to the public from shipments of radioactive materials would be comparable, with no LCFs expected among the transportation crew or general public along the transportation routes.

174-4 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In the *Draft SPD Supplemental EIS*, the MOX Fuel Alternative was DOE's Preferred Alternative for surplus plutonium disposition. DOE's preferred option for disposition of surplus non-pit plutonium that is not suitable for MOX fuel fabrication was disposal at WIPP. DOE's preferred option for pit disassembly and conversion of surplus plutonium metal, regardless of its origins, was to use some combination of facilities at TA-55 at LANL and K-Area, H-Canyon/HB-Line, and MFFF at SRS, rather than to construct a new stand-alone facility.

In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of *this SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of

Commentor No. 174 (cont'd): Jay Coghlan, Executive Director, and Scott Kovac, Operations and Research Director, Nuclear Watch New Mexico

But given the likely permanent cancellation of the PDCF, this SPD dSEIS improperly limits itself to analysis of just the disposal of an additional 13 metric tons of plutonium above the 34 metric tons that both Russia and the U.S. have agreed to dispose of. It omits adequate discussion of how feedstock for the MFFF will be prepared for the original 34 metric tons now that the PDCF has been canceled, and the potential impacts thereof. There is no substantial discussion of the impact that this might have on the newly included SRS and LANL facilities, other than to say that plutonium input could vary between 2.5 metric tons to 35 metric tons over various periods of time, "depending on the pit disassembly and conversion option selected" (page B-7).

174-4 cont'd

But here is exactly our point. The pit disassembly and conversion option should first be selected through rigorous programmatic review. The fact that the range of plutonium throughput is so broad and speculative is sufficient reason by itself to invalidate the SPD dSEIS. This cries for selecting the necessary pit disassembly and conversion options from discerning programmatic review, and then proceeding with follow on site-specific NEPA analyses to determine and possibly mitigate local impacts.

NNSA Cannot Proceed to a Final SEIS Without TVA Buy In

As the NNSA acknowledges under "**Preferred Alternatives**... The TVA [Tennessee Valley Authority] does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose." (SPD SEIS p. iv.) NNSA also says under "**Purpose and Need for Agency Action**... TVA is a cooperating agency on this SPD Supplemental EIS because it is considering the use of MOX fuel, produced as part of DOE's Surplus Plutonium Disposition Program, in its nuclear power reactors."

"Considering" by TVA is not enough, especially given that after further consideration other utilities (e.g., Duke Energy Corp.) pulled out of being candidates for the MOX Program. We don't believe that NNSA can proceed with a final SPD SEIS until such time as TVA declares that its preferred alternative matches that of NNSA's. Otherwise, this whole SPD SEIS process is an exercise in futility. Of what value is it, even to NNSA, to further this process paid for by the taxpayer when there are no reactors committed to using the agency's MOX fuel? We think this clearly reinforces the need for programmatic review, with TVA as a fully "cooperating agency" sharing NNSA's preferred alternative.

174-5

Separate from the NEPA process, politically NNSA needs to show that it actually has customers signed up for its MOX fuel. Without that congressional appropriators are likely to bring out their long knives while searching for any and all budget savings. We think that to save and go forward with the MOX program that NNSA will have to compel TVA to declare that its preferred alternative generally matches NNSA's, or alternatively find another customer given that NNSA has no reactors of its own even remotely suitable for MOX fuel use. We strongly assert that a final SPD SEIS should not go forward until TVA (or another customer) has actually contracted to use NNSA's MOX fuel.

The MOX Alternative Must Be Reconsidered

In addition to the substantial changes that NNSA proposes for its plutonium disposition program (which we contend create the need to go back to programmatic analysis to begin

174-6

NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

As described in Chapter 1, Section 1.4, under all alternatives, DOE would disposition as MOX fuel 34 metric tons (37.5 tons) of surplus plutonium in accordance with previous decisions. The pit disassembly and conversion options analyzed in this *SPD Supplemental EIS*, including the PDCF Option, apply to 27.5 metric tons (30.3 tons) of pit plutonium that DOE has decided to fabricate into MOX fuel (a portion of the 34 metric tons [37.5 tons]), as well as to the 7.1 metric tons (7.8 tons) of pit plutonium for which disposition is under consideration in this *SPD Supplemental EIS,* for a total of approximately 35 metric tons (38.6 tons). Appendix B, Table B–3, lists the annual and total plutonium throughput for the various pit disassembly and conversion options at SRS and LANL. For example, the maximum annual throughput for PDCF at SRS is 3.5 metric tons (3.9 tons) per year, while the maximum amount of plutonium to be processed could be 35 metric tons (38.6 tons) over the life of facility operation. The amount of plutonium that would be allowed at LANL at any given time would be limited, and shipments of pits to be disassembled there would be timed to support pit disassembly and conversion activities such that the amount of plutonium at PF-4 did not exceed the established material safety limit. Therefore, the pit disassembly and conversion options evaluated in this *SPD Supplemental EIS* include the environmental impacts associated with all of the pit disassembly and conversion activities required to support the Surplus Plutonium Disposition Program, including those required to support disposition of the 34 metric tons (37.5 tons) of plutonium that Russia and the United States previously agreed to dispose of as MOX fuel.

See the response to comment 174-3 regarding DOE's views on why a new programmatic EIS is not necessary.

174-5 The disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts as required by NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors, including, but not limited to five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants. These reactors are explicitly considered because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Section I.1). However, the MOX Alternative also analyzes irradiation in generic commercial nuclear reactors

Commentor No. 174 (cont'd): Jay Coghlan, Executive Director, and Scott Kovac, Operations and Research Director, Nuclear Watch New Mexico

with), broader historical changes since 1996 call into serious question the current direction of the plutonium disposition program. One tectonic change was the near economic meltdown this country experienced in 2008, and its long lingering aftereffects. In contrast to the once-loud (but now receding) fanfare for a "nuclear renaissance", the nuclear power industry has never economically stood on its own legs without huge taxpayer props, such as congressionally directed indemnification above $12.6 billion in damages in the event of a nuclear catastrophe. Even Wall Street won't invest in new nuclear power plants on its own without federal loan guarantees. NNSA's MOX program throws good money after bad, further subsidizing a failing industry,

The MOX program now eats up a full third of NNSA's ~$2.5 billion "Defense Nuclear Nonproliferation" account, and continues to grow while worthy nonproliferation programs such as the Global Threat Reduction Initiative are facing cuts. The nation can no longer afford dead end investments, especially when it may rob money from critically needed, genuine nonproliferation programs. The introduction of plutonium to global commerce through the MOX program runs counter to our long-term nonproliferation goals.

174-6 cont'd

To add insult to injury, in the face of serious national fiscal constraints the MOX program also arguably robs from accelerated development of renewable energy technologies that could lead us toward energy independence while abating greenhouse gases. Nuclear power fails the economic smell test and the intractable problem of disposal of high-level radioactive wastes. Promotion of nuclear power with its claimed lack of greenhouse gas emissions fail to account for the full nuclear fuel cycle, beginning with the energy and environmental costs of uranium mining and enrichment. And to circle back to nonproliferation issues, continuing massive taxpayer subsidies to the nuclear power industry and huge investments in further processing of nuclear materials sets a poor geopolitical example as this country attempts to constrain the nuclear programs of other countries (i.e., Iran).

Arguably the U.S. MOX program will even directly work against our declared national security goal of diminishing Russian plutonium so that it can never be used again in nuclear weapons targeting America. First, there has always been a bit of a circular argument, as this writer has witnessed senior American government officials saying that we have to do MOX because the Russians are going to do MOX, and then while in Moscow hearing their Russian counterparts saying that they have to do MOX because the Americans are going to do MOX. The Russian-American plutonium disposition agreement first and foremost requires the disposition of 34 metric tons of plutonium each, with the choice of disposal method ultimately left up to each respective country. The future direction of disposal in the U.S. plutonium disposition program should be decoupled from the Russian method for all the reasons stated in these comments. What really matters is the overall objective of permanently and safely disposing of 34 metric tons at the lowest reasonable costs.

174-7

But through the MOX program the U.S. has essentially condoned Russian use of MOX fuel in a new breeder reactor. When Russia canceled efforts to use MOX in its light-water reactors, it became clear that it would concentrate on building a new BN-800 breeder reactor that can produce, or "breed," weapons-grade plutonium. Although Russia has said it will initially operate the reactor in a non-breeding mode, it can later reconfigure operations such that the reactor can produce substantially more weapons-grade plutonium than it consumes.

including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2), and is not dependent on TVA participation.

See the response to comment 174-4 regarding the revised Preferred Alternative. TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose.

Based on this *SPD Supplemental EIS* and consistent with the requirements of NEPA, DOE may make a decision in a ROD to be issued no sooner than 30 days after its announcement of a Preferred Alternative in the *Federal Register*. TVA, as a cooperating agency, may adopt this *Final SPD Supplemental EIS* after independently reviewing the EIS and determining its comments and suggestions have been satisfied (40 CFR 1506.3(c)).

174-6 DOE acknowledges the commentor's opinion.

The MOX Fuel Alternative would be conducted in the United States and would not introduce plutonium into global commerce. The viability of commercial nuclear power is not within the scope of this *SPD Supplemental EIS*. Funding decisions for nuclear power, the MOX fuel program, and renewable energy are also not within the scope of this *SPD Supplemental EIS*.

174-7 DOE does not agree with the opinions expressed by the commentor regarding the MOX fuel program and current and postulated future Russian activities. U.S. nonproliferation policy and nonproliferation agreements such as the PMDA (USA and Russia 2000) are unchanged, are beyond the discretion of DOE to amend, and are beyond the scope of this *SPD Supplemental EIS.* In any event, existing decisions on the use of surplus plutonium in MOX fuel, as well as the use of additional surplus plutonium as MOX fuel as analyzed in this *SPD Supplemental EIS*, are consistent with U.S. nonproliferation policy and international nonproliferation agreements. Use of MOX fuel in commercial nuclear power reactors would render surplus plutonium into a form that is not readily usable for nuclear weapons. For further discussion, refer to Section 2.4, Topic A, of this CRD.

Under the PMDA (USA and Russia 2000), which entered into force in 2011, the United States and the Russian Federation agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. Russia plans to irradiate its MOX fuel in fast reactors (BN-600 and BN-800) under certain nonproliferation conditions. To that end, Russia has successfully irradiated

Commentor No. 174 (cont'd): Jay Coghlan, Executive Director, and Scott Kovac, Operations and Research Director, Nuclear Watch New Mexico

Thus, the US program has given Russia cover to continue constructing this breeder reactor, which is a potential blow to US non-proliferation efforts, even though the State Department turns the matter on its head and seems to triumph a new Russian plutonium breeder reactor as indicating its progress toward plutonium disposition. However, this "triumph" could be all too short-lived, especially if bilateral relations, already under strain, were to further deteriorate. Russia's recent announcement that its wants to reconsider the two decade old Cooperative Treat Reduction program (AKA the Nunn-Lugar Program) further erodes bilateral confidence.

174-7 cont'd

The SEIS Must Consider the Costs Versus Benefits of the MOX Program.
NNSA and DOE have an increasingly bad reputation for project management and fiscal responsibility, with a number of billion-dollar-plus projects and programs tripling or more in actual or estimated costs. Notably the House Appropriations Committee observed in its FY 2012 report that "The threat posed by rising [MOX] construction costs to the progress of core nonproliferation activities remains a major Committee concern." At the same time NNSA refuses to calculate estimated MOX life cycle costs, which some outside experts estimate will cost another $17 billion or more. New and/or supplemental programmatic review must consider the costs versus benefits of the MOX program and cheaper alternatives that possibly could have greater benefits.

The cost of building the Mixed Oxide Fuel Fabrication Facility (MFFF) at SRS is now expected to rise by more than $2 billion and the projected schedule for completing the project could slip significantly. Original NNSA estimates in 2007 projected that the facility would cost $4.8 billion and be operating by 2016. Government agencies (and especially DOE) have always claimed that NEPA does not require them to analyze or disclose cost estimates. Yet while promulgating NEPA Congress directed that "all agencies of the federal government shall - - ... include in every recommendation... a detailed statement by the responsible official on -- ... any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented." 42.U.S.C. § 4331 Sec. 102 (C).

174-8

Given the serious financial problems and constraints that this country faces it is high time that federal agencies should conduct a cost benefit analysis concerning irreversible and irretrievable commitments of resources, including taxpayer dollars, for proposed major federal actions. NNSA should do so now for its entire plutonium disposition program.

NNSA should also completely review its plutonium disposition program in a new or supplemental programmatic environmental impact statement in the event that sequestration of the federal budget occurs under the Budget Control Act.

The SEIS Must Re-Evaluate the Disposal of Plutonium as Waste.
NNSA's disposition program should programmatically re-evaluate the disposal of plutonium as waste, immobilized in glass and/or ceramic, rather than used as MOX fuel to subsidize a failing nuclear power industry that can't pull its own weight. Immobilization has the promise of being quicker, cheaper, and safer than MOX, and would unambiguously be a genuine nonproliferation program in contrast to MOX. But, unfortunately, as the SPD dSEIS notes, "In 2002, however, DOE made the decision to cancel the surplus plutonium immobilization program due to budgetary constraints" (p. S-32).

174-9

21 prototypic MOX fuel LTAs in its BN-600 fast reactor; completed over 50 percent construction of the BN-800 fast reactor; completed formal siting of its MOX fuel fabrication plant; established an integrating contracting office for implementation of PMDA activities; and actively participated with the United States and IAEA in negotiating a verification agreement that will enable IAEA to independently verify that the objectives of the PMDA are met. Additional information on the PMDA is located on the U.S. State Department website at www.state.gov/r/pa/prs/ps/2010/04/140097.htm.

Under the PMDA, Russia must operate its fast reactors as plutonium burners, not breeders; cannot reprocess any of its used fuel during the life of the agreement; and, after the agreement expires, can only reprocess under an international monitoring regime and only for commercial purposes. Operation of the Russian fast reactors will be monitored and verified by IAEA.

174-8 DOE does not agree with the opinion expressed by the commentor regarding the need for a new or supplemental EIS that considers the costs and benefits of the MOX fuel program. See the response to comment 174-3 regarding DOE's views on why a new programmatic EIS is not necessary. The decisionmaker may consider cost, schedule, technical viability, worker and public safety, environmental impacts, security, and the ability to carry out international agreements, among other factors, when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic A, of this CRD.

174-9 DOE does not agree with the opinion of the commentor about the need for a programmatic re-evaluation of the disposition of surplus plutonium as waste. See the response to comment 174-3 regarding DOE's views on why a new programmatic EIS is not necessary. As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) evaluated numerous alternatives for disposition of surplus plutonium, including immobilization and direct disposal of surplus plutonium as waste. DOE selected an approach for disposition of some of the plutonium declared surplus (68 FR 20134). As discussed in Section 2.2, Topic A, of this CRD, DOE's prior disposition decisions are not addressed in this *SPD Supplemental EIS*. Further, DOE does not believe that the inclusion of immobilization as an alternative in this *SPD Supplemental EIS* for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium invalidates previous decisions. For further discussion, refer to Chapter 2, Section 2.4, of this *SPD Supplemental EIS*.

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Remarkably, a decade later, NNSA has partially reversed that decision so that it can immobilize up to six tons of plutonium judged to be too high in impurities for use in MOX fuel. That fortunately reestablishes immobilization in principle and puts it back on the table. But now that budget constraints are much more severe than in 2002, and given the MOX program's escalating costs, immobilization should be programmatically analyzed as a preferred alternative for all surplus plutonium, not just that deemed to have too high impurities.

174-9 cont'd

Another profound changed circumstance since the 1996 *Storage and Disposition of Weapons-Usable Fissile Materials Programmatic EIS* is the extraordinary nuclear disaster at Fukishima. First, Fukishima is another nail in the coffin of the international nuclear power industry, further strongly questioning the wisdom of further investments into an industry that would die without taxpayer subsidies. Worthy of note are the shrinking nuclear power industries in Japan and Germany and even the U.K. and France, indicative of the continuing global decline of the nuclear power industry. This again illustrates that massive taxpayer investments into the MOX program are imprudent.

More narrowly, review of NNSA's plutonium disposition program needs to include and consider detailed information about any effects and possibly increased contamination from the use of MOX fuel in Fukushima's badly damaged unit #3.

The SEIS Must Evaluate Dam Failures

Also related to the example set by the nuclear disaster at Fukushima, the SPD dSEIS does not evaluate a dam failure "river tsunami accident," since it was not determined to be a credible accident in Safety Analysis Reports by the Tennessee Valley Authority. NNSA hopes to first demonstrate MOX fuel use at TVA's Browns Ferry and Sequoyah nuclear power plants (as a footnote, Browns Ferry has a very checkered safety history to begin with).

174-10

However, in a letter submitted this last September to internal investigators at the Nuclear Regulatory Commission, a whistleblower engineer within the agency accused regulators of deliberately covering up information relating to the vulnerability of U.S. nuclear power plants located downstream from large dams and reservoirs. The letter also accuses the agency of failing to act to correct these vulnerabilities despite being aware of the risks for years. Rather than relying on just TVA's reports, further NEPA steps in review of NNSA's plutonium disposition program should investigate and analyze the risks of dam failure and resulting "river tsunami."

NNSA Must Reconsider its Preferred Alternative

As previously mentioned, TVA has yet to agree to use MOX, or for that matter even to test it. NNSA has failed to identify any utilities committed to using MOX, thus rendering its "preferred alternative" as near fatally flawed. It seems obvious that this "preferred alternative" must be reconsidered.

174-11

In addition, NNSA has failed to:

- Evaluate all the risks involved with MOX use in commercial reactors;

174-12

Cancellation of the surplus plutonium immobilization program occurred for the reasons stated in the April 19, 2002, amended ROD (67 FR 19432); a subsequent amended ROD (April 24, 2003, 68 FR 20134) reaffirmed DOE's decision to fabricate surplus plutonium into MOX fuel.

174-10 DOE does not agree that the March 2011 accident at the Fukushima Dai-ichi Nuclear Power Station requires an end to or redirection of the MOX fuel program. Accident analyses for U.S. nuclear power reactors already consider the radiological impacts of accidents like the Fukushima accident in that the safety evaluations include evaluation of beyond-design-basis accidents. As discussed in Appendix J, Section J.3, the analysis in this *SPD Supplemental EIS* compares the accident results for partial MOX fuel and full LEU fuel cores to determine whether the use of MOX fuel in these TVA reactors would make any substantive difference in the potential risks associated with the accidents analyzed. The beyond-design-basis accidents include severe accidents with a subsequent loss of containment similar to the accident at Fukushima. The results show that the consequences of such an accident, should it occur, would be comparable, regardless of whether the reactor was using a partial MOX fuel core or a full LEU core. DOE does not believe that the accident at the Fukushima Dai-ichi Nuclear Power Station changes this conclusion. At the time of that accident, the Fukushima Dai-ichi Nuclear Power Station's Unit 3 was operating using a partial MOX fuel core. However, at least one authority has determined that the accident involved failures unrelated to the use of MOX fuel, and there is no evidence to suggest that the presence of MOX fuel in Unit 3 increased the consequences of the accident (ONR 2011). For further discussion, refer to Section 2.5, Topic C, of this CRD.

As described in Appendix J, Section J.3, of this *SPD Supplemental EIS*, reactor accident analyses consider natural phenomena hazards such as floods, tornados, earthquakes, and unstable foundation conditions. In addition, accident analyses for U.S. nuclear power reactors already consider the radiological impacts of accidents like the Fukushima accident, in that the safety evaluations include evaluation of beyond-design-basis accidents for which it is assumed that, for whatever reasons, effective cooling of the reactor core is lost, substantial damage to the core occurs, and reactor confinement is lost, resulting in the uncontrolled release of radioactivity to the environment. This was the ultimate result of the loss of power at the Fukushima reactors. The focus of activities at U.S. nuclear power reactors is ensuring that severe events such as earthquakes, tsunamis, and dam failures do not ultimately lead to loss of cooling. This *SPD Supplemental EIS*, however, evaluates radiological impacts of accidents, such as a flood, with ultimate impacts on the

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- Evaluate all the risks associated with processing plutonium for MOX. Under NNSA's new proposal a full analysis must be included of modifications to facilities at the Savannah River Site and Los Alamos Lab to process plutonium from nuclear weapons "triggers;" *174-13*
- Outline the operational schedule of the MOX plant and exactly what type of MOX fuel would be fabricated; *174-14*
- Evaluate options to dispose of plutonium as waste; and *174-15*
- Prepare a "Plan B" for plutonium management and disposition when there is a good chance that the MOX program will fall of its own weight because of escalating costs and technical and scheduling problems.

Concerning a Plan B, as a recent and very relevant example, NNSA was strongly criticized after the proposed CMRR-Nuclear Facility was deferred at LANL for not having prepared in advance an alternative plan for nuclear weapons plutonium programs under its largest budget account "Total Weapons Activities." NNSA would be well advised to develop a Plan B that does not include MOX for its second largest budget account "Defense Nuclear Nonproliferation." This would help insulate NNSA from more congressional and public criticism should the MOX program fail, which seems increasingly likely. *174-16*

An Additional 35 metric Tons of Plutonium at Los Alamos Must Be Better Justified. Possible expanded plutonium MOX operations at LANL would occur at Plutonium Facility-4's (PF-4's) Advanced Recovery and Integrated Extraction System (ARIES). The SPD dSEIS states that plutonium throughput at PF-4 could vary between the 2 metric tons that the facility is already slated to process for MOX feedstock to a maximum throughput of 2.5 metric tons annually for a total of 35 metric tons, "depending on the pit disassembly and conversion option selected" (page B-7). This further buttresses the need for new and/or supplemental programmatic review, especially given that the originally proposed stand-alone Pit Disassembly and Conversion Facility at SRS is effectively canceled because of its exploding costs. For this SPD SEIS to purport that it has adequately analyzed the additional impacts to plutonium facilities at both LANL and SRS given the very broad range in potential material throughput defies belief and common sense.

One of the reference documents for the SPD dSEIS, LANL's February 2012 *Final Report, Data Call to Support the SPD SEIS*, states the following: *174-17*

> **No Action Alternative.**
> The existing ARIES program under the No Action Alternative has upgrades currently planned:
> • _Modifications of pit disassembly lathe, already operating in PF-4, which will be used by LANL's existing ARIES program,
> • _Installation of hydride/dehydride equipment,
> • _Acquisition and installation of second Pu direct metal oxidation (DMO) furnace,
> • _Installation of second mill/blend machine,
> • _Installation of four new safes in the basement, and
> • _Installation of new part storage boxes in two gloveboxes.
>
> These modifications will not require any new construction project workers to implement, and will have no construction environmental impacts or waste. Consequently, in the data call response that follows, the focus is on the Action

reactor similar to a Fukushima-like event (that is, a beyond-design-basis accident). The differences in projected radiological impacts with full LEU cores and partial MOX cores are small, as discussed in Section J.3.3.

174-11 See the response to comment 174-4 regarding the revised Preferred Alternative. As discussed in response to comment 174-5, TVA is a cooperating agency for this *SPD Supplemental EIS* and is not required to declare a preferred alternative. TVA does not have a preferred alternative in this *Final SPD Supplemental EIS*. DOE's interagency agreement with TVA to study the use of MOX fuel in TVA plants is addressed in the response to comment 174-5. As addressed in Section 2.4, Topic A, of this CRD, the need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process.

174-12 DOE believes this *SPD Supplemental EIS* adequately evaluates the impacts associated with the potential use of MOX fuel at TVA and generic reactors. Evaluated environmental impacts and risks are presented in Chapter 4 and summarized in Chapter 2, Section 2.6, with additional information provided in Appendices I and J. For further discussion about possible impacts from potential reactor accidents, refer to Section 2.5, Topic B, of this CRD.

174-13 In this *SPD Supplemental EIS*, DOE considers a variety of options for plutonium pit disassembly and conversion, including construction of a new stand-alone facility at SRS, modification of facilities at SRS that either already exist (H-Canyon/HB-Line and K-Area Complex) or are already under construction (MFFF), and modification of existing facilities at LANL. Appendix B provides a description of the facilities and construction and modification activities that would occur under the surplus plutonium disposition alternatives. Environmental impacts and risks from facility construction and operation are evaluated in Appendix F and summarized in Chapter 4 and Chapter 2, Section 2.6, Table 2–3.

174-14 As described in Appendix B, Section B.1.1.2, of this *SPD Supplemental EIS*, and analyzed in the *Interim Action Determination, Flexible Manufacturing Capability for the Mixed Fuel Fabrication Facility* (DOE 2011a), signed on April 1, 2011, MOX fuel could be fabricated for use in BWRs, PWRs, or next-generation LWRs. There are currently no plans to fabricate fuel for other types of reactors. Use of MOX fuel in other types of nuclear reactors would require the preparation of additional NEPA documentation.

A detailed MFFF operating schedule is not required to perform the environmental impacts analysis in this *SPD Supplemental EIS*. DOE's analysis of potential

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Alternative exclusively.

Action Alternative.
To achieve the Action production rate of 2.5 MT/y of metal or oxide, twenty gloveboxes must be decontaminated and decommissioned, eighteen gloveboxes modified, and eighteen new gloveboxes installed.

B. Construction Time Horizon
- *_Estimated length of construction period in months.*
- *_Estimated month and year that construction could start.*

If this is the selected alternative, construction work could start within six months after project approval is received, and would last approximately 96 months. The schedule used here arbitrarily assumes the project begins in FY2013. Large construction activities are the installation of the Modern Foundry and replacement of the Special Recovery Line (SRL). (Page 7, bolding and italics in the original, http://twilight.saic.com/spdcrs/refs/389.pdf)

174-17 cont'd

First of all, the so-called No Action Alternative of having LANL's Advanced Recovery and Integrated Extraction System (ARIES) prepare two metric tons of plutonium oxide for feedstock for the MOX Fuel Fabrication Facility (MFFF) is a significant deviation from the 1996 *Storage and Disposition of Weapons-Usable Fissile Materials Programmatic EIS* to begin with. ARIES was originally to be just a technical demonstration of pit disassembly and conversion technology for follow on transfer to the now-canceled Pit Disassembly and Conversion Facility (PDCF) at the SRS. ARIES was never meant to be a permanent fixture at PF-4. We contend that that change alone requires programmatic review.

But far exceeding that now is the potential plutonium throughput for ARIES at PF-4 that could be a maximum of 2.5 metric tons annually for a total of 35 metric tons. The scale of necessary modifications to PF-4 to enable that expanded plutonium mission (i.e., decommissioning 20 old gloveboxes, modifying 18 and installing 18 new gloveboxes) and length of time of construction (96 months), all of which will generate an estimated ~2,000 ft^3 of radioactive wastes, demand site-specific NEPA analysis only after programmatic review has arrived at a Record of Decision which needs to determine the plutonium throughput to begin with.

The Impact of Expanded Plutonium Operations Must Be Better Explained.
Moreover, PF-4 is an extremely sensitive facility given that it is the nation's sole facility for plutonium pit production. It is fortunate that NNSA has decided to defer the proposed Chemistry and Metallurgy Research Replacement Project (CMRR)-Nuclear Facility at LANL, which also became a victim of exploding costs and increasing budget constraints.

We have long argued that the analytical chemistry and materials characterization missions in the old and unsafe CMR Building that directly support plutonium pit production could be relocated to the combination of the newly built first phase of the CMRR Project (the "Rad Lab") and PF-4. NNSA has now agreed with us in part when it declared in its FY 2013 Congressional Budget Request that "NNSA has determined, in consultation with the

environmental impacts of the MOX Alternative in this *SPD Supplemental EIS* is based on the anticipated operational lifespan of MFFF, rather than a projected program schedule. As shown in Appendix B, Table B–2, MFFF is estimated to operate for 21 to 24 years, depending on the amount of surplus plutonium to be fabricated into MOX fuel.

174-15 As discussed in the response to comment 174-9, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS.* In this *SPD Supplemental EIS*, three of the four disposition options include disposal of some or all of the 13.1 metric tons (14.4 tons) of surplus plutonium as waste: (1) immobilization (see Chapter 2, Section 2.2.1); (2) vitrification with HLW (see Section 2.2.3); and (3) disposal as CH-TRU waste at WIPP (see Section 2.2.4). All of these options are considered reasonable for dispositioning the surplus plutonium.

174-16 As discussed in the response to comment 174-9, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS.* As indicated in the response to comment 174-15, for the 13.1 metric tons (14.4 tons) of additional surplus plutonium evaluated in this *SPD Supplemental EIS*, three of the four alternatives involve disposal.

The decisionmaker may consider cost, schedule, technical viability, status of the MOX fuel program, worker and public safety, and the ability to carry out international agreements, among other factors, when selecting an alternative for implementation.

174-17 DOE does not agree with the opinion of the commentor about the need for a new or supplemental programmatic review of the participation of LANL in the Surplus Plutonium Disposition Program. As discussed in Section 2.1, Topic A, of this CRD, in the ROD (62 FR 3014) for the *Storage and Disposition PEIS* (DOE 1996), DOE stated that, to accomplish the plutonium disposition mission, DOE would use, to the extent practical, new and modified existing and new buildings and facilities for portions of the disposition mission. Consistent with this ROD, in this *SPD Supplemental EIS*, DOE evaluates the impacts of use of existing and modified plutonium capabilities at LANL.

DOE believes that this *SPD Supplemental EIS* adequately evaluates the impacts of pit disassembly and conversion at LANL under all alternatives, and that further NEPA analysis is not required. As addressed in Appendix A, Section A.2.4, the use of PF-4 for pit disassembly and conversion of a limited amount of surplus plutonium

Commentor No. 174 (cont'd): Jay Coghlan, Executive Director, and Scott Kovac, Operations and Research Director, Nuclear Watch New Mexico

national laboratories, that the existing infrastructure in the nuclear complex has the inherent capacity to provide adequate support for these [plutonium] missions."

But this inevitably puts more pressure on PF-4. For example, LANL's SPD SEIS data call final report states:

> ***A. General Plutonium Operations at PF-4***
> General facility capabilities related to plutonium preparation and handling are described here. The current ARIES program (No Action Alternative) uses about 4,500 square feet. The Action alternative adds another 3,000 s.f., for an approximate total of 7,500 s.f. (Page 13)

LANL's SPD SEIS data call final report further states:

> ***B. Plutonium Metal and Oxide Production Schedule***
> *Expected output of metal and/or oxide (peak annual and total)*
> *Projected start year and total number of operational years*
> Operations would begin immediately after NEPA and program approval, likely with a ramp-up to a peak output of 2.5 MT(Pu)/y as equipment is installed and certified for production use. Operational years are currently estimated to be eighteen years (beginning in FY2013 and ending in FY2030) for a ~25 MT(Pu) total mission. An additional 9 MT(Pu) is expected to be declared as excess to National Security, and its conversion would require operations to continue until FY2034 at 2.5 MT(Pu)/y. (Page 21).

Thus additional floor space will be dedicated to the MOX fuel mission at PF-4, with potentially large input (2.5 MT/yr) for the next 20+ years. We have appended Table 1 "Category 1 Laboratory Space Requirements" from LANL's 1997 report *Alternatives for Increasing the Nuclear Materials Processing Space at Los Alamos for Future Missions* at the end of our comments. Our point is to demonstrate how tightly bound PF-4's total processing space of 59,600 square feet is by program. The report states that at that time 1,000 square feet of processing floor space was dedicated to "Fissile Materials Disposition – MOX." We know from the above not only that 4,500 square feet are now so dedicated, but also that an additional 3,000 square feet may be added under NNSA's preferred alternative.

This cries out once again for review and analysis on a programmatic level that takes into account possible impacts on other national security plutonium programs not related to the MOX program but that could be impacted by it. More specifically, there needs to be programmatic examination of how any increased MOX fuel mission at PF-4 could impact the so-called alternative plutonium strategy that NNSA has embarked upon after the Administration's decision to defer the CMRR-Nuclear Facility. We believe that Congress would take a dim view of any possible impacts by the MOX program on the alternative plutonium strategy, which is for nuclear weapons research and production and is not related to plutonium disposition.

174-18

In addition to the impacts at LANL of the ARIES program, any future NEPA reviews need to clearly present and analyze the possible impacts of increased MOX fuel polishing operations at PF-54. Those operations purify plutonium from ARIES for direct use in the fabrication of MOX fuel. NNSA needs to make clear what volumes of material are involved in MOX fuel polishing, what percentage is taking place at SRS and LANL respectively, and the composition and amounts of the resulting waste streams.

at LANL was evaluated in a 1998 environmental assessment (DOE 1998a) and Finding of No Significant Impact (DOE 1998b), as well as in the 2008 *LANL SWEIS* (DOE 2008), and DOE decided to proceed with disassembly and conversion of 2 metric tons (2.2 tons) of pit plutonium (73 FR 55833). The impacts from pit disassembly and conversion of 2 metric tons (2.2 tons) and 35 metric tons (38.6 tons) of surplus plutonium at LANL are evaluated in detail in Appendix F and summarized in Chapter 2, Section 2.6, Table 2–3, and Chapter 4. The analyzed quantities are meant to cover the range of pit disassembly and conversion activities that could occur at LANL, from a continuation of existing PF-4 activities (2 metric tons [2.2 tons] of surplus plutonium) to an optional maximum quantity of 35 metric tons (38.6 tons) of surplus plutonium. For further discussion, refer to Section 2.3, Topic A, of this CRD.

174-18 DOE does not agree with the opinion of the commentor about the need for a new programmatic review and analysis of the Surplus Plutonium Disposition Program in the context of conflicts with DOE's weapons research and production mission. DOE does not expect that expanded pit disassembly and conversion operations at PF-4 would adversely impact other LANL missions (e.g., stockpile stewardship, environmental management, and remediation). The LANL Plutonium Oxide Polishing mission referenced by the commentor was cancelled in December 2007 after delivery of surplus plutonium to France for MOX fuel LTA fabrication. Plutonium oxide polishing needed to support MOX fuel production would be performed at MFFF, not LANL, and the projected waste streams from these operations are included in the waste estimates for SRS, as shown in Appendix G of this *SPD Supplemental EIS*. For further discussion, refer to Section 2.4, Topic A, of this CRD.

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Possible Defense Nuclear Facilities Safety Board Concerns
The Defense Nuclear Facilities Safety Board has long been concerned with possible radioactive doses to the public should PF-4 experience a serious seismic event. Among other things, the Safety Board has long urged that LANL reduce the plutonium inventory in PF-4 so that there would be less "Material at Risk." Therefore NNSA needs to fully explain to the DNFSB and the public how up to an additional 2.5 metric tons of plutonium every year will not create unacceptable risks. NNSA also needs to explain how it will shoehorn in the extensive modifications that will take 96 months to complete, while at the same time PF-4 will also be undergoing major structural upgrades designed to increase seismic safety.

174-19

Transportation of ~2,000 shipments of nuclear materials needs analysis.
LANL's February 2012 *Final Report, Data Call to Support the SPD SEIS* states:

> The production schedule [for MOX fuel feedstock from ARIES], coupled with the packaging assumptions, allows us to compute the trucking requirements for operational material. The total number of truck (SGT) shipments per year for pits (Pantex to LANL), oxide and metal (LANL to SRS), and HEU (LANL to Y-12) ranges from 60 to 210 at a peak production rate of 2.5 MT/y. The total over the whole 34 MT program is about 2,000 shipments. P. 35.

174-20

Any future NEPA reviews, which we argue should be site-specific following programmatic review, will have to rigorously analyze the transportation risks associated with this large number of potential shipments. That review should also place those shipments within the context of the total number of nuclear materials shipments to and from LANL.

The Impact of More Plutonium on Cleanup Must Be Analyzed.
LANL already has a mission to clean up transuranic wastes (bomb wastes contaminated with plutonium) and "low-level" wastes at Area G, which is behind schedule and will cost billions of dollars if comprehensively done. The SPD dSEIS did not analyze the potentially negative effects that significantly increased plutonium operations at LANL could have on the March 2005 Compliance Order on Consent between the New Mexico Environment Department (NMED) and LANL (AKA the "Consent Order") that governs cleanup.

The purposes of the Consent Order are to: (1) characterize the extent of contaminants at LANL; (2) evaluate clean up remedies and mitigation strategies to prevent the migration of contaminants; and (3) to implement those cleanup measures and mitigation strategies, dependent on the first two steps. LANL has asked for, and NMED has granted, more than 30 two-year extensions on Consent Order milestones for the first two characterization and evaluation steps, thus throwing into grave doubt the third step of actual cleanup. The cumulative effect on Consent Order compliance of dramatically expanding the plutonium mission at LANL that would generate yet more waste while diverting focus and resources away from cleanup needs to be addressed.

174-21

Programmatic Review Must Analyze the Impacts of More Plutonium Wastes at WIPP.
Federal laws limit WIPP's mission to 175,564 cubic meters of transuranic waste, including 7,079 cubic meters of more radioactive remote-handled (RH) wastes. Because of how waste has been shipped to WIPP and placed underground, a significant amount of space has not been used or has been filled with empty containers. Thus, at least 40 percent of the

174-22

174-19 Should the proposed enhanced pit disassembly and conversion activities be selected for implementation at LANL, DOE would process the additional surplus plutonium within PF-4 and stay within the facility safety basis, including meeting the DOE safety goals. As discussed in Appendix D, Section D.1.5.2.11, of this *SPD Supplemental EIS*, the overall material at risk under accident conditions is expected to fall within existing limits for material at risk.

DOE believes that this *SPD Supplemental EIS* sufficiently analyzes the environmental impacts of pit disassembly and conversion of surplus plutonium at LANL, including impacts from potential accidents, for existing as well as optional expanded (up to 2.5 metric tons [2.8 tons] per year) operations. This *SPD Supplemental EIS* evaluates several accident scenarios, including varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9). These analyses indicate that the chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

DOE has an ongoing program to ensure that PF-4 can meet DOE safety goals under a wide range of severe accident conditions, including a design-basis earthquake. DOE is working with DNFSB to ensure that these goals are met. Both physical and administrative changes have been made to reach that goal. Structural changes in the seismic upgrade program have improved the overall response of the facility and equipment to limit the release of radioactive materials in severe earthquakes. Administrative controls have been employed to reduce the material at risk, especially the more readily dispersible materials such as plutonium-238 powder. Safety analyses have also been improved to more realistically examine and model the material at risk, the damage it might sustain in a variety of accident scenarios, and the fraction that might become airborne and released from the building. All of these efforts, including ongoing and routine correspondence between DOE and DNFSB, are a matter of public record and are available at www.dnfsb.gov.

As noted above, pit disassembly and conversion operations in support of the Surplus Plutonium Disposition Program are ongoing under the No Action Alternative. As discussed in Appendix B, Section B.2.1, the pit disassembly and conversion capability at PF-4 is operating at demonstration capacity (based on single-shift operation) to produce 2 metric tons (2.2 tons) of plutonium oxide as early feed for MFFF. Section B.2.1 also describes the upgrades to the current capability that would be needed to accommodate an increase in throughput. The increases in throughput would be accomplished by using existing processing rooms at PF-4.

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RH waste cannot be disposed as planned. The ten planned panels also may not have sufficient space for the contact handled wastes.

The SPD dSEIS states that the additional 6 metric tons of plutonium proposed for disposal at WIPP could be up to 17,000 cubic meters of waste. That amount would approximately double the amount of wastes from SRS to be emplaced at WIPP. While the SPD dSEIS states that amount could fit at WIPP, it might require adding additional panels or displacing contact handled waste from LANL or other sites that are in the existing WIPP Inventory. Additionally, plutonium oxide in pipe overpack containers has never before come to WIPP and may contain materials, such as "stardust," that are not permitted at WIPP. Finally, in a separate NEPA process WIPP is also proposed to dispose of up to 6,000 cubic yards of "Greater than Class C" (GTCC) wastes, a catch all term for sealed sources, activated metals (such as from decommissioned reactors), and other wastes that are the most radioactive so-called Low-Level Wastes.

174-22 cont'd

It is unlikely that WIPP can accommodate NNSA's proposal for additional disposal of 6 metric tons of surplus plutonium, much less the GTCC wastes. There are also increasing suggestions that WIPP (or its environs) also dispose of the nation's high-level radioactive wastes, now that the Yucca Mtn. repository has been canceled. All of this once again argues for rigorous programmatic review of not only what WIPP can realistically handle, but also the interrelated impacts that NNSA's current proposal for plutonium disposition can have on the interlocking sites within DOE's nuclear complex.

Conclusion: For all the reasons stated in these comments and more, NNSA should not issue a Final Supplemental EIS. Instead, it must prepare a new programmatic environmental impact statement on plutonium storage and disposition that includes analysis of all credible alternatives that could better achieve the nuclear nonproliferation goals of our country and help save taxpayers' money at the same time.

A Beginning Recommendation: Again, Nuclear Watch New Mexico is a strong advocate for the permanent disposition of plutonium that could be used in nuclear weapons**.** We recommend that the MOX Program be canceled and a Pit Conversion Facility be built at the Pantex Plant near Amarillo, TX, because that's where some 15,000 surplus plutonium pits are. "Conversion" should be a comparatively simple process that crushes the pits and packages them for eventual geologic disposal, and not necessarily in a vitreous or ceramic matrix. All the while procedures to avoid nuclear criticalities need to be stringently observed. Geologic disposal could include co-location with existing high level wastes so that a radiation barrier is created that would strongly discourage future extraction of plutonium. We recognize that the most difficult problem is locating the permanent geologic repository, which needs a scientific solution leading to a popular political solution that is beyond our expertise. But overall our recommendation would greatly reduce transportation risks and realize substantial savings for the taxpayer while NOT introducing plutonium into the global market. We would redirect savings into genuine nonproliferation programs that would help lead us into a future world free of nuclear weapons.

174-23

These comments respectfully submitted,

Jay Coghlan
Executive Director

Scott Kovac
Program Director

174-20 Transportation risks are evaluated for all alternatives proposed in this *SPD Supplemental EIS*, including the threat of theft and diversion of radioactive materials. This *SPD Supplemental EIS* includes analysis of the transportation risks associated with processing up to 35 metric tons (38.6 tons) of surplus plutonium at PF-4. Appendix E, Tables E–6 through E–10, show the number of shipments of SNM (identified as Secure Transportation Asset shipments) under the various alternatives and pit disassembly and conversion options. Chapter 4, Table 4–22, shows that the incident-free risks of a single LCF in the exposed population would be less than 1 (0.09 to 0.1), and the accident risk would be on the order of 0.0001 LCFs for all shipments of materials and wastes. These shipments would be in comparison to up to about 980 to 1,600 shipments of SNM (including plutonium dioxide) that could occur over a 10-year period, as analyzed for the alternatives in the 2008 *LANL SWEIS*, Appendix K, Table K–5 (DOE 2008).

174-21 DOE intends to continue conducting the environmental restoration programs at LANL in compliance with the Consent Order and other applicable requirements in parallel with its other missions. Progress on implementing the Consent Order at LANL is not linked to, and does not contradict, decisions on pit disassembly and conversion activities. Further, pit disassembly and conversion activities at LANL are expected to have minimal environmental impacts and not interfere with cleanup and remediation activities. For further discussion, refer to Section 2.3, Topic C, of this CRD.

174-22 No remote-handled TRU waste would be generated under the alternatives evaluated in this *SPD Supplemental EIS*.

As described in Chapter 2, Section 2.3.3, of this *SPD Supplemental EIS*, 2 metric tons (2.2 tons) of plutonium material could be disposed of at WIPP under the MOX Fuel Alternative. As described in Chapter 2, Section 2.3.5, 13.1 metric tons (14.4 tons) of plutonium material could be disposed of at WIPP under the WIPP Alternative. Both alternatives are considered reasonable for consideration in this *SPD Supplemental EIS* because neither alternative would result in generation of TRU waste sufficient to exceed WIPP's disposal capacity.

Chapter 4, Section 4.5.3.6.3, of this *SPD Supplemental EIS* discusses the amount of CH-TRU waste that is projected for disposal at WIPP, as published in the *Annual Transuranic Waste Inventory Report – 2012* (DOE 2012a), as well as the amount of unsubscribed CH-TRU waste disposal capacity that would be necessary to support the alternatives analyzed in this *SPD Supplemental EIS*. As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium

Commentor No. 174 (cont'd): Jay Coghlan, Executive Director, and Scott Kovac, Operations and Research Director, Nuclear Watch New Mexico

Attachment A

Alternatives for Increasing the Nuclear Materials Processing Space at Los Alamos for Future Missions, LA-UR-97-1000, LANL, April 1997

Table 1. Category 1 Laboratory Space Requirements.

	Present PF-4	Future PF-4	Future CMR	Change
DP-Programs				
Pit Fabrication - General	11,400	11,500	2,200	2,300
Pit Fabrication - Disassembly	0	0	1,000	1,000
Pit Fabrication - Assembly	0	3,100	0	3,100
Pit Fabrication - Radiography	0	700	0	700
Pit Surveillance	2,300	0	4,500	2,200
Pu-238 Heat Sources & Recovery	6,000	6,000	0	0
Stockpile Stewardship Programs	2,300	2,300	0	0
Special Recovery Line	700	0	1,200	500
Actinide Research & Development	3,400	3,400	1,000	1,000
Non-DP Programs				
Pu-238 Heat Sources & Recovery	3,000	3,000	0	0
Neutron Source Mat'ls Recovery	800	800	0	0
Fissile Materials Disposition - ARIES	1,000	1,500	0	500
Fissile Materials Disposition - MOX	3,000	3,000	0	0
EM Technology Support	800	0	0	–800
Non-Proliferation Technologies	0	0	0	0
Support Functions				
Aqueous and Pyro Recovery	13,400	13,400	0	0
Mat'ls Management and Rad. Control	4,400	4,400	2,000	2,000
Waste Management	2,400	2,400	1,200	1,200
Analytical Chemistry - Metallography	4,700	2,600	1,500	–600
Contingency Space	0	1,500	700	2,200
Totals	59,600	59,600	15,300	15,300

disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD. Appendix B, Section B.1.3, describes the process of mixing the plutonium oxide with inert material and loading it in POCs for disposal at WIPP. This process has already been used successfully for plutonium disposal at WIPP.

Chapter 4, Section 4.5.3.6.3, of this *Final SPD Supplemental EIS*, was revised to include consideration of the disposal at WIPP of GTCC and GTCC like waste as described in the *Draft Environmental Impact Statement for the Disposal of Greater Than Class C (GTCC) Low Level Radioactive Waste and GTCC Like Waste* (DOE 2011c) and TRU waste from storage tanks at the Hanford Site as described in the *Final Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington* (DOE 2012c). Future decisions about the disposal of TRU waste would be made in the context of the needs of the entire DOE complex. Disposal of HLW at WIPP is not a reasonably foreseeable action under CEQ and DOE NEPA regulations.

174-23 As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) evaluated numerous alternatives (technologies and locations) for disposition of surplus plutonium, including immobilization and direct disposal of surplus plutonium as waste. DOE selected an approach for disposition of some of the plutonium declared surplus (68 FR 20134). As discussed in Section 2.2, Topic A, of this CRD, DOE's prior disposition decisions are not addressed in this *SPD Supplemental EIS.*

DOE does not agree with the opinion of the commentor about the need for construction of a pit conversion facility at the Pantex Plant and crushing the plutonium pits for disposal as waste. DOE is not reconsidering pit disassembly and conversion at the Pantex Plant for the reasons set forth in the *SPD EIS* ROD (65 FR 1608). Also refer to Chapter 2, Section 2.4, of this *SPD Supplemental EIS*.

Commentor No. 174 (cont'd): Jay Coghlan, Executive Director, and Scott Kovac, Operations and Research Director, Nuclear Watch New Mexico

With respect to the additional 13.1 metric tons (14.4) tons of surplus plutonium addressed in this *SPD Supplemental EIS*, DOE is considering alternatives for its disposition, including preparation into MOX fuel, immobilization, vitrification with HLW, and preparation for potential disposal at WIPP. DOE does not believe that an alternative involving crushing the plutonium pits and placing the pits into containers for geologic disposal would be a reasonable alternative. Pit crushing would not change the chemical form of the plutonium metal and, therefore, would present a criticality risk and would not be as proliferation-resistant as the other alternatives considered in this *SPD Supplemental EIS*.

Commentor No. 175: Joseph Anderson

From: Joseph Anderson
Sent: Monday, October 15, 2012 3:36 PM
To: spdsupplementaleis@saic.com
Subject: Comment

I agree with the surplus plutonium disposition supplemental environmental impact statement *175-1*

Joseph Anderson

175-1 DOE acknowledges the commentor's opinion.

Commentor No. 176: Tom Clements, Nonproliferation Policy Director Alliance for Nuclear Accountability

Alliance for Nuclear Accountability

A national network of organizations working to address issues of nuclear weapons production and waste cleanup

October 11, 2012

The attached items are hereby submitted for consideration for the record of the DOE's *Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement*:

A. Articles

1. **"Environmental groups seek updated cost estimates for MOX project,"** Augusta *Chronicle*, October 11, 2012, http://chronicle.augusta.com/news/metro/2012-10-11/environmental-groups-seek-updated-cost-estimates-mox-project

2. **"Public Interest Groups Challenge Savannah River Site's Troubled Plutonium Fuel (MOX) program,"** Aiken *Leader*, October 11, 2012, http://aikenleader.villagesoup.com/blog/blogpost/909172?from=%2Fpost%2Fmanage%2Fposts.seam%3FformId%3D1%26page%3D0&cid=391243

B. The attached chart, entitled **"SCHEDULES OF KEY ENVIRONMENTAL IMPACT STATEMENTS,"** lists March 2013 for the issuance of the Final Supplemental EIS on this matter. I request that this date be changed to **tentative** given the NEPA legal issues and scheduling problems that face the process now before DOE.

Tom Clements

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Washington, DC Office: 322 4th Street NE, Washington, DC 20002, 202/544-0217, Fax: 202/544-6143
www.ananuclear.org

176-1

176-2

176-3

176-1 Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

176-2 The concerns addressed in this article were submitted directly to DOE as part of the public comment process on the *Draft SPD Supplemental EIS*. The responses to your correspondence submitted on October 10, 2012, (Comment Document 158) address these concerns.

176-3 DOE acknowledges the commentor's opinion.

Commentor No. 176 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

Environmental groups seek updated cost estimates for MOX project |... http://chronicle.augusta.com/news/metro/2012-10-11/environmental-...

Augusta (Georgia) Chronicle October 11, 2012

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Environmental groups seek updated cost estimates for MOX project

By Rob Pavey
Thursday, Oct. 11, 2012 2:56 PM
Last updated 6:52 PM

Environmental groups asserted this week that design changes and other factors will add at least $2 billion to the cost of the government's mixed oxide project at Savannah River Site.

The one-of-a-kind MOX plant, which has been under construction six years, is designed to dispose of 34 metric tons of weapons-grade plutonium by blending small amounts with uranium to make fuel rods for commercial power reactors – a process that forever renders the plutonium unusable for weapons.

In joint comments responding to a revised supplemental environmental impact statement addressing changes in the MOX program, 40 environmental groups said updated budget figures are needed – both for construction and operating costs.

"The MOX plant cost estimate has been frozen at $4.8 billion for the last several years," said the groups, which include the Sierra Club chapters, Alliance for Nuclear Accountability and Southern Alliance for Clean Energy.

The schedule calls for the plant to be completed in 2016 and begin producing commercial fuel in 2018.

However, the groups noted, a 2003 U.S. Department of Energy estimate placed the construction cost at $1.7 billion and forecast a completion date in 2007.

Although new cost estimates have not been publicly released, the groups cited a Sept. 26 report in an industry trade publication, *Weapons Complex Monitor*, that the internal baseline cost of building the plant had jumped $2 billion.

"Despite repeated requests from public interest groups, DOE has adamantly refused for all of 2012 to release this new cost estimate for either the MOX plant construction or overall plutonium disposition program and is keeping this vital information secret," the groups said.

The government has not altered its mission to dispose of the plutonium, but has amended its original plan to build a freestanding plant to process plutonium "pits" from dismantled warheads into powder for use at the MOX plant. Instead, the new plan – which required amendments to the environmental statements – will use existing facilities, including the H Canyon area at Savannah River Site, to accomplish the same mission.

The National Nuclear Security Administration, which manages the nation's nuclear weapons stockpile and is in charge of the MOX project, is working with Tennessee Valley Authority in its quest to find clients willing to use the fuel. So far, no formal agreement has been reached.

The comment period for the revised environmental impact statement closed Thursday, and the Department of Energy expects to evaluate all comments and issue a record of decision on the changes sometime in 2013.

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Commentor No. 176 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

A2

THE AIKEN LEADER
YOUR NEWS SOURCE FOR THE AIKEN AREA

Edit BlogPost

Public Interest Groups Challenge Savannah River Site's Troubled Plutonium Fuel (MOX) Program

By Thomas Clements | Oct 11, 2012 Share

Photo by: Carolina Peace Resource Center

At a meeting at the University of South Carolina on October 10, attendees heard from Tom Clements of the Alliance for Nuclear Accountability (ANA) about mounting cost and technical problems with the plutonium fuel (MOX) program being carried out at the Savannah River Site. Meeting participants learned that MOX program is amongst the most poorly managed and costly DOE programs which the Government Accountability Office has warned about. Participants also learned about preliminary and secretive efforts by special interests to bring the nation's highly radioactive spent fuel to South Carolina for "extended" storage and possible reprocessing. The crowd uniformly agreed that spent fuel dumping on the state would be soundly opposed by South Carolinians, who will fight like Gamecocks against the scheme.

Columbia, SC -- The Alliance for Nuclear Accountability (ANA), in conjunction with over 40 other public interest organizations, has submitted comments to the Department of Energy (DOE) in opposition to the MOX plutonium fuel program. The Mixed Oxide Plutonium fuel, or MOX, program would dispose of surplus weapons plutonium by turning it into experimental plutonium fuel (MOX) at the Savannah River Site near Aiken, South Carolina.

The groups oppose MOX for both fiscal and technical reasons and instead endorse preparation of a new analysis to review cheaper and safer options to manage weapons-grade plutonium as nuclear waste.

The groups' comments of October 10 were submitted as part of the Draft Supplemental Environmental Impact Statement (Draft SEIS) on plutonium disposition. The Draft SEIS is required by the National Environmental Policy Act before the MOX program can move ahead. The comments focus on DOE's poorly formulated plan for testing experimental weapons-grade MOX fuel and for its use in commercial nuclear power reactors.

The cost of DOE's plutonium fuel program, which has been poorly received by utilities, has soared, with about $17.5 billion yet to be spent, based on an analysis by ANA. This figure is more than three times the cost of disposing of plutonium as nuclear waste and should come as a shock to fiscal conservatives, according to ANA.

Shaw AREVA MOX Services is constructing the $7-billion MOX plant at the Savannah River Site. DOE has staunchly refused to inform the taxpayer about the cost of both the MOX plant and the overall plutonium disposition program.

"DOE and AREVA expect the tax payer to continue signing blank checks for the misguided MOX program but patience is wearing thin as good money is being thrown after bad," according to Tom Clements of ANA. "Why should the French plutonium company AREVA be profiting off the U.S. tax payer for a dead-end program that lacks a path forward?"

The comments note that currently "DOE has no "Plan B" to pursue plutonium management when the MOX program fails due to cost, technical and scheduling challenges." DOE has already demonstrated how its failure to think about "Plan B" on other projects has resulted in billions of wasted taxpayer dollars, according to ANA. This includes millions of dollars wasted designing a plutonium processing facility in New Mexico that, in the face of cost and schedule problems, DOE now says it doesn't need. ANA and its public interest allies believe that taking time to plan for safer, less expensive alternatives to MOX could save tax payers billions.

Technical and scheduling problems with DOE's plan to make MOX fuel are highlighted in the public interest group comments. Groups signing on to the comments point out that the DOE's "pro-MOX" "preferred alternative" which was presented in the Draft SEIS is

Documents Reveal Time-line and Plans for "Small Modular Reactors" (SMRs) at the Savannah River Site (SRS) Unrealistic and Promise no Funding

Thomas Clements

One SMR Design being Eyed at SRS for Use of Plutonium Fuel (MOX) and Production of Tritium Gas Used in Nuclear Weapons

Documents obtained under the Freedom of Information Act (FOIA) by the Alliance for Nuclear Accountability (ANA) in Columbia, South Carolina reveal unrealistic plans for pursuit of "small modular reactors" (SMR) at the Department of Energy's Savannah River Site, located near Aiken, South Carolina. The obtained Memoranda of Agreement (MOA) between SMR vendors and the Savannah River Site address three conceptual designs: NuScale, SMR, LLC and Gen4 Energy (formerly Hyperion).

"It's clear that officials at SRS are caught up in an unrealistic public relations campaign to promote imaginary SMRs at the site," said Tom Clements, Nonproliferation Policy Director with the Alliance for Nuclear Accountability. "SRS is unfortunately staking its future on development of SMRs when there is little indication that they will be economically or technologically practical. The future of SMRs at SRS is doubtful at best and no amount of public relations spin will make them come true absent sound designs and large amounts of private funding."

The MOAs indicate that sale of electricity to SRS via "Purchase Power Agreements" (PPAs) is being viewed as a way to fund the reactors. "Sales of electricity produced by SMRs at high rates to SRS would likely be nothing but a back-door subsidy by big government and will not be defensible to the public or Congress," said Clements.

The main goal of the SMR vendors appear to be a desire to obtain part of the $452 million subsidy that DOE will award in September to two reactor designs.

"It's time for big government to stop choosing winners and losers among SMR concepts and let the free market decide if SMRs will be pursued," said Clements. "It's shocking that Governor Haley of South Carolina would support the big-government approach being presented by the Obama Administration over the decisions about SMRs being made by the free market."

The MOA with SMR, LLC for the "Safe Modular Underground Reactor" indicates pursuit of controversial nuclear weapons-related programs. The MOA states that "the Parties agree to invite the NNSA [National Nuclear Security Administration] to discuss the feasibility of additional Agreements to

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Commentor No. 176 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

inconsistent with the "no-MOX" alternative presented by the Tennessee Valley Authority (TVA). DOE is considering MOX use in five of TVA's aging reactors, including three reactors Browns Ferry which are of the faulty Fukushima design.

In the Draft SEIS, TVA is simply listed as a "cooperating agency," but, in fact, TVA's role as the only utility selected to accept plutonium fuel is central to the MOX program. At this point TVA has not expressed interest in MOX testing or use. This inconsistency poses serious legal problems for DOE under the National Environmental Policy Act.

According to ANA and allied groups, DOE has a legal responsibility to prepare a new Programmatic Environmental Impact Statement (PEIS), due to the significant changes between previous Environmental Impact Statements and the Draft SEIS. Some of these dramatic changes include using Los Alamos National Lab, the Waste Isolation Pilot Plant (WIPP), or other facilities for plutonium disposition had not been considered by DOE in earlier versions of the MOX Environmental Impact Statement. The comments state that "DOE/NNSA must issue for public comment a new Storage and Disposition PEIS or a Supplemental PEIS describing the overall surplus plutonium disposition program and its alternatives before it can proceed with a Final Supplemental EIS."

Groups signed onto the comments noted that MOX made from weapons-grade plutonium has never been used on a commercial scale anywhere in the world and such experimental fuel has never even been tested in a boiling water reactor. The Draft SEIS DOE proposes using MOX in TVA's Sequoyah pressurized water reactors and the problem-plagued Browns Ferry boiling water reactors. However, TVA has not agreed to accept MOX and has not even conducted any public analysis of the testing and use of experimental weapons-grade MOX fuel.

At a recent environmental hearing near Browns Ferry, not a single person spoke in favor of MOX use in the reactors, indicating that TVA will have a public relations nightmare on its hands if it were to consider MOX testing and use in the reactors now at the top of the NRC's list of problematic reactors.

TVA's chief nuclear officer, Preston Swofford, was recently quoted by the Decatur (Alabama) Daily throwing cold water on the idea of TVA using MOX: "It's just so low on my radar screen that I refuse to jump in the fray. I don't think I do service to the ratepayers of the Valley bringing on one more issue. Now three or four years from now, when the fleet's back to steady, we'll take a look at the product."

"It is stunning that DOE is proceeding with construction of a $7-billion MOX plant at the Savannah River Site without any customers to use plutonium fuel and no operational schedule for the plant," said Tom Clements, ANA's Nonproliferation Policy Director. "The time to terminate the MOX program and explore safer, less costly options to dispose of plutonium as nuclear waste has arrived. Due to technical and legal issues, it is clear that DOE will not be able to issue a Final Environmental Impact Statement endorsing MOX, which will be a strong indication that the MOX program is stumbling and that new non-MOX approaches are needed."

Click here to view the Alliance for Nuclear Accountability's comments on the Plutonium Disposition Draft Supplemental Environmental Impact Statement.

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irradiate Tritium Producing Burnable Absorption Rods (TPBARs) and Mixed Oxide Fuel (MOX)." These plans refer to the production of radioactive tritium gas used to boost the explosive power of all U.S. nuclear weapons and the use of experimental plutonium fuel (mixed oxide, MOX) made from weapons-grade plutonium surplus to the nuclear weapons program.
Tritium for nuclear weapons is currently produced by the Watts Bar unit 1 reactor owned by the Tennessee Valley Authority. According to ANA, this shows that the U.S. has quietly crossed the imaginary line between the military and civilian nuclear processes and is engaged in a project which undermines sound nuclear non-proliferation policies. "For non-proliferation, safety and cost reason, production of tritium and use of MOX fuel should be ruled out for any SMRs," said Clements.
SRS is engaged in an intensive promotional campaign to secure SMRs at the site in spite of the fact that they only exist on paper, no design is licensed by the Nuclear Regulatory Commission and sources of funding for development and construction of the reactors have not been identified. This effort by SRS to present itself as a leading SMR candidate site is in parallel with the overly enthusiastic media campaign by SMR vendors to promote their specific models, according to ANA.
"While SRS may superficially appear to present certain attractive aspects for the location of SMRs, the site has not had experience with operation of nuclear reactors in over twenty years and has no current expertise in reactor operation," said Clements. "While DOE is set to chose two SMR designs to fund for further development, SRS affirms that no construction funds will be provided, leaving vendors with the difficult and perhaps insurmountable task to find private funding for SMR construction."
Two of the three separate "Memoranda of Agreement" for three different and still hypothetical SMR designs include deployment timelines which are already admitted by DOE to be inaccurate since they were signed less than six months ago.
As SMRs are being promoted for overseas markets, SRS officials will not say what plans are for used reactor vessels or highly radioactive spent fuel which would be taken back to the production site.
"If SRS would become a nuclear waste dumping site due to involvement in SMR programs, this is something that the public in the Aiken area and in South Carolina will soundly reject," said Clements.
###
The three MOAs obtained by ANA include agreements with SRS and the following vendors:
SMR, LLC (http://holtecpower.com/) – signed December 2011
http://www.ananuclear.org/Portals/0/SMR,%20LLC%20MOA.pdf
NuScale (http://www.nuscale.com/) – signed March 2012
http://www.ananuclear.org/Portals/0/NuScale%20MOA.pdf
Hyperion Power Generation (now Gen4 Energy, http://www.gen4energy.com/) – signed

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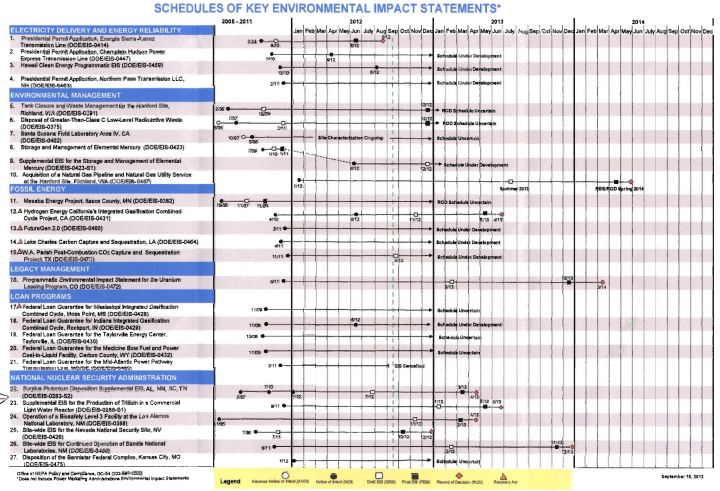
Commentor No. 176 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability



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Commentor No. 177: Tom Clements, Nonproliferation Policy Director Alliance for Nuclear Accountability

Alliance for Nuclear Accountability

A national network of organizations working to address issues of nuclear weapons production and waste cleanup

January 15, 2013

Ms. Sachiko McAlhany
SPD Supplemental EIS NEPA Document Manager
U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874–2324

Additional Document Submitted for the Record of the Department of Energy's *Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement* (DOE/EIS-0283-S2, July 2012)

I hereby submit the attached news release from the office of Representative Ed Markey and a letter he submitted to DOE on January 14, 2013, with questions concerning the MOX program.

Though DOE is not compelled to address any of the questions Representative Markey raises in his letter to Secretary Chu, it would be best if the Final SEIS – if it can ever be issued – addresses the questions that Representative Markey poses. Failure to address the issues he raises in any Final SEIS will be noticed and it may appear that DOE is avoiding the subjects he raises.

You will note that Representative Markey requests a response from DOE by February 15, 2013, so you may want to see how DOE responds and then incorporate those responses in any Final SEIS if it can be issued.

Thank you.

Tom Clements
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Columbia, SC 29201

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www.ananuclear.org

177-1

177-1 The referenced letter from Representative Edward J. Markey (now Senator Markey) was received by DOE. DOE had discussed the issues regarding the MOX Fuel Program with Representative Markey and his staff. Similar issues have been raised in other comments on the *SPD Supplemental EIS* and are addressed in the corresponding responses.

Commentor No. 177 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

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http://markey.house.gov

January 14, 2013

The Honorable Dr. Steven Chu
Secretary
Department of Energy
1000 Independence Avenue SW
Washington, D.C., 20585

Dear Secretary Chu:

I write to request information related to the Department of Energy's efforts to dispose of excess weapons-grade plutonium through the fabrication of mixed oxide (MOX) fuel that will be burned in nuclear reactors. I have long opposed these plans on the grounds that the cost and environmental impact of this approach have been grossly underestimated, that this approach blurs the longstanding distinction between civilian and military uses of nuclear technology and raises nonproliferation concerns, and that alternative approaches have not been properly considered[1]. In addition to these concerns, several recent reports suggest that the Mixed Oxide Fuel Fabrication Facility (MFFF), under construction at the Savannah River Site, may be over budget, behind schedule, and lacking even a single customer for its product. These reports call into question the viability and fiscal wisdom of the Department's current approach. I am very concerned about these reports, as they suggest that the MOX program may be both wasting taxpayer dollars and ultimately failing to reduce our stores of surplus weapons-grade plutonium.

The MFFF is designed to blend plutonium-oxide, derived from surplus weapons-grade plutonium, with uranium-oxide to produce fuel rods for commercial power reactors. Construction on MFFF began in 2007, with a construction budget of $4.8 billion and a planned completion date in 2016. A report in the Sept. 28 issue of Nuclear Weapons and Materials Monitor, however, suggests that DOE internal estimates of construction costs are now $2 billion higher due to "a significant rise in commodity prices as well as hiring and retention issues, problems finding nuclear qualified vendors and difficulty obtaining specialty components from the long-dormant nuclear industry." Some of these same issues were also identified as risks in the National Nuclear Security Administration's (NNSA) FY13 Congressional budget request for MFFF, where difficulties in finding suppliers that meet Nuclear Quality Assurance 1 standards and an almost complete turnover in the construction management staff of Shaw AREVA MOX

[1] http://markey.house.gov/document/2012/2002-letter-doe-plutonium-disposition; http://markey.house.gov/document/2012/2002-letter-doe-mox; http://markey.house.gov/document/2012/1997-letter-doe-mox

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Commentor No. 177 (cont'd): Tom Clements, Nonproliferation Policy Director, Alliance for Nuclear Accountability

Services in a single year are cited[2]. These challenges are also highlighted by a recent Nuclear Regulatory Commission (NRC) report on flawed welds in glove boxes delivered to MFFF by a supplier[3].

Moreover, in unscripted comments, NNSA personnel have confirmed the reality of these underlying budgetary and supply problems. In a Sept. 17 article, "U.S. Department of Energy Honors Byers Precision Fabricators," the Blue Ridge Times-News quoted Kevin Hall, an acting project director for NNSA overseeing the MFFF construction, as saying, "I'm getting behind schedule. And I'm going to have to determine whether I have to go to Congress and ask for more money — never a lot of fun.[4]" Furthermore, the DOE Office of Engineering and Construction Management currently lists the MFFF as being in their worst performance category: "expected to breach its Performance Baseline cost, schedule, or scope[5]."

Additionally, the projected operating costs for the MOX plutonium-disposition program are listed at nearly $500 million per year in the FY13 budget. With operations planned for at least 20 years, this represents nearly $10 billion of taxpayer dollars spent on a program with an uncertain future in an era of shrinking federal budgets.

Even more troubling than these cost over-runs are reports that NNSA lacks customers for the MOX product that is costing so much to produce. The use of MOX fuel potentially requires some reactor modifications as well as changes in the management of the spent fuel waste. It is unclear which utilities might be willing to take on the challenge of using this new fuel, and it is undecided whether DOE will subsidize these additional costs. In the recent draft supplemental environmental impact statement (SEIS) on plutonium disposition, DOE listed burning of MOX fuel in the Brown's Ferry and Sequoyah nuclear reactors run by the Tennessee Valley Authority (TVA) as the preferred alternative for plutonium disposition[6]. TVA, however, has declared no intention to use MOX fuel and, in fact, has publicly stated that even considering it is not in their list of top priorities. Preston Swafford, chief nuclear officer at TVA, stated he believed MOX could be safely used in TVA reactors but that even considering the use of the fuel was "just so low on my radar screen that I refuse to jump in the fray.[7]" Instead Swafford emphasized the need to fix problems identified by the NRC in the Brown's Ferry reactors. NNSA has not identified any other utilities that are planning to use MOX fuel, raising concerns that MFFF-produced fuel may not even have a customer.

There is also the issue of testing of the MOX fuel before it is deployed in commercial reactors. Although there is a long history of using MOX made from spent nuclear fuel in Europe, there is no such experience here in the US. In addition, there is a different composition of plutonium isotopes in weapons-grade plutonium and the plutonium extracted from spent nuclear fuel rods, which may influence the behavior of the MOX fuel. NRC has not approved MOX for use in any commercial reactor and a recent presentation to NRC by Global Nuclear Fuel, which

[2] http://www.cfo.doe.gov/budget/13budget/Content/Volume1.pdf
[3] http://www.nrc.gov/reading-rm/doc-collections/event-status/event/en.html
[4] http://www.blueridgenow.com/article/20120917/ARTICLES/120919810?tc=ar
[5] http://energy.gov/management/downloads/november-2012-project-dashboard
[6] http://nnsa.energy.gov/aboutus/ouroperations/generalcounsel/nepaoverview/nepa/spdsupplementaleis
[7] http://timesdaily.com/stories/From-bomb-to-power,195760

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manufactures fuel assemblies for light water reactors, suggested a lengthy testing procedure would be required to qualify MOX from the MFFF for use in US commercial boiling water reactors (BWR), potentially delaying any commercial use until at least 2025[8]. Previous tests conducted at Duke's Catawba pressurized water reactor (PWR) were terminated after only two cycles, and it remains unclear if additional testing in PWRs will be required. It is likely that at least some additional testing in BWR and PWR will be required before commercial MOX use, likely incurring additional costs and delays in the program.

There are also concerns related to the placement of MOX fuel on-site or into any future nuclear waste repository. Spent MOX fuel reportedly is thermally hotter than spent low enriched uranium fuel. Because of this higher temperature, spent MOX fuel may need to be stored at lower density in cooling pools and dry storage and may need to be stored longer than standard spent fuel. It is not clear that these increased requirements for MOX waste have been adequately considered in the cost and utility of the MOX program.

While there is near-universal agreement on the need for the permanent disposal of our surplus weapons-grade plutonium, it is far from clear that the Department's current plan is the most cost-effective means of doing so. The Alliance for Nuclear Accountability estimates that the lifetime cost of the MOX program will likely approach $20 billion[9]. An estimate by the Congressional Research Service[10] suggests that the 47 metric tons of weapons-grade plutonium that is slated for disposal would provide the fuel necessary to produce between 170 and 300 billion kilowatt hours of electricity, depending on the isotopic blend of the plutonium and the extent of fuel burnup in reactors. Assuming a wholesale electrical power price of $0.1/kilowatt hour, this represents between $16 and $28 billion worth of electrical power. The cost of the nuclear fuel, however, is only a fraction of the cost of producing and distributing that power. The Congressional Research Service estimates that the replacement value of the MOX nuclear fuel used to generate this power is between $1.1 and $2 billion, produced by a program that potentially has a $20 billion price tag. The Alliance for Nuclear Accountability estimates that this same plutonium could be disposed of as waste for less than $5 billion. I am very concerned about moving forward with a disposal plan that will potentially cost $15 billion more than other alternatives and has an uncertain chance of success in order to provide $2 billion in electrical power generation subsidies for select utilities and customers.

In light of these concerns, I request answers to the following questions:

1. Please provide an updated estimate for the construction costs for the MFFF and associated structures. Please explain any changes in estimated costs compared to the FY13 budget.

[8] http://www.ananuclear.org/Portals/0/GNF%20on%20MOX%20LUAs%20NRC%20meeting%208.8.2012.pdf

[9] http://ananuclear.org/Portals/0/group%20comments%20on%20draft%20plutonium%20SEIS%2010.10.2012%20pdf.pdf

[10] http://markey.house.gov/sites/markey.house.gov/files/documents/2013-01-10_CRS_Plutonium_Electricity_Generation_Memo_Markey.pdf

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2. Has the Department obtained reports prepared or delivered by Shaw AREVA MOX Services or other associated contractors indicating that costs for the MFFF construction are likely to increase? If yes, please provide a copy of each such report.

    a. Are these potential cost increases being reviewed by DOE and incorporated as appropriate into the Department's FY14 budget request (and estimates for the project's overall costs)? If no, why not? If yes, when will this review be finalized? If yes, how large are the costs increases in these reports and what factors are suggested as driving the increase?

3. Please give a detailed timeline for the completion of the MFFF and other facilities necessary for the MOX plutonium disposition program. Please list all key contractors involved in this construction.

4. Please describe all steps being taken and planned to address the problems the DOE Office of Engineering and Construction Management identified when classifying the MFFF construction project as likely to breach the baseline cost, schedule, or scope in their recent reports.

5. What is the current estimate for the startup cost of the MFFF?

6. Have negotiations for "Early Option 2" MFFF plant startup with AREVA been completed? If yes, please provide a copy of the contract. If no, please provide an outline of the proposed scope of work, estimated costs, and an estimate of when the contract will be signed.

7. Please give a detailed timeline for the necessary work to startup the conversion of plutonium pits to MOX fuel. Include both necessary demonstration projects as well as the work associated with ramp-up to full-scale production. List all key contractors involved in these startup processes.

8. What is the timeline for applying for NRC approval to initiate MOX production at MFFF? Does DOE anticipate any risks with the equipment or processes planned for MFFF? In your response, please describe how the MFFF equipment and processes, which are modeled on the MELOX plant in France, has been adapted for U.S. regulatory environment and nuclear industry safety culture.

9. What is the current estimate for the annual operating costs of the MFFF and associated facilities after startup, when MOX fuel is being produced?

10. Please provide a detailed timeline for the production of MOX fuel. For example, how many fuel assemblies will be produced in each year of the program? When will the MFFF exhaust the current supply of surplus weapons-grade plutonium? Are there current plans for the MFFF and related facilities beyond this date? List all key contractors involved in production operations.

11. Has DOE considered any use of the MOX plant beyond the existing mission to make MOX fuel from surplus weapons-grade plutonium? For example, has there been

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discussion or documents prepared related to production of fuel for fast neutron reactors or next-generation reactors?

12. What is the current estimate for the shutdown, decontamination, and decommissioning costs for the MFFF and related facilities?

13. Please provide a detailed timeline for the shutdown process of the MFFF and related facilities. List all key contractors involved in the shutdown procedure.

14. What additional costs besides those asked for above are anticipated in the currently planned plutonium disposition program? Please describe each activity, the anticipated cost, and list the key contractors involved.

15. What testing do you anticipate will be required for NRC to certify the use of MOX in boiling water reactors? What about in pressurized water reactors?

16. If NRC requires testing of MOX fuel assemblies, do you have arrangements with a nuclear power utility in place to conduct those tests? If no, why not?

    a. If yes, which utilities will participate in the testing? Please provide a detailed work plan and timeline for any planned or anticipated testing, including *both* irradiation in reactors and analysis of extracted fuel rods.

17. Please list the nuclear power utilities DOE has contacted to discuss the possibility of using MOX for power production, and provide me with copies of all correspondence related to such discussions.

18. Which nuclear power utilities have agreed to use MOX fuel? Under what conditions have these utilities agreed to use the fuel? When are these utilities expected to begin using MOX fuel?

19. Which nuclear power utilities are considering the use of MOX fuel? What conditions have these utilities placed on making a commitment? Please describe DOE's next steps to secure an agreement.

20. If no utilities have agreed to or are considering the use of MOX or if more utilities are needed to burn all the MOX fuel within a reasonable timeframe, please describe DOE's plan to secure an agreement with additional nuclear power utilities.

21. What reactor and procedure modifications are expected to be necessary for each of the nuclear power utilities that have agreed or are considering the use of MOX fuel? If no specific utility has agreed to or is considering the use of MOX fuel, describe the typical necessary reactor and procedure modifications for a boiling water reactor and a pressurized water reactor. Does DOE expect to subsidize the cost of these reactor or procedure modifications? If so, what are the anticipated costs of these modifications?

22. How would MOX fuel be distributed to nuclear power utilities? Would the utilities pay market price, a discounted price, or be given the fuel outright?

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23. Please describe any anticipated differences in the handling of spent MOX fuel as compared to spent low enriched uranium fuel. What additional costs are anticipated for these necessary changes in waste handling with spent MOX fuel? Will DOE subsidize these costs?

24. Do you agree with the CRS estimate[11] that the MOX fuel produced by the currently planned plutonium disposition program would have a value between $1.1 and $1.93 billion in 2013 dollars? If not, please explain where you disagree with the CRS estimate and how this changes the estimate of the value.

25. Please provide an estimate of the costs associated with disposal of surplus weapons-grade plutonium as waste. For example, what would be the per kilogram cost of disposal at the Waste Isolation Pilot Plant (WIPP) or another suitable facility?

26. Please provide a timeline for the potential disposal of surplus weapons-grade plutonium as waste at WIPP or another suitable facility.

Thank you for your attention to this important matter. Please provide written responses to these questions no later than February 15, 2013. If you have any questions, please have a member of your staff contact Dr. Chris Schaffer or Dr. Michal Freedhoff in my office at 202-225-2836.

Sincerely,

Edward J. Markey

Edward J. Markey

[11] http://markey.house.gov/sites/markey.house.gov/files/documents/2013-01-10_CRS_Plutonium_Electricity_Generation_Memo_Markey.pdf

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Markey Perturbed Over Problematic Plutonium Plan

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Jan. 14, 2013 –

Contact: Eben Burnham-Snyder 202-225-2836

Surplus weapons-grade plutonium would be turned into $2 billion of fuel for nuclear power plants at a cost of $20 billion to U.S. taxpayers under Department of Energy program

WASHINGTON, D.C. – Today, Rep. Edward J. Markey (D-Mass.), a senior member of the Energy and Commerce Committee, sent a letter to the Department of Energy (DOE) questioning the value of the Department's plan to convert surplus weapons-grade plutonium into Mixed-Oxide Fuel (MOX) that could be used in nuclear power plants. The project is over budget, raises non-proliferation concerns, lacks even a single customer for the MOX fuel, and is far more expensive than disposing of the material as waste.

"The government's plutonium plan is a pluperfect disaster," said Rep. Markey. **"It is over budget, riddled with delays and problems, and is producing a product that no one wants. And all to produce $2 billion worth of reactor fuel at a cost of tens of billions of taxpayer dollars and damage to our global non-proliferation efforts."**

Rep. Markey has long opposed plans to dispose of surplus plutonium by making MOX fuel on the grounds that the cost and environmental impact of this approach have been grossly underestimated, that this approach blurs the longstanding distinction between civilian and military uses of nuclear technology and raises nonproliferation concerns, and that alternative approaches have not been properly considered. In 1997 and again in 2002, Mr. Markey raised concerns with the Secretary of Energy regarding this program, and he included complete cancelation of this senseless plan in H.R. 3975, the Smarter Approach to Nuclear Expenditures Act, which was introduced in 2012.

Mr. Markey's letter, which can be found HERE, asks:

How much will it cost to complete the MOX facility, begin operations, process all surplus plutonium, and finally shut down the program; and what is the timeline for these operations?

Which nuclear power plants will use MOX fuel, how will DOE secure their agreement, and at what cost?

What will be the value of the MOX fuel that is produced?

What would be the cost and timeline to dispose of surplus plutonium as waste?

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Commentor No. 178: Tom Clements, Southeastern Nuclear Campaign Coordinator, Friends of the Earth

Friends of the Earth

March 18, 2013

Ms. Sachiko McAlhany
NEPA Document Manager
SPD Supplemental EIS
U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324

Delay of SPD EIS; Need to Reevaluate Direct Vitrification of Plutonium in High-Level Waste

Dear Ms. McAlhany:

Due to out-of-control budget problems facing the plutonium fuel (MOX) program, I have heard that the schedule for the release of the *Final Surplus Plutonium Disposition Supplemental Environmental Impact Statement* (SPD Supplemental EIS, DOE/EIS–0283–S2) has been delayed once again. I have heard that the Final SEIS may not be released until the summer, if at all. *178-1*

Whether DOE defunds and/or terminates the MOX program or not, attached is a document which underscores the need for DOE to reconsider the direct vitrification of surplus weapons-grade plutonium in high-level waste at the Savannah River Site. The need to revive the immobilization option is being discussed in Congress and DOE should now act to put all vitrification options back on the table.

You can see that the document, entitled ***Reevaluation of Vitrified High Level Waste Form Criteria for Potential Cost Savings at the Defense Waste Processing Facility*** (at: http://sti.srs.gov/fulltext/SRR-STI-2013-00006.pdf), states that plutonium loading in canisters being filled at the Defense Waste Processing Facility (DWPF) could be much more than earlier considered:

> SRNL determined that a plutonium loading of 1 wt% in glass was possible after completing initial studies with hafnium (Hf) as a surrogate for plutonium [8]. The 1 wt% in glass plutonium concentration translated to ~18 kg plutonium per DWPF canister. This would be ~ 10X the current allowed limit per the WAPS / International Atomic Energy Agency (IAEA) specification (2500 g/m3 of glass) and about 30X the current 897 g/m3 limit. The studies showed that the plutonium was homogeneously distributed and did not result in any formation of plutonium-containing crystalline phases as long as the glass was prepared under "well-mixed" conditions.

178-2

Given the possibility of increased plutonium loading in DWPF canisters, this must be analyzed as a new option in the Final SEIS (if it is ever issued) or as a supplement to it.

Sincerely,

Tom Clements

Tom Clements

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178-1 Delays in the schedule for release of this *Final SPD Supplemental EIS* were unrelated to any perceived problems with the MOX fuel program. Among other things, this *Final SPD Supplemental EIS* considers comments received on the *Draft SPD Supplemental EIS*, and changes have been made to this *Final SPD Supplemental EIS* in response to these comments. Chapter 1, Section 1.8, of this *Final SPD Supplemental EIS* describes the changes made between the *Draft* and *Final SPD Supplemental EIS.*

178-2 DOE acknowledges the commentor's support of direct vitrification of plutonium in HLW. As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of an additional 13.1 metric tons (14.4 tons) of surplus plutonium, including use of the surplus plutonium as MOX fuel or its conversion into waste forms suitable for disposal, such as can-in-canister immobilization and vitrification. For further discussion, refer to Section 2.2, Topic A, of this CRD.

The testing conducted to assess the glass plutonium limit for typical high-level waste glass as described in the referenced SRNL paper, considered the solubility of plutonium oxide, glass durability, irradiation damage due to alpha emitting plutonium ions, and effects of glass processing. The testing was specific to the effects on high-level waste glass and did not include the operational constraints at H-Canyon nor storage tank transfers from H-Canyon through the liquid waste system. Although the plutonium loading of 1 percent in glass is possible in the DWPF glass, it could not be executed at this increased level within H-Canyon nor between the Canyon and DWPF due to criticality concerns in the storage tanks. As described in Appendix B, Section B.1.4.1, this *SPD Supplemental EIS* evaluates both the current plutonium loading at 897 grams of plutonium per cubic meter and a much higher plutonium loading limit of 6,000 grams of plutonium per cubic meter in DWPF that does consider operational and criticality limits that would be imposed within H-Canyon, storage tanks, and transfers between H-Canyon and DWPF.

Commentor No. 178 (cont'd): Tom Clements, Southeastern Nuclear Campaign Coordinator, Friends of the Earth

http://sti.srs.gov/fulltext/SRR-STI-2013-00006.pdf

WM2013 Conference, February 24 - 28, 2013, Phoenix, AZ, USA. SRR-STI-2013-00006

Reevaluation of Vitrified High-Level Waste Form Criteria for Potential Cost Savings at the Defense Waste Processing Facility - 13598

J. W. Ray*, S. L. Marra** and C. C. Herman**
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**Savannah River National Laboratory
Savannah River Site
Aiken, SC 29808

ABSTRACT

At the Savannah River Site (SRS) the Defense Waste Processing Facility (DWPF) has been immobilizing SRS's radioactive high level waste (HLW) sludge into a durable borosilicate glass since 1996. Currently the DWPF has poured over 3,500 canisters, all of which are compliant with the U. S. Department of Energy's (DOE) Waste Acceptance Product Specifications for Vitrified High-Level Waste Forms (WAPS) and therefore ready to be shipped to a federal geologic repository for permanent disposal. Due to DOE petitioning to withdraw the Yucca Mountain License Application (LA) from the Nuclear Regulatory Commission (NRC) in 2010 and thus no clear disposal path for SRS canistered waste forms, there are opportunities for cost savings with future canister production at DWPF and other DOE producer sites by reevaluating high-level waste form requirements and compliance strategies and reducing/eliminating those that will not negatively impact the quality of the canistered waste form.

INTRODUCTION

The DWPF HLW vitrification program was defined to meet the requirements of the DOE WAPS [1] and the DOE Waste Acceptance System Requirements Document (WASRD) [2]. These specifications/requirements were developed assuming Yucca Mountain was the final repository for disposition of HLW. Currently, the DOE has petitioned to withdraw the application from the NRC for HLW disposition and is pursuing alternatives. A "Blue Ribbon" panel of experts was convened to evaluate alternative approaches for disposition. The panel has provided recommendations to DOE based on their review but no definitive plans have been announced by DOE.

In light of these potential changes, the existing WAPS and WASRD requirements should be reviewed to determine which of the requirements are repository driven. For those that are repository driven, a technical review of applicability to the future disposal site should be performed once the alternate repository is selected. Testing may also be required to support the change in repository location. An example of this might be a change in the environmental conditions for disposal and the associated performance testing. For those criteria that are not

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repository driven, a technical review should be performed to determine whether the criteria are still applicable given the roughly 17 years of radioactive operation at SRS and experience at the West Valley Demonstration Project (WVDP). The technical basis could then be provided to support elimination of the non-relevant criteria. An example might be evaluating whether a different canister material could be used given the leach resistance of the glass and the fact that credit is not taken for the canister in the repository safety analyses.

The regulations and repository waste form requirements drive the cost of compliance up for HLW vitrification, which in turn has an associated impact on treatment schedule and costs. Reductions in programmatic costs can be obtained by changing the DOE requirement documents (WAPS/WASRD) and/or changing the compliance strategy documents at DWPF by taking advantage of the 17 years of production data. These Producer-generated documents include the DWPF Waste Form Compliance Plan (WCP) [3], which describes the compliance strategies and the methods/programs to demonstrate compliance, and the DWPF Waste Form Qualification Report (WQR) [4], which documents the technical bases for these compliance strategies.

DISCUSSION

Conservatism with Glass Models

A primary constraint or acceptance limit for meeting current durability requirements for HLW glass is related to the benchmark Environmental Assessment (EA) glass. More specifically, the durability response of the HLW glass in question as defined by the Product Consistency Test (PCT) must be better than the PCT response of the EA glass with the equivalent of two standard deviations confidence. The accepted boron release is 16.70 g/L for the EA glass. Historically, HLW glasses produced at the DWPF have been an order of magnitude better than the EA glass release with normalized boron releases in the range of 1 g/L. Therefore, a gap exists between where glasses are currently being formulated and their durability response relative to the EA benchmark. The data suggest that investigations should be made to determine the potential positive impacts on mission life reduction if DWPF could target glass compositions that are less durable but still meet the current durability requirements or potentially requirements that may change as a result of repository changes. Some examples might be changes to the Tank Farm operations (e.g., sludge batch washing) or changes in waste loading or processing rates. Realization of any of these options would still require production of an acceptable glass (i.e., melter processing constraints including liquidus temperature and viscosity would also have to be met) but would take advantage of the significant conservatism in durability that currently exists.

Another approach that could be taken without reducing the conservatism that currently exists is to take advantage of the large amount of glass data that has been generated since the start-up of DWPF. This data could be folded into the current durability model to update the model

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coefficients. It may also lead to the development of an alternative model that more effectively predicts the linear response seen thus far for DWPF. Moreover, the data to be added to the model should more adequately cover the composition region anticipated for future DWPF batches due to the numerous process changes that have occurred since DWPF start-up and the original development of the durability model. Once this data is fitted, the data gaps for out-year processing should more easily be identified. Ultimately, it is the application of the process control models and their associated constraints that will limit projected (and actual) waste loadings and restrict HLW system planning with respect to glass formulations that could be processed through DWPF.

Re-examination of the Sludge Batch Qualification Process

When the initial HLW qualification programs were written for DWPF and WVDP, U.S. operating experience with vitrification of radioactive glass at large scales did not exist, nor was it extensive internationally. Therefore, conservatism was written into the requirements as well as in the associated compliance plans from the operating sites. The DWPF Glass Product Control Program (GPCP) was developed early in the DWPF waste acceptance program and was based on the operating philosophy that controlling the composition of feed to the melter will ensure that an acceptable glass product will be made. Figure 1 displays the key elements of the GPCP.

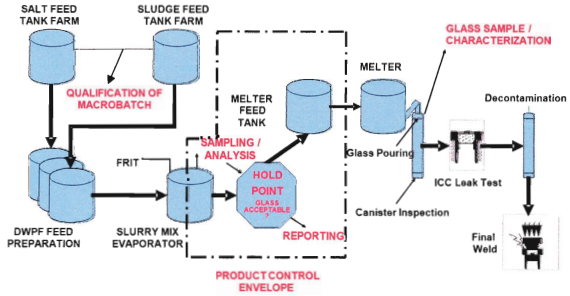

Fig. 1. Schematic providing overview of the DWPF GPCP.

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For each sludge batch to be processed, qualification work has been or will be performed as part of the GPCP to demonstrate that the sludge batch (or macrobatch) can be processed at the DWPF and make a compliant glass product. The current compliance strategy for the sludge batch qualification task includes:

- characterization of the chemical and radionuclide constituents of the sludge prepared in the Tank Farm,
- demonstration of the DWPF Sludge Receipt and Adjustment Tank (SRAT) and Slurry Mix Evaporator (SME) process with the qualification sample,
- fabrication and testing of the glass made from the qualification sample SME product, and
- validation of the DWPF durability model over the anticipated glass composition range for the batch (i.e., variability study).

The other elements of the DWPF GPCP shown in Figure 1 include sampling and analysis of the SME during DWPF processing, prediction and targeting of the SME glass composition via the process control algorithm Process Composition Control System (PCCS), verification and reporting of glass composition before transferring to the Melter Feed Tank (MFT), characterization and reporting of the actual radioactive constituents in the as-processed sludge from the DWPF Feed Tank (i.e., WAPS sample), and characterization and durability testing of DWPF glass pour stream samples.

The characterization portion of the sludge batch qualification process has some areas for potential improvement. At this point, it seems unlikely that reduction of the chemical constituent analyses would be possible because of the potential impact on the glass formulation or solubility limits. However, the required analyses, as well as the reporting requirements for out-year projections, for the radionuclides should be reviewed. This should be undertaken in light of the 17 years of production, the potential changes in the repository, and the known radionuclide constituents in HLW. Reduction in the number of radionuclides that are measured versus estimated from other components or known history could save production costs from analyses and from reporting. This would apply to both the qualification sample and the WAPS sample, which provides data used for reporting radionuclide inventory in the DWPF Production Records for the final canistered waste forms. For past sludge batches processed at DWPF, over 30 radionuclides have been required to be reported per macrobatch to meet the WAPS waste form reporting specifications.

Next, the demonstrations of the DWPF process with the radioactive qualification samples have been performed for 17 years covering nine different sludge batches. At this point, the chemical reactions that occur during feed preparation in the DWPF are fairly well replicated by simulant

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testing across a range of conditions whereas testing with actual radioactive sludge samples is still performed from a glass processing or compliance testing. Therefore, the need for this demonstration should be re-evaluated based on the available data. Savannah River National Laboratory (SRNL) has already provided the technical basis for the elimination of the fabrication of a glass sample during the qualification process. DWPF is reviewing deletion of this requirement with DOE. Further reductions should be pursued and the program should be modified to determine the analytes of importance and other characteristics of the actual waste that cannot be replicated with simulants (e.g., rheology). This has the potential to shorten the duration of the qualification process, while reducing some associated costs with the qualification.

Finally, the glass durability requirements and potential modifications to reduce costs and schedule were discussed earlier. When DWPF was going through startup testing, there were concerns about model applicability over the projected composition region to be processed in DWPF so the compromise was to experimentally verify the models for each batch to ensure applicability via a variability study. This has shown to be an effective process but the process could be improved by implementing the generated data from previous sludge batch variability studies into the prediction/verification process.

Restrictions with the 897 g/m^3 Yucca Mountain Fissile Limit

Section 1.14.2.3.2.4 of the Yucca Mountain Repository License Application (LA) Safety Analysis Report (SAR) currently states the estimated fissile isotope concentration in SRS HLW canisters to be 897 g/m^3 [5]. The discussion in the Yucca Mountain SAR acknowledges that the fissile concentration is ~1 order of magnitude lower than the ANSI/ANS-8.1-1998 minimum subcritical limit and that the HLW glass has a significant margin of subcriticality. Because the HLW canisters are safely subcritical, the SAR documents that no further analysis is required to demonstrate the subcriticality of the individual HLW glass canisters.

In August 2007, SRS submitted a report in response to a Yucca Mountain Project request for the SRS glass composition and noted that the report's projected composition was not to be used for environmental modeling or accident analysis. The projected curie content of DWPF canisters did not include Pu "drops" from the SRS H Canyon or the Plutonium Disposition Project. In August 2008, DOE mandated to the SRS contractor that the total fissile concentration in DWPF glass to be at or below 897 g/m^3 to stay below the Yucca Mountain SAR value discussed above [6]. Sludge Batch 5 had to be limited to a maximum waste loading of 37 wt% to protect the 897 g/m^3 fissile limit and the contractor had to target an even lower 33% waste loading in DWPF SME batches to account for uncertainties.

The concentration of plutonium is typically low (on the order of 0.01 wt % PuO_2) in HLW glasses made from the reprocessing of DOE spent fuel. The behavior of plutonium in the glass

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Commentor No. 178 (cont'd): Tom Clements, Southeastern Nuclear Campaign Coordinator, Friends of the Earth

at these levels has been analyzed and determined not to impact processing, criticality safety or glass performance. Recently, additional excess nuclear material plutonium has been identified for disposition with HLW vitrification considered as a primary disposition path. However, the 897 g/m^3 fissile limit has restricted the amount of plutonium that could be disposed into any one sludge batch. As discussed above, this limit does not have a sound technical basis and was put into effect because of the SRS HLW glass compositions that were incorrectly used in the Yucca Mountain SAR.

The DOE Office of Environmental Management (DOE-EM) tasked SRNL to assess the glass plutonium limit for typical HLW glasses to provide a technical basis to solve this problem [7]. The testing considered the solubility of PuO_2, glass durability, irradiation damage due to alpha-emitting plutonium ions and effects on glass processing.

SRNL determined that a plutonium loading of 1 wt% in glass was possible after completing initial studies with hafnium (Hf) as a surrogate for plutonium [8]. The 1 wt% in glass plutonium concentration translated to ~18 kg plutonium per DWPF canister. This would be ~ 10X the current allowed limit per the WAPS / International Atomic Energy Agency (IAEA) specification (2500 g/m^3 of glass) and about 30X the current 897 g/m^3 limit. The studies showed that the plutonium was homogeneously distributed and did not result in any formation of plutonium-containing crystalline phases as long as the glass was prepared under "well-mixed" conditions. The Hf surrogate results indicated that this higher concentration did not adversely impact glass viscosity or glass durability. Irradiation effects due to incorporation of plutonium must be considered specifically as related to long-term performance of the glass. Since plutonium is an alpha-emitter and alpha decay events will result in atom displacements, the recoil damage must be considered and the effects of these displacements on the glass must be understood. Based on the data available, the 1 wt% target appears to have minimal impact. Finally, evaluation of DWPF glass pour stream samples that had plutonium concentrations below the 897 g/m^3 limit showed that Pu concentrations in the glass pour stream were close to targeted compositions in the melter feed indicating that Pu neither volatilized from the melt nor stratified in the melter when processed in the DWPF melter. Therefore, incorporation of up to 1 wt% plutonium in glass appears to be a viable option through the DWPF vitrification processes.

Future of RW-0333P QA Program

The HLW vitrification program at DWPF currently operates under the quality assurance requirements of Revision 20 of RW-0333P [9]. Maintenance of this program is a cost burden to the site contractors, since SRS already maintains a NQA-1 quality assurance program. The need for maintenance of the RW-0333P program in light of the change in repository location should be reviewed given its potential cost savings. Since DOE-EM has been designated as the organization that will perform the previous defined functions of the Office of Civilian

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Radioactive Waste Management (RW), it would seem prudent to evaluate whether the EM Quality Assurance Program (EM-QA-001) coupled with ASME NQA-1-2008 and the NQA-1a-2009 Addenda would be acceptable for the DWPF QA program.

Use of Higher Capacity Canisters (HCCs)

Under the existing WAPS, a specification is given for the size of the canisters containing HLW glass. Both SRS and Hanford contractors have expressed interest in reducing the wall thickness on the main body of the canister (not the top head or bottom). The current nominal wall thickness of the baseline DWPF and the Hanford Waste Treatment Plant (WTP) canisters is 0.95 cm (0.375 inches). The DWPF HCC has a nominal canister wall thickness of 0.342 cm (0.1345 inches - 10 gauge). This wall thickness reduction would reduce the amount of material used in fabrication but also allow for an increased volume of glass (e.g., 104%) to be poured in the same sized canister.

An HCC drop test literature search and engineering evaluation was completed in 2011 and it was concluded that proposed DWPF HCC design at a maximum glass fill height and a maximum glass specific gravity would not breach, rupture or leak material during or after a 7-meter bottom-end drop [10]. There was also conclusive evidence that the HCC design would pass through a 64 cm cylindrical cavity after the bottom-end drop [10].

The national laboratories could be used to resolve any remaining technical issues with the HCC including the effect of the reduced wall thickness on corrosion and material compatibility. The HCC design has the potential for significant benefit because of the total number of canisters to be produced at WTP (15,000+ canisters) and the remaining canisters to be poured at DWPF (3,000+ canisters).

CONCLUSIONS

As a result of DOE looking at alternative approaches for disposition of HLW following the termination of the Yucca Mountain Project, it is an opportune time to review the existing DOE HLW requirements documents as well as the Producer's compliance strategy documents to recommend changes that can result in significant production cost savings over the lifetime of DWPF and other HLW Producer sites. Compliance areas to be targeted for changes include reevaluating the uncertainties associated with glass models to allow higher waste loadings, reexamining radionuclide reporting requirements and associated strategies, reassessing the overall approach to "real waste" qualification and the testing to be performed, removing the arbitrary 897 g/m^3 fissile limit for DWPF canisters, evaluating whether the costly RW-0333P QA program continues to be necessary given the current repository situation, and continuing to study the HCC design that will allow 4% more glass volume per canister.

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Commentor No. 178 (cont'd): Tom Clements, Southeastern Nuclear Campaign Coordinator, Friends of the Earth

REFERENCES

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3. WSRC-IM-91-116-0, **DWPF Waste Form Compliance Plan (U)**, Revision 9, Savannah River Site (June 2012).
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5. DOE Office of Civilian Radioactive Waste Management, **Yucca Mountain Repository License Application Safety Analysis Report**, DOE/RW-0573, Revision 1 (November 2008).
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8. J. C. MARRA, C. L. CRAWFORD, K. M. FOX and N. E. BIBLER, "Plutonium Solubility in High-Level Waste Alkali Borosilicate Glass," SRNL-STI-2010-00766, Savannah River National Laboratory (January 2011).
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10. S. SHIRAGA, "Higher Capacity Canister (HCC) Drop Test Literature Search and Engineering Evaluation," EnergySolutions (September 2011).

ACKNOWLEDGEMENTS

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Commentor No. 179: Tom Clements, Southeastern Nuclear Campaign Coordinator, Friends of the Earth

Alliance for Nuclear Accountability - Friends of the Earth - Nuclear Watch of New Mexico
Georgia Women's Action for New Directions - Nuclear Watch South
Bellefonte Efficiency & Sustainability Team and Mothers Against Tennessee River Radiation
Oak Ridge Environmental Peace Alliance - Southern Alliance for Clean Energy
Southwest Research and Information Center - Tri-Valley CAREs
Blue Ridge Environmental Defense League - Miamisburg Environmental Safety & Health
Concerned Citizens for Nuclear Safety - The Peace Farm
American Values Network

May 8, 2013

Acting Secretary of Energy Dan Poneman
U.S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585

Termination of Plutonium Disposition EIS Process

Dear Acting Secretary Poneman,

We are writing to request that the Department of Energy (DOE) formally terminate the current Environmental Impact Statement (EIS) review of disposition of surplus plutonium. Given that the plutonium disposition program is now under review and subject to change, the EIS as is now being pursued is no longer valid and must be halted.

As you are well aware, the White House stated in Fiscal Year 2014 budget documents released on April 10 that "the Administration will assess the feasibility of alternative plutonium disposition strategies, resulting in a slowdown of MOX Fuel Fabrication Facility construction in 2014." Likewise, DOE budget details released on April 17 state that "considering preliminary cost increases and the current budget environment, the Administration is conducting an assessment of alternative plutonium disposition strategies in FY 2013, and will identify options for FY 2014 and the outyears."

179-1

Of paramount concern is that the cost estimate for construction of the plutonium fuel (MOX) plant at DOE's Savannah River Site has soared from $1.8 billion in 2004 to $4.8 billion in 2008 to $7.7 billion in April 2013. Contrary to sound project management, DOE has never released a life-cycle cost of the overall MOX program but an independent assessment indicates that around $22 billion are yet to be spent on the project, if a number of cost, technical and scheduling hurdles can be overcome.

In spite of the significant developments involving a review of plutonium disposition options, DOE has scheduled the release of the *Final Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SPD Supplemental EIS*; DOE/EIS-0283-S2) for June 2013. The scope of that document, which centers on MOX use, is limited and may well not cover options to be recommended as a result of the new plutonium disposition assessment. Noting that earlier dates for the release of the *Final SPD Supplemental EIS* have slipped, the document as

179-1 DOE does not agree with the commentor's opinion about the need to terminate this SPD *Supplemental EIS*. This *SPD Supplemental EIS* complies with CEQ and DOE regulations and guidance. At this time, DOE is not aware of alternatives beyond those already analyzed in this *SPD Supplemental EIS* or other existing NEPA documents. Should any new alternatives, or other substantial new information, come to DOE's attention in the future, the Agency would make a decision as to whether additional NEPA analysis is required at that time.

Consistent with the requirements of NEPA, DOE may issue a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative in the *Federal Register*.

Commentor No. 179 (cont'd): Tom Clements, Southeastern Nuclear Campaign Coordinator, Friends of the Earth

prepared will not be able to be released due to potentially significant changes in the plutonium disposition program.

DOE's "implementing procedures" of National Environmental Policy Act (NEPA) regulations require in 10 CFR § 1021.210 that "DOE shall coordinate its NEPA review with its decisionmaking" and that "DOE shall complete its NEPA review for each DOE proposal before making a decision on the proposal." As DOE's decisionmaking on plutonium disposition is now under review, NEPA requires that the current SPD Supplemental EIS be coordinated with such decisionmaking and not conducted in isolation. Thus, NEPA regulations require that the current SPD Supplemental EIS process not continue as the proposals being analyzed in that document do not necessarily reflect the current state of decisionmaking concerning plutonium disposition.

179-1 cont'd

Further, the National Environmental Policy Act requires that a reasonable range of alternatives be analyzed in comparison to each other. Now that additional plutonium disposition options that were not covered in the Draft SPD Supplemental EIS are under review, it would not be lawful to proceed with the SPD Supplemental EIS process in a piece-meal or tiered approach. Thus, issuance of a Final SPD Supplemental EIS that covers only certain options analyzed in the Draft SPD Supplemental EIS is not permitted under NEPA.

Likewise, a "Record of Decision" (ROD) which would formalize any "preferred alternative" chosen in the Final SPD Supplemental EIS, will not be able to be released in July 2013 as indicated in DOE's April 15 schedule of release of key EIS documents as posted on the website of the Office of NEPA Policy and Compliance.

Additionally, given mounting uncertainties concerning the mixed oxide fuel proposal as a means of plutonium disposition, there is no new indication from the Tennessee Valley Authority (TVA) or any other utility that there is any demand to either test or use MOX fuel. Thus, DOE's "preferred alternative" in the Draft SPD Supplemental EIS in favor of MOX fuel use remains unsupported by TVA or any other utility and it is unlikely if DOE's "preferred alternative" in favor of MOX use can be agreed to be TVA. This is made more significant as TVA is a "cooperating agency" in preparation of the SPD Supplemental EIS and their participation would be key concerning MOX testing and use.

179-2

As it appears that the "assessment of alternative plutonium disposition strategies" could take much of 2013 to conduct and finalize and could propose new disposition options that must analyzed in a new EIS process, the SPD Supplemental EIS process has been rendered moot.

We thus request that DOE take steps to formally terminate the existing SPD Supplemental EIS process and that such a decision be formally communicated via a notice in the Federal Register. Once the current SPD Supplemental EIS process has been terminated and the plutonium disposition assessment has been finalized and new policies subsequently implemented, we will be attentive to the announcement concerning a new plutonium disposition EIS process.

179-3

If there are any questions about this request or to respond to it, please contact Tom Clements, Friends of the Earth, 1112 Florence Street, Columbia, SC 29201, tel. 803-834-3084, tomclements329@cs.com.

179-2 The disposition of surplus plutonium as MOX fuel is a reasonable alternative to achieve DOE's stated purpose and need. As such, NEPA requires a full evaluation of its potential environmental impacts, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors, including, but not limited to five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants. These reactors are explicitly considered because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Section I.1). However, the MOX Alternative also analyzes irradiation in generic commercial nuclear reactors including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2), and is not dependent on TVA participation.

Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In the *Draft SPD Supplemental EIS*, the MOX Fuel Alternative was DOE's Preferred Alternative for surplus plutonium disposition. DOE's preferred option for disposition of surplus non-pit plutonium that is not suitable for MOX fuel fabrication was disposal at WIPP. DOE's preferred option for pit disassembly and conversion of surplus plutonium metal, regardless of its origins, was to use some combination of facilities at TA-55 at LANL and K-Area, H-Canyon/HB-Line, and MFFF at SRS, rather than to construct a new stand-alone facility.

In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose. After issuance of this *Final SPD Supplemental EIS*, DOE can make decisions on the actions analyzed in this *Final SPD Supplemental EIS* to achieve DOE's purpose and need. TVA, as a cooperating agency, may adopt this *Final SPD Supplemental EIS* after independently reviewing the EIS and determining its comments and suggestions have been satisfied (40 CFR 1506.3(c)).

179-3 See the response to comment 179-1 regarding not terminating the current *SPD Supplemental EIS*.

Commentor No. 179 (cont'd): Tom Clements, Southeastern Nuclear Campaign Coordinator, Friends of the Earth

Sincerely,

Tom Clements
Friends of the Earth
Washington, DC

Katherine Fuchs
Alliance for Nuclear Accountability
Columbia, SC

Jay Coghlan
Nuclear Watch of New Mexico
Santa Fe, NM

Amanda Hill-Attkinson
Georgia Women's Action for New Directions
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Glenn Carroll
Nuclear Watch South
Atlanta, GA

Marylia Kelly
Tri-Valley CAREs
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Ralph Hutchison
Oak Ridge Environmental Peace Alliance
Knoxville, TN

Sara Barczak
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Springboro, OH

Joni Arends
Concerned Citizens for Nuclear Safety
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Eric Sapp
American Values Network
Washington, DC

Jerry Stein
The Peace Farm
Amarillo, TX

Sandy Kurtz
Bellefonte Efficiency & Sustainability Team and Mothers Against TN River Radiation
Chattanooga, TN

Cc: Ms. Carol Borgstorm, Director Office of NEPA Oversight and ComplianceMs. Neile Miller, Acting Administrator, National Nuclear Security Administration
Mr. Michael Lempke, Associate Principal Deputy Administrator, NNSA
Ms. Anne Harrington, Deputy Administrator for Defense Nuclear Nonproliferation, NNSA
Ms. Sachiko McAlhany, SPD Supplemental EIS NEPA Document Manager
Ms. Mary Martin, NEPA Compliance Officer, NNSA
Mr. Andrew R. Grainger, NEPA Document Manager, Savannah River Operations Office
Mr. William B. Sansom, Chairman , Tennessee Valley Authority
Mr. William D. Johnson, TVA CEO
Ms. Gail Rymer, Senior Manager, TVA Public Relations Staff

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Campaign A

Sachiko McAlhany
NEPA Document Manager
SPD Supplemental EIS
U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324

Dear Sachicko McAlhany:

I am very concerned about Department of Energy plans for surplus plutonium. No additional plutonium should be brought to Los Alamos National Lab (LANL), which has a cleanup mission and cannot meet seismic standards in the case of a severe earthquake. WIPP has a limited mission and does not have the capacity for all surplus plutonium. Stop MOX and immobilize and safely store plutonium until technically sound, suitable disposition facilities are available. *A-1*

LANL should not be considered for any additional plutonium. Because of the risks of substantial releases of plutonium in the event of earthquakes, there is too much plutonium already at LANL. Any additional plutonium would only increase the risk to the public living nearby. In addition, people living along the transportation routes from the Pantex Plant in Texas to LANL and along the routes that would take the plutonium from LANL to the Savannah River Site (SRS) in South Carolina would be at increased risk. *A-2* *A-3*

WIPP should not be considered for additional plutonium waste that has not previously been included in the WIPP inventory. WIPP already may not have enough room for the existing inventory. The proposed 6 metric tons of plutonium would approximately double the amount of plutonium in WIPP. That plutonium would also double the amount of waste planned to be shipped from SRS to WIPP. Such large increases in waste are likely to either displace waste from other sites that are planned for WIPP, including LANL, or require changing the law to increase the capacity of WIPP. Waste already at LANL poses threats to people and the environment. WIPP has a limited mission for a limited timeframe, and it is inappropriate to change the law to expand that mission. *A-4*

Plutonium should be immobilized so that it can be safety stored until new disposition options are available. Immobilization would also be less expensive than MOX. *A-5*

The MOX option should be stopped, as it is not viable because there are no utilities that want to use MOX fuel in existing power plant because of its costs, dangers, and the need to make changes to the reactors. *A-6*

Thank you for your consideration of these comments and all others.

A-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

DOE expects that the proposed activities at LANL would not negatively impact the site's environmental restoration program. As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

A-2 DOE is aware of the seismic concerns associated with the continued operation of PF-4 and is aggressively pursuing additional analyses of and upgrades to this facility to ensure that it continues to operate safely. As described in Chapter 4 and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, risks to the public are expected to be minor from both normal operations and potential accidents under any proposed alternative. For further discussion, refer to Section 2.3, Topic A, of this CRD.

A-3 Transportation risks are analyzed for all alternatives proposed in this *SPD Supplemental EIS*, including the threat of theft and diversion of radioactive materials.

Campaign A (cont'd)

As shown in Chapter 4, Table 4–22, under all alternatives, the radiological risks to the public from shipments of radioactive materials would be comparable, with no LCFs expected among the transportation crew or general public along the transportation routes. The packaging and transportation of all radiological materials would meet NRC and DOT regulations that are designed to ensure the safe transport of radiological materials on the Nation's highways, as described in Appendix E, Section E.3.

A-4 As addressed in Chapter 4, Sections 4.1.4, of this *SPD Supplemental EIS*, implementation of any of the proposed alternatives would result in generation of CH-TRU waste at SRS and LANL that would be sent to WIPP for disposal. As discussed in Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD. DOE is not proposing through this *SPD Supplemental EIS* to amend the Act to increase WIPP's disposal capacity.

A-5 Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, and Section 2.2, Topic A, of this CRD.

A-6 Disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts per NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors (see Appendix I, Section I.2).

The environmental, human health, and socioeconomic impacts of using MOX fuel in TVA's reactors are described in Appendix I, Section I.1, and summarized in Chapter 2, Section 2.6, of this *SPD Supplemental EIS*. The impacts of the use of a partial MOX fuel core are not expected to be meaningfully different from the impacts of reactor operation using a conventional full LEU fuel core. As described in Appendix B,

Campaign A (cont'd)

Section B.4, and Appendix I, only minor changes would be needed to commercial nuclear power reactors to use a partial MOX fuel core.

Campaign A (cont'd)

Individuals submitting this campaign:

Annette Aguayo
Sally Beers
David Ble
Judy Boles
Lisa B. Conley
Debra DiSanti
Sandra Ely
Barbara Enger
Angelo Gaziano
Barbara Hoehne
J. Elise Johnston
Julie Krupcale
Ron Levy
Penelope Nicolopolis-Weiland
Ari Rier
Ethan Sockwell
Melissa Williams

Campaign B

Speak Out Against More Plutonium at LANL & WIPP

The Department of Energy (DOE) plans to ship 13.1 metric tons of plutonium from nuclear weapons to Los Alamos National Lab (LANL) and to the Waste Isolation Pilot Plant (WIPP).

What are DOE's Plans?

DOE has released the *Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SPD DSEIS).* The preferred alternative is for the Savannah River Site (SRS) to process 6 metric tons of plutonium and ship it to WIPP for disposal with other contact-handled transuranic (TRU) waste. For 7.1 metric tons of plutonium in "pits" - the triggers for nuclear bombs - some or all would be shipped from the Pantex Plant in Texas to LANL to be disassembled. The resulting plutonium oxide powder would be shipped to SRS to be fabricated into plutonium-uranium mixed oxide (MOX) fuel to be used in the Sequoyah (Tennessee) and/or Browns Ferry (Alabama) Nuclear Plants operated by the Tennessee Valley Authority.

What are concerns about DOE's plan?

- LANL is not meeting its waste cleanup schedule, and its facilities do not meet seismic standards in case of a severe earthquake. Bringing thousands of plutonium pits to LANL would further endanger public health and safety and divert resources away from cleanup. **B-1**
- Doubling the amount of TRU waste coming from SRS will likely exceed WIPP's capacity. As a result, TRU waste from LANL and other sites might not fit into WIPP.
- Plutonium should be immobilized so that it can be safety stored until new disposition options are available. Immobilization would also be less expensive than MOX.
- MOX is not viable as there are no utilities that want to use MOX fuel in existing power plants because of its costs, dangers, and the need to make changes to the reactors. **B-2**

What Can I Do?

Submit written comments to: Sachiko McAlhany, NEPA Document Manager, SPD Supplemental EIS, U.S. Department of Energy, P.O. Box 2324, Germantown, MD 20874-2324, by **September 25, 2012.**

Use the sample comments below, or write whatever you want.

Thank you!

Dear Sachicko McAlhany:

I am very concerned about Department of Energy plans for surplus plutonium. No additional plutonium should be brought to Los Alamos National Lab (LANL), which has a cleanup mission and cannot meet seismic standards in the case of a severe earthquake. WIPP has a limited mission and does not have the capacity for all surplus plutonium. Stop MOX and immobilize and safely store plutonium until technically sound, suitable disposition facilities are available. **B-3**

B-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults. DOE and LANL are continuing to take appropriate actions to further improve the safety policies and controls in place at the laboratory and implement facility modifications and upgrades as necessary to improve safety in the event of an earthquake.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9), including a beyond-design-basis earthquake with fire, and describes concerns identified by DNFSB. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 1, Section 1.4, under all alternatives, DOE would disposition as MOX fuel 34 metric tons (37.5 tons) of surplus plutonium in accordance with previous decisions. The pit disassembly and conversion options analyzed in this *SPD Supplemental EIS*, including the PDCF Option, apply to 27.5 metric tons (30.3 tons) of pit plutonium that DOE has decided to fabricate into MOX fuel (a portion of the 34 metric tons [37.5 tons]), as well as to the 7.1 metric tons (7.8 tons) of pit plutonium for which disposition is under consideration in this *SPD Supplemental EIS*, for a total of approximately 35 metric tons (38.6 tons). Appendix B, Table B–3, lists the annual and total plutonium throughput for the various pit disassembly and conversion options at SRS and LANL. For example, the maximum annual throughput for the PF-4 at LANL is 2.5 metric tons (2.8 tons) per year, while the maximum amount of plutonium to be processed could be 35 metric tons (38.6 tons) over the life of facility operation. The amount of plutonium that would be allowed at LANL at any given time would be limited, and shipments of pits to be disassembled there would be timed to support pit disassembly and conversion activities such that the amount of plutonium at PF-4 did not exceed the established material safety limit.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As addressed in Chapter 4, Section 4.1.4, of this *SPD Supplemental EIS*, implementation of any of the alternatives evaluated would generate CH-TRU waste that would be sent to WIPP for disposal. As discussed in Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use

Campaign B (cont'd)

between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE considers immobilization a viable disposition pathway for at least some portion of the approximately 13.1 metric tons (14.4 tons) of surplus plutonium for which a disposition path is not assigned and has analyzed immobilization options it could potentially implement in this *SPD Supplemental EIS* (see Chapter 4). The analyses in this *SPD Supplemental EIS* indicate that none of the alternatives analyzed, including immobilization, involve any substantial risk to the safety of the public. The decisionmaker may consider cost, among other factors, when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

B-2 Disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts per NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors (see Appendix I, Section I.2).

The environmental, human health, and socioeconomic impacts of using MOX fuel in a nuclear reactor are described in Section I.2 and summarized in Chapter 2, Section 2.6, of this *SPD Supplemental EIS*. The impacts of the use of a partial MOX fuel core are not expected to be meaningfully different from the impacts of reactor operation using a conventional full LEU fuel core. As described in Appendix B, Section B.4, and Appendix I, only minor changes would be needed to commercial nuclear power reactors to use a partial MOX fuel core.

B-3 See the response to comment B-1.

Campaign B (cont'd)

Individuals submitting this campaign:

Chris Baumann	Adamm Martinez	Jeff Williams
Deb Binderman	James McIlrath	Justin Young
Barbara Brock	Caroline Monie	Illegible signatores (3)
Michele Brock	Marla Painter	
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Susan Butkovich	Sheryl Reese	
Armen Chakerian	Jeanette Rich	
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Bernadette Garcia	Joseph Sulzberg	
Loren Gomez	Nancy Sulzberg	
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Ben Hughes	Patricia Thunderchief	
Terri Jerry	Teresa Trujillo	
Win Kalmon	Fern Sawyer Ward	
Joan Kessler	Margaret Wells	
Carey Lien	Victor Werbin	
Todd Lindholm	J.Q. Whitcomb	
Ellen Lowenberg	Ann Williams	

Campaign C

MOX SEIS: No Plutonium in TVA Reactors ~ Stop MOX and Study Alternatives

October 2012

Ms. Sachiko McAlhany
SPD Supplemental EIS NEPA Document Manager U.S. Department of Energy P.O. Box 2324 Germantown, MD 20874-2324

RE: SUPPLEMENTAL SURPLUS PLUTONIUM DISPOSITION DRAFT ENVIRONMENTAL IMPACT STATMENT

Dear Ms. McAlhany,

I appreciate the National Environmental Policy Act and the opportunity to comment as a member of the affected public on the draft Supplemental Environmental Impact Statement on plutonium disposition. I am aware that the need for another SEIS is an indication of on-going problems confronting DOE's administration of the plutonium disposition program and that cost overruns, safety concerns, schedule delays, technical challenges and lack of mission clarity continue to plague DOE and the plutonium disposition program.

This current EIS process began more than five years ago which reveals the confusion persisting with the MOX plutonium program. Furthermore, the NEPA process for the overall plutonium disposition program began in June 1994, with the Storage and Disposition of Weapons-Usable Fissile Materials Programmatic Environmental Impact Statement (SPEIS). In the subsequent 18 years not a single gram of plutonium, beyond small amounts of test material, has been disposed of via the so-called "preferred alternative" – use of the controversial mixed oxide fuel (MOX) for nuclear power reactors.

The MOX plutonium program stands as a monument to DOE ineptitude in pursuing a misguided mission that has fallen prey to manipulation by special interests such as the French government-owned company AREVA and giant, Warren Buffett-owned, Shaw Industries. The MOX program is 15 years behind schedule, 400% over budget, and there are still no reactors willing to load the controversial MOX plutonium fuel.

Following are some of the serious concerns that must be analyzed but still are not addressed adequately in the draft SEIS:

1) Plutonium fuel (MOX) must be reconsidered as the "preferred alternative" for plutonium disposition. The MOX plutonium fuel program appears destined to fail to secure plutonium because there are no reactors to irradiate MOX. The TVA reactors being pursued by DOE are old reactors with unsafe designs and troubled operating histories and TVA has expressed reluctance to rush into the MOX program. Previous experience with DOE to produce tritium, hydrogen for nuclear weapons,

C-1

C-1 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In the *Draft SPD Supplemental EIS*, the MOX Fuel Alternative was DOE's Preferred Alternative for surplus plutonium disposition. DOE's preferred option for disposition of surplus non-pit plutonium that is not suitable for MOX fuel fabrication was disposal at WIPP. DOE's preferred option for pit disassembly and conversion of surplus plutonium metal, regardless of its origins, was to use some combination of facilities at TA-55 at LANL and K-Area, H-Canyon/HB-Line, and MFFF at SRS, rather than to construct a new stand-alone facility.

In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

Disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts as required by NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors, including, but not limited to five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants. These reactors are explicitly considered because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Section I.1). However, the MOX Alternative also analyzes irradiation in generic commercial nuclear reactors including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2), and is not dependent on TVA participation.

As summarized in Chapter 5, Section 5.3.3, of this *SPD Supplemental EIS*, use of MOX fuel in TVA or other reactors would require an amendment to the reactor's operating license in accordance with 10 CFR Part 50.

TVA is a cooperating agency for this *SPD Supplemental EIS* and, as such, is not required to declare a preferred alternative. TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose. TVA, as a cooperating agency, may adopt this *Final SPD Supplemental EIS* after independently reviewing the EIS and determining that its comments and suggestions have been satisfied (40 CFR 1506.3(c)).

Campaign C (cont'd)

has showcased DOE exploitation and unfair treatment of TVA. TVA should heed the experience and take a pass on MOX. ***C-1 cont'd***

2) DOE has not outlined the operational schedule of the MOX plutonium fuel factory under construction at the Savannah River Site and it is clear that production levels at the MOX plant, if it is ever operates, will be greatly constrained not only because of lack of reactors but also because MOX testing required in the Browns Ferry (GE Fukushima-type) boiling water reactors (BWRs), test review and Nuclear Regulatory licensing for commercial use will take 10 years or more. A previous MOX plutonium fuel test in Duke Power reactors failed and the test will have to be repeated, or irradiation periods shortened resulting in inefficient plutonium protection.The $5-billion MOX plutonium factory at SRS is at risk of sitting idle even if it can obtain an operating license (which is being challenged by Nuclear Watch South and others) and complete start-up testing. Global Nuclear Fuel in NC has recently entered into MOX production discussions and affirms that testing will be required for MOX fuel, pushing against industry and DOE speculation that the NRC can be convinced to waive further MOX testing. ***C-2***

3) A comprehensive study on options to manage plutonium as waste is needed to effectively compare alternatives with MOX plutonium disposition program. The "glass can-in-canister" option is included in the draft SEIS and I support it as a viable disposition option. DOE must immediately place can-in-canister and other plutonium disposition options back on the table. The MOX program appears fated to total failure and DOE must renew analysis of all non-MOX options, some of which were included in early NEPA analyses. DOE must actively pursue an array of non-MOX disposal options lest the collapse of the MOX program results in a total halt to plutonium disposition. ***C-3***

4) DOE must explain what analysis of MOX use in a "generic reactor…for any additional future potential utility customers" means. DOE has been focused on use of MOX in Tennessee Valley Authority reactors, but inclusion of a "generic reactor" in the SEIS notice indicates that DOE is far from certain it can secure TVA's old reactors for MOX use. DOE must be transparent if it solicits utilities to potentially irradiate MOX in its reactors. Any modifications to reactors to use MOX plutonium fuel must be discussed including physical modifications needed and associated NRC licensing impacts. ***C-4***

5) DOE must proceed cautiously in the disposal of non-pit plutonium in the Waste Isolation Pilot Plant. The only way that such disposal will be considered is if the requisite Waste Acceptance Criteria and other regulatory requirements are met and if there is sufficient space in WIPP, as specified by law. Any decision to ship contaminated non-MOXable plutonium to WIPP is an affirmation that disposal of plutonium utilizing the "spent fuel standard" – by which plutonium is placed in a ***C-5***

C-2 A detailed program schedule is not required to perform the environmental impacts analysis in this *SPD Supplemental EIS*. The actual production schedule for MFFF would depend on factors such as license conditions and the specific contracts received from customers to manufacture specific types of MOX fuel. As shown in Appendix B, Table B–2, MFFF is estimated to operate for 21 to 24 years, depending on the amount of surplus plutonium to be fabricated into MOX fuel.

Use of MOX fuel in one or more domestic commercial nuclear power reactors would be under the terms of NRC license(s). NRC would only issue a license agreement or license amendments to each applicable reactor operator when it is satisfied that the reactor can operate safely and within all design parameters. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

The information presented by GNF was based on use of a GNF-designed fuel and did not address the potential use of AREVA-designed MOX fuel. AREVA has extensive data on the performance of reactor-grade MOX fuel in both BWRs and PWRs. As discussed above, additional information is available from the prior irradiation of MOX LTAs at the Duke Energy Catawba Nuclear Station.

C-3 As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) evaluated numerous alternatives for disposition of surplus plutonium, including disposal of the surplus plutonium by various methods. DOE selected the MOX fuel approach for some of the material declared surplus for the reasons set forth in the *SPD EIS* ROD (65 FR 1608). As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. The action alternatives evaluated for the 13.1 metric tons (14.4 tons)

Campaign C (cont'd)

matrix with a radiation barrier – is being abandoned. The SEIS must discuss the philosophical shift to the plutonium disposition program and analyze that elimination of the "spent fuel standard" can open the door to cheaper, effective disposal options that do not necessitate such an extremely high radiation barrier. The possibility that DOE will attempt to dispose of all weapons-grade plutonium in WIPP raises a host of troubling legal, regulatory and environmental concerns. The option to dispose of surplus plutonium in WIPP was rejected in the original Programmatic EIS and its inclusion in the draft SEOS warrants reopening the PEIS process.

C-5 cont'd

I appreciate your diligent consideration of these comments. Please notify me when the final SEIS is issued.

Respectfully submitted,

of surplus plutonium are the Immobilization to DWPF Alternative, MOX Fuel Alternative, H-Canyon/HB-Line to DWPF Alternative, and WIPP Alternative.

C-4 TVA reactors are evaluated in this *SPD Supplemental EIS* because DOE and TVA have entered into an interagency agreement to evaluate the use of MOX fuel in the Sequoyah and Browns Ferry Nuclear Plants. From a technical perspective, DOE believes that MOX fuel could potentially be used in any domestic commercial nuclear power reactor. Therefore, other unspecified domestic commercial nuclear power reactors are analyzed as part of the "generic reactor" analysis in this *SPD Supplemental EIS* (see Appendix I, Section I.2). The analysis in Appendix I of this *SPD Supplemental EIS* indicates that only minor modifications would be needed at existing commercial nuclear reactors to use MOX fuel. These minor modifications would be subject to an appropriate safety review by NRC.

C-5 Chapter 4, Section 4.5.3.6.3, of this *Final SPD Supplemental EIS* discusses the amount of TRU waste that is projected for disposal at WIPP, as published in the *Annual Transuranic Waste Inventory Report – 2012* (DOE 2012a), as well as the amount of unsubscribed CH-TRU waste disposal capacity that would be necessary to support the alternatives analyzed in this *Final SPD Supplemental EIS*. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE believes that the alternatives analyzed in this *SPD Supplemental EIS* meet the goals of the Spent Fuel Standard. The Spent Fuel Standard is a term, coined by the National Academy of Sciences and modified by DOE, denoting the main objective of alternatives for the disposition of surplus weapons-usable plutonium: that such plutonium be made roughly as inaccessible and unattractive for weapons use as the much larger and growing stock of plutonium in civilian used nuclear fuel. Removal of WIPP from further analysis in the *Storage and Disposition PEIS* (DOE 1996) was not based on the Spent Fuel Standard. WIPP was not considered for further analysis in the *Storage and Disposition PEIS* because disposal of 50 metric tons (55 tons) of surplus plutonium would exceed WIPP's disposal capacity.

In response to comments on the *Draft SPD Supplemental EIS*, DOE expanded the WIPP Alternative to include potential disposal of all 13.1 metric tons (14.4 tons) of the surplus plutonium for which a disposition path is not assigned. The disposal at WIPP of 13.1 metric tons (14.4 tons) of surplus plutonium, which is approximately 26 percent of the amount considered in the *Storage and Disposition PEIS*, could potentially be accomplished within WIPP's capacity and, therefore, is considered to be a reasonable alternative in this *Final SPD Supplemental EIS* (see Chapter 4 Section 4.5.3.6.3).

Campaign C (cont'd)

Individuals submitting this campaign:

Catherine Bradshaw
Corinne Carey
Glenn Carroll
Lillian Champion
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Karen Hadden
Sarah Hatch
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Joan King
Brenda Kissane
Kathryn Kuppers
Marvin Lewis
Judith Lomas
Susannah Masarie
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Nancy Mills
Regina Minniss
Lewis Patrie
Melodye Pryor
Peggy Pryor
Phillip Raines
Jennifer Shaffer
Joanne Steele
Dot Sulock
Stephen Wingeier

Petition 1

September 27, 2012

Ms. Sachiko McAlhany
SPD SEIS Document Manager
P.O. Box 2324
Germantown, MD 20874-2324;

Please accept the following signatures and points in response to the Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SEIS).

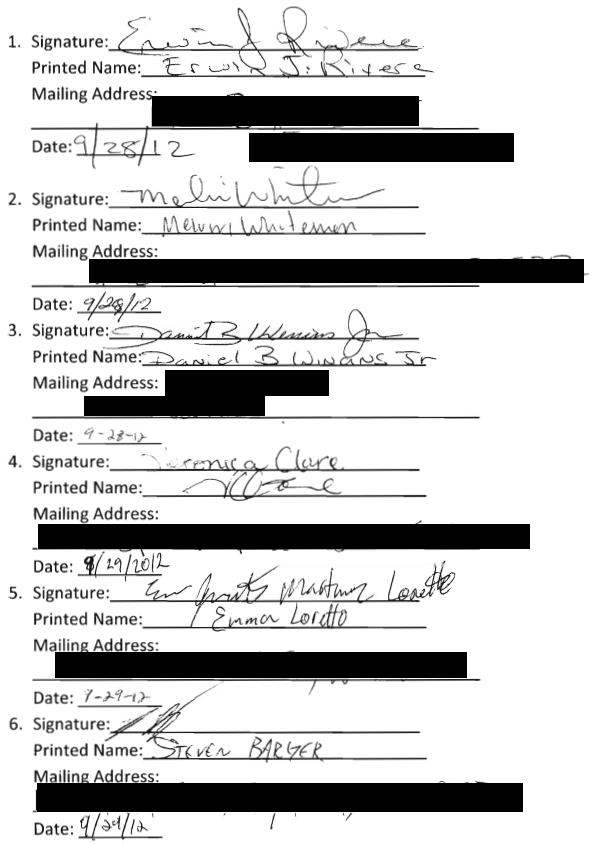
- **Surplus plutonium is not wanted at LANL due to seismic hazards that exist beneath the Jemez Plateau. Current LANL facilities are not built to handle a severe earthquake.** *P1-1*
- **Transporting surplus plutonium is too great of a risk to national security, as well as the health and well being of communities and ecosystems it would pass through.** *P1-2*
- **Surplus plutonium needs to be immobilized and retained at its current source, until new long-term repositories are researched and developed.** *P1-3*
- **WIPP (Waste Isolation Pilot Plant) in Carlsbad, NM is already at capacity, and must only be used for its original purpose.** *P1-4*
- **This proposal will only further delay and hinder cleanup of LANL legacy waste, which is already behind schedule.** *P1-5*
- **MOX (Mixed Oxide Fuel) is not wanted in NM, which has no nuclear power plants and would only further endanger our cultural life ways. There are no utilities that want to use MOX fuel in existing power plants because of its costs, risks, and the need to make changes to the reactors.** *P1-6*
- **This SEIS is not accurate in its calculations of human risk, because current U.S. radiation exposure regulations are based on an adult, Anglo male. Our most vulnerable populations, women, children and the unborn need to be protected.** *P1-7*
- **The risk and harm to Indigenous Human Rights, as stated in the United Nations Declaration on the Rights of Indigenous Peoples needs to be acknowledged and addressed.**
- **Environmental and Reproductive Justice issues are not adequately addressed in the current SEIS, as this proposal would involve locations next to Tribal communities and Peoples of color. "[EJ] will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work (US EPA)."** *P1-8*
- **The landscape surrounding LANL is unstable, as shown with two severe wildfires in the last decade, we can no longer be threatened by the risk of genocide if a plutonium fire should occur at these facilities. Our local firefighters are not equipped to deal with such a disaster and neither are local communities in regards to emergency preparedness.** *P1-9*

P1-1 The potential risks to the public from the sitewide effects of a severe earthquake at LANL were addressed in the *LANL SWEIS* (DOE 2008). The seismic risks to the public would not be expected to change substantially with expansion of pit disassembly and conversion activities at PF-4 at LANL. As described in Chapter 4 and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, risks to the public are expected to be minor from both normal operations and potential accidents under any proposed alternative at LANL. The accidents evaluated include those that could occur due to natural phenomena such as earthquakes. In this regard, Chapter 3, Section 3.2.2, describes geology and soil conditions at PF-4 at LANL, including the location of faults and a discussion of seismic hazards. This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. Potential consequences of postulated accidents can be found in Tables 4–6 through 4–8; however, the chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. Sections D.1.5.2.11 and D.2.9 provide more-detailed information on accidents at PF-4, including natural phenomena hazards such as earthquakes. Section D.1.5.2.1.1 describes the completed and planned seismic upgrades to PF-4. To be conservative, the accident analysis in this *SPD Supplemental EIS* considers the current state of PF-4 without future seismic upgrades. For further discussion, refer to Section 2.3, Topic B, of this CRD.

P1-2 DOE would transport, as necessary, plutonium between DOE sites and MOX fuel from SRS to domestic commercial nuclear power reactors using the NNSA Secure Transportation Asset Program. Under this program, security measures specific to the materials being transported would be implemented to protect them from diversion. The packaging and transportation of radiological materials would need to meet the NRC and DOT regulations that are designed to ensure the safe transport of radiological materials on the Nation's highways, as described in Appendix E, Section E.3, of this *SPD Supplemental EIS*. Chapter 4, Table 4–22, shows that, under all alternatives, the radiological risks to the public from shipments of radioactive materials would be comparable, with no LCFs expected among the transportation crew or general public along the transportation routes.

P1-3 As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) evaluated numerous alternatives (technologies and locations) for pit disassembly and conversion and disposition of surplus plutonium. DOE selected an approach for disposition of some of the plutonium declared surplus (68 FR 20134). As discussed in Section 2.2, Topic A, of this CRD,

Petition 1 (cont'd)



1. Signature: [signature]
   Printed Name: Erwin J. Rivera
   Mailing Address: [redacted]
   Date: 9/28/12 [redacted]
2. Signature: [signature]
   Printed Name: Melvin Whitmon
   Mailing Address: [redacted]
   Date: 9/28/12
3. Signature: [signature]
   Printed Name: Daniel B Winans Jr
   Mailing Address: [redacted]
   Date: 9-28-12
4. Signature: [signature]
   Printed Name: [redacted]
   Mailing Address: [redacted]
   Date: 9/29/2012
5. Signature: [signature]
   Printed Name: Emma Loretto
   Mailing Address: [redacted]
   Date: 9-29-12
6. Signature: [signature]
   Printed Name: STEVEN BARGER
   Mailing Address: [redacted]
   Date: 9/29/12

DOE's prior disposition decisions are not addressed in this *SPD Supplemental EIS*. DOE is, however, evaluating alternatives, including immobilization, for disposition of an additional 13.1 metric tons (14.4 tons) of surplus plutonium, as well as alternatives to PDCF for pit disassembly and conversion using existing facilities at SRS and LANL.

As discussed in Appendix B, Section B.1.4, of this *SPD Supplemental EIS*, DWPF canisters containing vitrified plutonium with HLW would be stored in S-Area at SRS; these DWPF canisters would be managed in the same manner as other DWPF canisters containing HLW. DOE has terminated the program for a geologic repository for used nuclear fuel and HLW at Yucca Mountain, Nevada. Notwithstanding the decision to terminate the Yucca Mountain program, DOE remains committed to meeting its obligations to manage and ultimately dispose of used nuclear fuel and HLW. For further discussion, refer to Section 2.7, Topic A, of this CRD.

P1-4 As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

P1-5 As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

P1-6 Environmental impacts are expected to be minor, and there would be little offsite impact on the public from normal operations of surplus plutonium disposition facilities. Operation of surplus plutonium disposition facilities under the alternatives evaluated in this *SPD Supplemental EIS* would contribute little to cumulative effects, including health effects among the offsite population. For further discussion, refer to Section 2.2, Topic A, of this CRD.

Petition 1 (cont'd)

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Mailing Address: [redacted]
Date: 9/29/12

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11. Signature: [signature]
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Mailing Address: [redacted]
Date: 9/27/12

12. Signature: [signature]
Printed Name: Anna White
Mailing Address: [redacted]
Date: 9/29/12

Disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts per NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors (see Appendix I, Section I.2).

The environmental, human health, and socioeconomic impacts of using MOX fuel in a nuclear reactor are described in Appendix I, Section I.2, and summarized in Chapter 2, Section 2.6, of this *SPD Supplemental EIS*. The impacts of the use of a partial MOX fuel core are not expected to be meaningfully different from the impacts of reactor operation using a conventional full LEU fuel core. As described in Appendix B, Section B.4, and Appendix I, only minor changes would be needed to commercial nuclear power reactors to use a partial MOX fuel core.

P1-7 Appendix C, Section C.1, of this *SPD Supplemental EIS* discusses the risk factor of 0.0006 LCFs per person-rem. The appendix was revised to include additional background information on the derivation of the risk factor of 0.0006, which is reasonable for a population of approximately equal numbers of males and females and an age distribution such as that in the United States which includes children and the elderly.

P1-8 Chapter 3, Section 3.1.11, of this *SPD Supplemental EIS* describes minority and low-income populations near SRS. Chapter 4, Section 4.1.6, was revised to clarify for each appropriate alternative that impacts on an individual residing at the Pueblo de San Ildefonso or Santa Clara Pueblo boundary location were analyzed. Tables 4–26 and 4–28 show that minority populations living near SRS would not be exposed to elevated risks compared to nonminority populations living in the same area from the proposed activities and the risks associated with these activities are small. The analysis has shown that risks to the public are expected to be minor as a result of the proposed actions at SRS. No LCFs are expected for the offsite population, including minority and low-income populations, as a result of the normal operations of the proposed surplus plutonium disposition facilities.

Chapter 3, Section 3.2.11, of this *SPD Supplemental EIS* describes minority and low-income populations near LANL. Chapter 4, Section 4.1.6, of this *SPD Supplemental EIS* analyzes the environmental justice impacts of the options for pit disassembly and conversion at LANL and concludes that Native Americans and other minority or low-income populations living near LANL would not be exposed to elevated risks compared to nonminority populations living in the same area from the proposed activities and the risks associated with these activities are small. For this *Final SPD*

Petition 1 (cont'd)

13.Signature: David Trujillo
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Date: 9-27-12
14.Signature: Tasia A. Slockish
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Date: 9/30/12
15.Signature: William F Slockish
Printed Name: William F. Slockish
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Date: 9/30/12
16.Signature: Theresa Martinez
Printed Name: Theresa Martinez
Mailing Address: [redacted]
Date: 9/30/2012
17.Signature: Harriet Levine
Printed Name: Harriet Levine
Mailing Address: [redacted]
Date: 9/30/12
18.Signature: Sharon Gonzalez-Atei
Printed Name: Sharon Gonzalez-Atei
Mailing Address: [redacted]
Date: 9/30/12
19.Signature: M Dougherty
Printed Name: Maria Dougherty

Supplemental EIS, the results of a dose assessment similar to that for the MEI were added to Section 4.1.6 to show the impact on a hypothetical individual living at a pueblo boundary near LANL. The maximum annual dose for a person at the Pueblo de San Ildefonso boundary would be 0.044 millirem; at the Santa Clara boundary, the annual dose would be 0.0046 millirem. These values can be compared to the MEI dose of about 0.081 millirem per year and the average annual dose from natural background radiation of 469 millirem per year (see Section 3.2.6.1).

This *SPD Supplemental EIS* includes an analysis for a special pathways receptor that was developed for the 2008 *LANL SWEIS* (DOE 2008) using the best information available to DOE to reflect exposures that could result from traditional living habits, including subsistence consumption of native vegetation (pinyon nuts and Indian Tea [Cota]), locally grown produce and farm products, groundwater, surface water, fish (game and nongame), game animals, other foodstuffs, and incidental consumption of soils and sediments (on produce, in surface water, and ingestion of inhaled dust); absorption of contaminants in sediments through the skin; and inhalation of plant materials. These pathways are in addition to the meat, milk, produce, water, and sediment consumption reflected in the "offsite resident" pathway assumption. The analysis concludes that persons living near LANL who practice traditional living habits would receive a higher dose than the rest of the populations living in the same area, but the risks associated with the exposures from LANL would be small (see Chapter 4, Section 4.5.3.8.2). For further discussion, refer to Section 2.6, Topic A, of this CRD.

P1-9 The accident analyses in Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9, of this *SPD Supplemental EIS* consider external fires as one of the many possible initiators of facility fires. The facilities evaluated in this *SPD Supplemental EIS* are all in cleared, industrial-like areas that are not immediately vulnerable to wildfires and are constructed of noncombustible materials. The facilities considered at LANL are surrounded by buffer areas in which combustible materials, including vegetation, are kept to a minimum. LANL is continuing to work to reduce the hazards associated with wildfires. For example, forests are thinned as part of an ongoing Wildfire Hazard Reduction Program to reduce the fuel load available in the event of a fire. The Emergency Management and Response Program, which combines Federal and local emergency response capabilities, and the fire protection program are discussed in Section 4.9.6 of this *SPD Supplemental EIS*.

Petition 1 (cont'd)

Mailing Address:

Date:
20. Signature:
Printed Name: Yolene Eustace
Mailing Address: [redacted]

Date:
21. Signature:
Printed Name: Lita Rivera
Mailing Address: [redacted]

Date:
22. Signature:
Printed Name: Viola Gomez
Mailing Address: [redacted]

Date:
23. Signature:
Printed Name: Alma Rivera
Mailing Address: [redacted]

Date:
24. Signature:
Printed Name: Victoria Rivera
Mailing Address: [redacted]

Date:
25. Signature:
Printed Name: Ramon Rivera
Mailing Address: [redacted]

Date:
26. Signature:
Printed Name: Bernadette Herrera
Mailing Address: [redacted]

Date:

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Petition 1 (cont'd)

27. Signature: Julie R Sutherland
Printed Name: Julie R Sutherland
Mailing Address: [redacted]
Date: 9-30-2012
28. Signature: Jay Kincaid
Printed Name: Jay Kincaid
Mailing Address: [redacted]
Date: 9-30-12
29. Signature: Kristen Mtz
Printed Name: Kristen Mtz
Mailing Address [redacted]
Date: 10-10-12
30. Signature: [redacted]
Printed Name: Jared Apodaca
Mailing Address: [redacted]
Date: 10/6/12
31. Signature: Josette L Flores
Printed Name: Josette Flores
Mailing Address: [redacted]
Date: 10/6/12
32. Signature: Jazmen Fernandez
Printed Name: Jazmen Fernandez
Mailing Address: [redacted]
Date:
33. Signature: [redacted]
Printed Name: Gilbert Sena
Mailing Address: [redacted]
Date: 10/6/12
34. Signature: [redacted]
Printed Name: Jessamee Rios
Mailing Address: [redacted]

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Petition 1 (cont'd)

Date: _____

35.Signature: [redacted]
Printed Name: [redacted]
Mailing Address: [redacted]
Date: 10/6/12
36.Signature: [redacted]
Printed Name: Justin DeCardenas
Mailing Address: [redacted]
Date: _____
37.Signature: [redacted]
Printed Name: [redacted]
Mailing Address: _____
Date: 10/6/12
38.Signature: [redacted]
Printed Name: _____
Mailing Address: _____
Date: _____
39.Signature: [redacted]
Printed Name: SONIA A. NORRIS
Mailing Address: _____
Date: 10/6/2012
40.Signature: [redacted]
Printed Name: Nina Gonzales
Mailing Address: [redacted]
Date: 10/6/12
41.Signature: [redacted]
Printed Name: SHARMA [redacted]
Mailing Address: [redacted]
Date: 10/6/12
42.Signature: Glenna B. Marcus
Printed Name: [redacted]
Mailing Address: [redacted]

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Petition 1 (cont'd)

Date:_____

43.Signature: Chloe Archuleta
Printed Name: Chloe Archuleta
Mailing Address: [redacted]
Date: 10/6/12
44.Signature: [redacted]
Printed Name: Brandon Bumgardner
Mailing Address: [redacted]
Date: 10.6.12
45.Signature: Alexis Martinez
Printed Name: Alexis Martinez
Mailing Address [redacted]
Date: 10/6/12
46.Signature: [redacted]
Printed Name: [redacted]
Mailing Address: [redacted]
Date:_____
47.Signature: Kailani Campbell
Printed Name: KAILANI CAMPBELL
Mailing Address:_____
Date: 10/6/12
48.Signature: [redacted]
Printed Name: [redacted]
Mailing Address: [redacted]
Date: 10/6/2012
49.Signature: [redacted]
Printed Name: Amanda Seese
Mailing Address: [redacted]
Date: 10/6/12
50.Signature: [redacted]
Printed Name: Dana Dalley
Mailing Address: [redacted]

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Petition 1 (cont'd)

Date:_________

51.Signature: Rachel Salazar
Printed Name: Rachel Salazar
Mailing Address: [redacted]
Date: 10-6-12

52.Signature: [illegible]
Printed Name: [illegible]
Mailing Address: [redacted]
Date: 10-6-12

53.Signature: [illegible]
Printed Name: Joaquin [illegible]
Mailing Address: [redacted]
Date: 10-6-12

54.Signature: Tomas Romero
Printed Name: Tomas Romero
Mailing Address: [redacted]
Date: 10.6-12

55.Signature: Ashley Hardison
Printed Name: Ashley Hardison
Mailing Address:
Date: 10-6-12

56.Signature: Lina Martinez
Printed Name: Lina Martinez
Mailing Address: [redacted]
Date: 10/05/12

57.Signature: Loriann Quintana
Printed Name: Loriann Quintana
Mailing Address: [redacted]
Date: 10-6-12

58.Signature: Ronald F Williams
Printed Name: Ronald F. Williams
Mailing Address: [redacted]

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Petition 1 (cont'd)

Date:_____

59.Signature: Mary Shoemaker
Printed Name: Mary Shoemaker
Mailing Address: [redacted]
Date: 10/6/12

60.Signature: [redacted]
Printed Name: [redacted]
Mailing Address: [redacted]
Date: 10-6-12

61.Signature: Danika Fernandez
Printed Name: Danika Fernandez
Mailing Address:_____
Date:_____

62.Signature: Odalys Marquez
Printed Name: Odalys Marquez
Mailing Address:_____
Date:_____

63.Signature: Erik Diaz
Printed Name: Erik Diaz
Mailing Address:_____
Date: 10/6/12

64.Signature: [redacted]
Printed Name: Joaquin Tuy, Jr.
Mailing Address: [redacted]
Date: 10-6-12

65.Signature: [redacted]
Printed Name: Tania Chavez
Mailing Address: [redacted]
Date: 10/6/12

66.Signature: [redacted]
Printed Name: Marylou Lopez
Mailing Address: [redacted]

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Petition 1 (cont'd)

Date:

67.Signature:
Printed Name: MARLENE ENGLEMAN
Mailing Address: [redacted]
Date: 10/03/12

68.Signature:
Printed Name: BOKAY R E MURRAY
Mailing Address: [redacted]
Date: 10/8/12

69.Signature:
Printed Name: [redacted]
Mailing Address: [redacted]
Date:

70.Signature:
Printed Name: Norma Navarro
Mailing Address: [redacted]
Date: 10/3/12

71.Signature:
Printed Name: Judy Chaddick
Mailing Address: [redacted]
Date: 10-8-12

72.Signature:
Printed Name: Fred Romero
Mailing Address: [redacted]
Date: 10/08/12

73.Signature:
Printed Name: Pauline Porreca
Mailing Address: [redacted]
Date: 10/3/12

74.Signature:
Printed Name: Lisa Morgan
Mailing Address: [redacted]

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Petition 1 (cont'd)

75. Signature: David García
Printed Name: David García
Mailing Address: [redacted]
Date: 10-9-12

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Petition 2

October 5, 2012

Via Certified Mail receipt request

Sachiko McAlhany,
SPD Supplemental EIS Document Manager
U.S. Department of Energy
P.O. Box 2324, Germantown, MD 20874-2324

Re: Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement (Draft SPD SEIS) (DOE/EIS-0283-S2) in support of Santa Clara Pueblo comments

Dear Ms. McAlbany,

We, the under signed, tribal members and residents of Santa Clara Pueblo fully support the Santa Clara Tribal Council comments submitted to you on October 3, 2012. These comments state that;

1. The Jemez Mountains, Pajarito Plateau contains many areas of cultural importance to our people and our cultural practices connected to these areas continue to this day. Our connection goes back to the beginning of time. The environment that we seek to have DOE protect, restore and enhance is our aboriginal homeland and continued spiritual sanctuary. *P2-1*

2. The Draft SPD SEIS does not meet the standards of NEPA *P2-2*

3. Increased pit assembly and conversion at LANL should not remain as part of DOE's preferred alternative because continued and increasing information about seismic risks at LANL make LANL a clear unsafe and unjustifiable choice. *P2-3*

4. The draft SPD SEIS does not properly analyze environmental justice impacts to Santa Clara Pueblo community related to new pit disassembly and conversion options involving LANL. *P2-4*

5. Pit disassembly and conversion at LANL should not be part of the DOE's preferred alternative because of the significant cumulative impact it would have on the remediation and restoration processes underway at LANL. *P2-5*

6. Next steps, DOE must take in addressing these comments, which include government-to-government consultation with Santa Clara Pueblo. *P2-6*

Therefore,

We the people of Santa Clara Pueblo support the Santa Clara Tribal Council and urges you in the strongest possible terms to ensure LANL no longer continue to be part of DOE's preferred alternative for new pit assembly and conversion capabilities associated with DOE's surplus plutonium disposition program. *P2-7*

P2-1 DOE notes the commentor's concern regarding the cultural importance of the Jemez Mountains and Pajarito Plateau and works with tribal authorities in the area through several mechanisms, including an accord with the Santa Clara Pueblo government. Analyses presented in Chapter 4, Section 4.1.7.6, of this *SPD Supplemental EIS* indicate that no impacts on cultural resources are expected because any construction would likely take place on previously disturbed land.

P2-2 This *SPD Supplemental EIS* was prepared in accordance with applicable CEQ and DOE NEPA regulations. For further discussion, refer to Section 2.1, Topic A, of this CRD.

P2-3 The alternatives in this *SPD Supplemental EIS* were developed recognizing that plutonium materials are currently stored at multiple DOE sites and individual sites have their own specific capabilities with respect to pit disassembly and conversion and plutonium disposition; LANL is included because of its unique capabilities with respect to pit disassembly and plutonium processing.

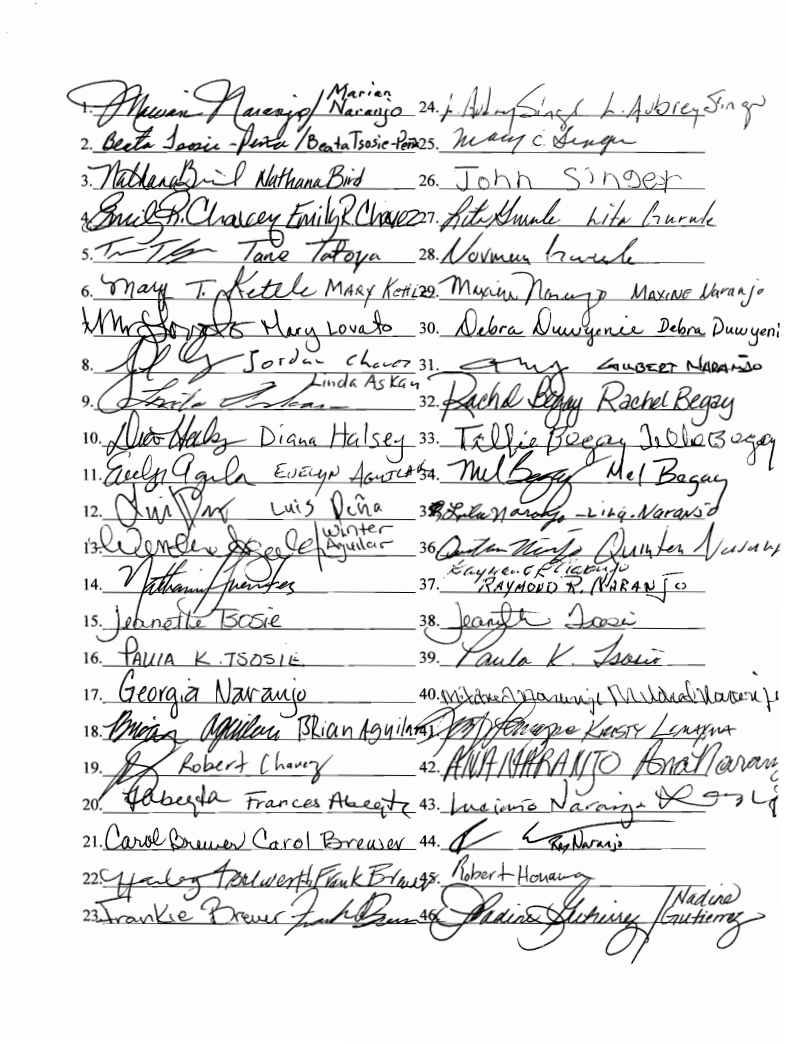
Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD. Section D.1.5.2.11 describes the completed and planned seismic upgrades to PF-4.

P2-4 Chapter 3, Section 3.2.11, of this *SPD Supplemental EIS* describes minority and low-income populations near LANL. Chapter 4, Section 4.1.6, of this *SPD Supplemental EIS* analyzes environmental justice impacts of the options for pit disassembly and conversion at LANL and concludes that Native Americans living near LANL would not be exposed to elevated risks compared to nonminority populations living in the same area from the proposed activities, and that the risks associated with these activities are small.

The DOE Los Alamos Site Office has been working with the Santa Clara Pueblo since 2010 to develop a plan that would enable the Santa Clara Pueblo to collect data

Petition 2 (cont'd)



that would better represent the Pueblo's interaction with the natural world. Once data are obtained, they would be incorporated into future NEPA analyses for proposed actions that could potentially affect the Santa Clara Pueblo. This *SPD Supplemental EIS* includes an analysis for a special pathways receptor that was developed for the 2008 *LANL SWEIS* (DOE 2008) using the best information available to DOE to reflect exposures that could result from traditional living habits, including subsistence consumption of native vegetation (pinyon nuts and Indian Tea [Cota]), locally grown produce and farm products, groundwater, surface water, fish (game and nongame), game animals, other foodstuffs, and incidental consumption of soils and sediments (on produce, in surface water, and ingestion of inhaled dust); absorption of contaminants in sediments through the skin; and inhalation of plant materials. These pathways are in addition to the meat, milk, produce, water, and sediment consumption reflected in the "offsite resident" pathway assumption. The analysis concludes that persons living near LANL who practice traditional living habits would receive a higher dose than the rest of the populations living in the same area, but the risks associated with the exposures from LANL would be small (see Chapter 4, Section 4.5.3.8.2). For further discussion, refer to Section 2.6, Topic A, of this CRD.

P2-5 As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. As described in Appendix F, Section F.4, of this *SPD Supplemental EIS*, waste generated by pit disassembly and conversion activities at PF-4 would be within the capacities of LANL waste management facilities. For further discussion, refer to Section 2.3, Topic C, of this CRD.

P2-6 DOE has also engaged with those tribes that have requested it to arrange for government-to-government consultation.

P2-7 The impacts at LANL from pit disassembly and conversion of 2 metric tons (2.2 tons) and 35 metric tons (38.6 tons) of surplus plutonium are evaluated in detail in Chapter 4 and summarized in Chapter 2, Section 2.6, Table 2–3; additional information is provided in Appendices C, D, and F. For further discussion, refer to Section 2.3, Topic A, of this CRD.

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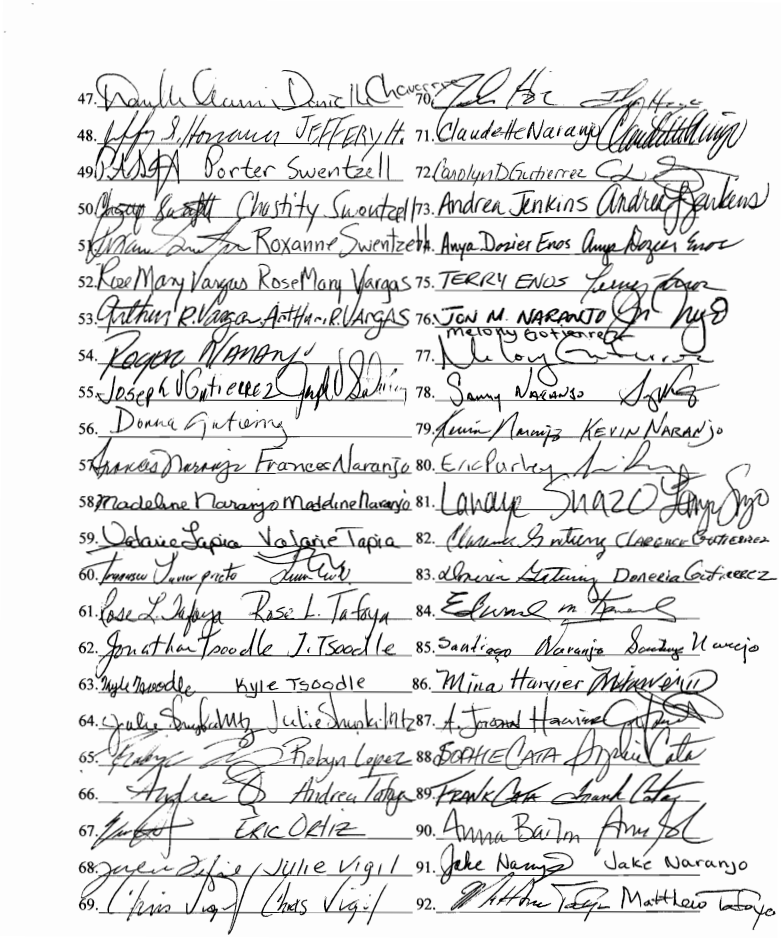

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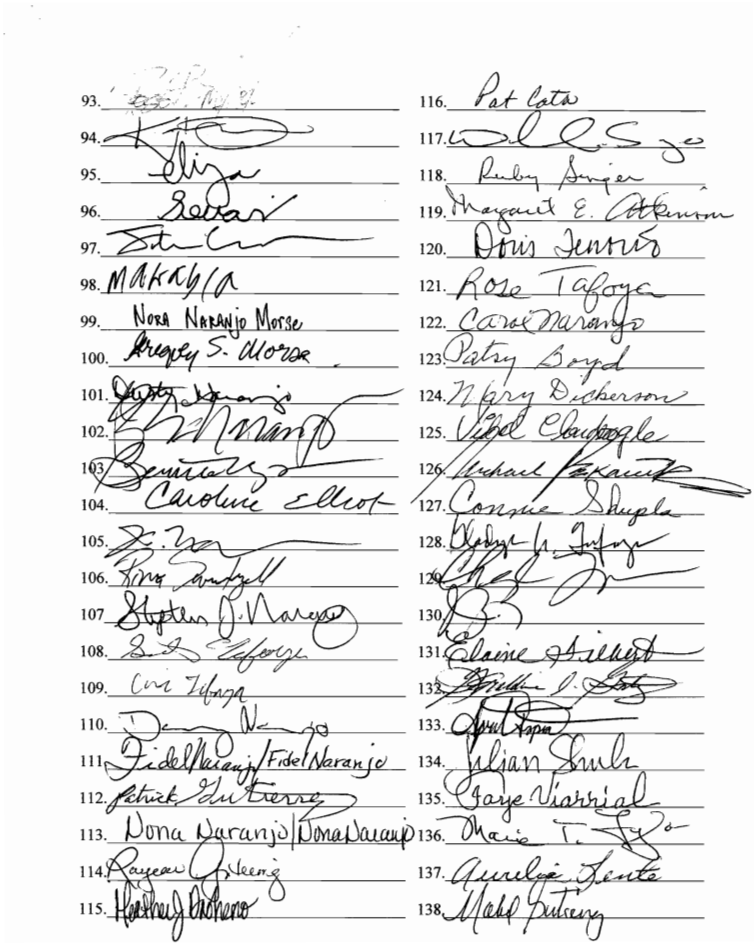

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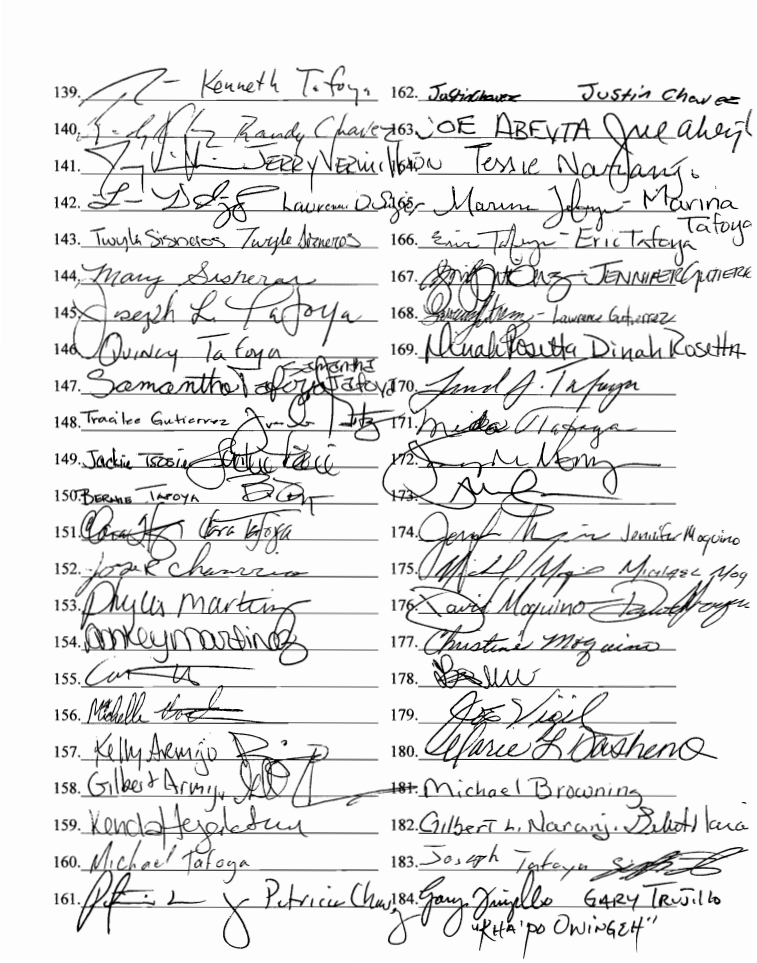

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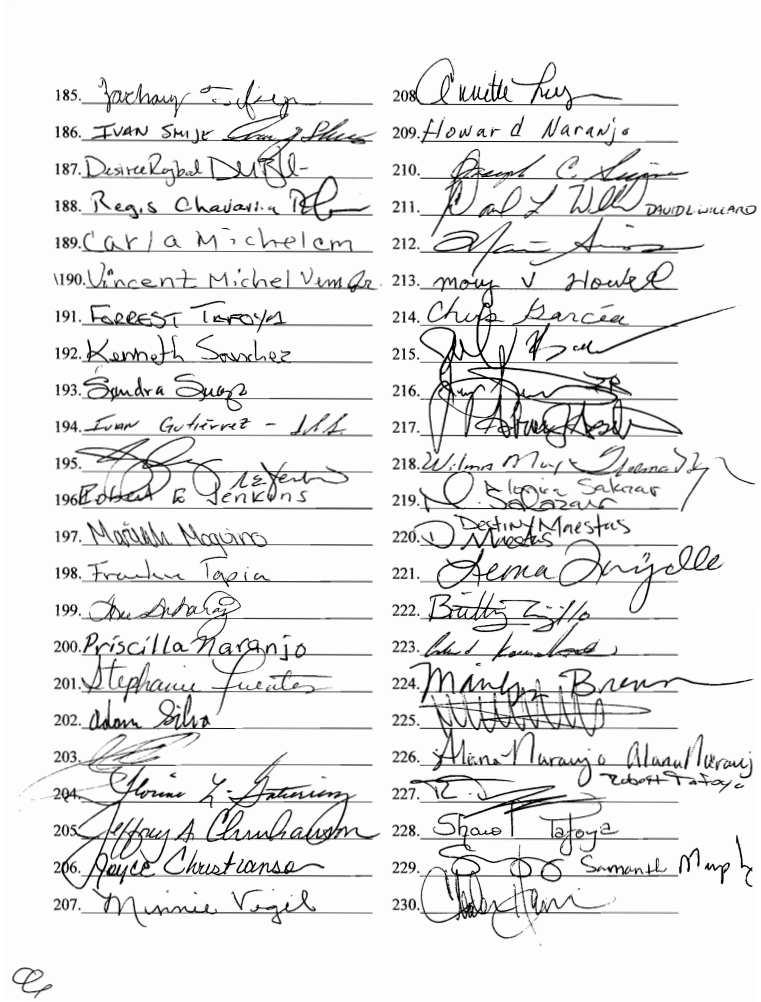
Petition 2 (cont'd)



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U.S. DEPARTMENT OF ENERGY

DRAFT SURPLUS PLUTONIUM DISPOSITION
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

PUBLIC HEARING

DATE: August 21, 2012

6:00 P.M.

Holiday Inn Express
60 Entrada Drive
Los Alamos, NM 87544

Homes Brown, Facilitator

PANEL MEMBER:
Sachiko McAlhany, U.S. Department of Energy, National Nuclear Security Administration

REPORTED BY: JANICE J. MURPHEY, RPR, CCR
NEW MEXICO CCR #135
ATKINSON-BAKER, INC., COURT REPORTERS
(800) 288-3376
www.depo.com

FILE NO: A6067A3

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U.S. DEPARTMENT OF ENERGY

SURPLUS PLUTONIUM DISPOSITION
SUPPLEMENTAL ENVIRONMENT IMPACT STATEMENT

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FORMAL COMMENTS FROM PUBLIC HEARING ON AUGUST 21, 2012

(Meeting in session at 6:00 P.M.)

MR. BROWN: Good Evening. This hearing is on the Department of Energy's Surplus Plutonium Disposition Draft Supplemental Environment Impact Statement, or Draft Supplemental EIS. I hope you've had an opportunity to browse the displays and talk with the project staff during the just-completed open house.

My name is Homes Brown, and I will serve as facilitator for this evening's meeting. I'm not an employee of the Department of Energy, nor advocate for any particular party or position. My role this evening is to ensure that the meeting runs on schedule and that everybody has an opportunity to speak.

At the registration table, you should have received a copy of this evening's slide presentation. It contains information on the Surplus Plutonium Disposition Program and the Supplemental EIS. If you didn't receive a copy, please raise your hand, and the staff can deliver one to you. Everybody? Okay, we've got a few over there.

There are two parts to this hearing: The information segment and the formal comment segment. The information segment began with the just-concluded, hour-long open house and continues with the welcoming

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remarks by a local representative. This will be followed by a 20-minute presentation by Sachiko McAlhany, who is the Supplemental EIS Document Manager for the DOE. Ms. McAlhany will discuss the Surplus Plutonium Disposition Program, the contents of the Draft EIS, the National Environmental Policy Act that governs the process, and the schedule for the completion of the Supplemental EIS.

A formal commentary period will follow a slide presentation. During this segment, members of the public will provide comments on the Draft Supplemental EIS. The court reporter will transcribe your comments verbatim, and they will be included in the permanent record. A DOE official will be present to hear your comments, but will not be responding to questions or comments.

We also have a Spanish language translator, in case anybody wishes to make their comments in Spanish. If you wish to make a comment and have not yet signed up to do so, please add your name to the list at the registration table. I will call on speakers in the order their names appear on the sign-up sheet. Based on the number of people signing up, each speaker will be provided with a specified number of minutes to speak. Speakers may not yield assigned minutes to

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other speakers.

We will now resume the information segment. I would like to introduce Juan Griego, Deputy Manager of the Los Alamos site office. He will offer welcoming remarks and will introduce Sachiko McAlhany, Supplemental EIS Document Manager.

MR. GRIEGO: Thank you, Mr. Brown.

Good evening, ladies and gentlemen. Again, my name is Juan Griego, and I'm a deputy site officer for the NNSA's Los Alamos site office, one of them. On behalf of Kevin Smith, who is tied up -- he's the site office manager, but he is tied up doing a presentation at the Los Alamos County Council this evening, so he sends his regrets. But, again, on his behalf, we do welcome all of you members of the public, and we appreciate your being here this evening to participate in the National Environmental Policy Act process associated with the Surplus Plutonium Disposition Supplemental EIS.

I'm going to introduce Ms. McAlhany here in just a second, but, again, just recognize from the site office perspective, there's a lot of interest in this particular program. This is a program that Los Alamos National Laboratory has been involved with for a number of years. And those of you who have read the document

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have a better feel for what Los Alamos's role is in this program. And, again, Ms. McAlhany will cover a little bit more of that in detail. But, again, this is the first of several public hearings. The Department did issue the Notice of Availability for the document on July 27th, and so that should be out there for everybody to take a look at.

Once again, we welcome you and we look forward to your comments, and we welcome your participation in the process. With that, I will introduce Ms. Sachiko McAlhany, who is not only the document manager for this Supplemental EIS, but she's also a program manager working with the NSSA office and is well-versed on the programs. With that, Ms. McAlhany. Thank you, once again, and welcome.

(Presentation by Ms. McAlhany not transcribed.)

MR. BROWN: Thanks very much. We will take a 5-minute break in order to review the list of folks that signed up to speak, and immediately after this break, we will begin the public comment period. So we will be right back. Thanks.

(Recess taken from 7:00 to 7:07 P.M.)

MR. BROWN: Okay, if folks will take their seats, we'll get started with the formal comment period. It's time now to begin the formal comment

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period. This is your opportunity to provide DOE with your comments on the content on the Draft Supplemental EIS. Our court reporter for tonight is Janice Murphey, who will transcribe your comments.

Let me review a few ground rules for the formal comments. Please step up to the microphone in the middle corridor and state your name. Introduce yourself, providing an organizational affiliation where appropriate. If you have a written version of your statement, please provide a copy to the court reporter after you have completed your remarks.

I will call two names at a time, the first for the speaker and the second of the person to follow. In view of the number of people who have indicated interest in speaking tonight, please confine your public comments to five minutes. I will let you know when you have one minute remaining by holding up this sign. If your statement is longer than five minutes, please summarize the key points in the allotted time.

All comments count equally, whether verbal or presented in any of the forums that Sachiko referenced on the last page of the slide show.

Again, let me remind you that Arturo Sandoval is available to provide Spanish language translation, if you need that, so let us know.

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And, Arturo, if you can hold your hand up.

(Note: Mr. Sandoval complies.)

MR. BROWN: Check with him.

Sachiko McAlhany will be serving as the hearing officer during this public comments segment. She will, however, not be responding to comments or questions.

And the court reporter has asked me to remind you, when you are speaking, please speak directly into the microphone so that she can transcribe all of your comments in their entirety.

So with that, by way of introduction, let me call on our first speaker, a regular here, Greg Mello.

MR. MELLO: Thank you very much. Let me just --

SPEAKER: Can you raise it up a little?

SPEAKER: We want to see people's faces.

MR. MELLO: Can I turn around?

MR. BROWN: Yes.

MR. MELLO: Please pardon my ignorance here because we don't know as much about this as we would like to. We are here partly to learn and so these comments are preliminary, and we hope that by the end of this process we will know a little bit more.

The Department of Energy is also learning. And we -- the Department of Energy has spent a lot of money

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on the pit conversion at this disassembly facility, and there's really nothing much to show for that. So the program is partially a fiasco, and I think that if we all approach this with humility, we can get farther.

This is a program that has had significant setbacks already, and it's very easy, after a long process like this, to feel like a lot of things are set, but I want to encourage all of us to see if we can detach from commitments we've already made from some costs and look at things as freshly as we can.

And I think the one thing that I think should give us a little pause right at the beginning, the impacts of the alternatives didn't differ appreciably. That is often, in my experience, a good indication that not a wide enough range of alternatives have been considered. That might be an indication that a wider set of alternatives should be considered, if the impacts all look more or less the same.

Another point that comes out right away is that there is a synthetic -- some synthetic alternatives where there are many options, say, for pit disassembly and conversion, and the Department reserves the actual -- the linear combination of using PF-4, H-Canyon, installation in MFFF, and some combination -- and I'm leaving out one, I think -- oh, a separate

9

600-1

600-1 In this *SPD Supplemental EIS*, DOE evaluated the potential environmental impacts of a range of reasonable alternatives for the disposition of 13.1 metric tons (14.4 tons) of surplus plutonium, in accordance with the requirements of NEPA. As described in Chapter 2, Section 2.4, of this *SPD Supplemental EIS*, additional alternatives were considered but dismissed from detailed evaluation. This *SPD Supplemental EIS* supplements the *SPD EIS* (DOE 1999), which tiers from the *Storage and Disposition PEIS* (DOE 1996). These parent documents considered additional alternatives.

600-2

600-2 In this *SPD Supplemental EIS*, DOE considers four options for pit disassembly and conversion. To ensure that DOE has fully analyzed the impacts associated with this pit disassembly and conversion option, for purposes of analysis, DOE evaluated a range of plutonium operations at LANL to conservatively envelop the possible operational scenarios (see Appendix B, Tables B–2 and B–3, for a summary of the options). The impacts for the pit disassembly and conversion options, which maximize the operations of facilities at LANL and SRS, are described in detail in the appendices and summarized in Chapter 4.

freestanding facility. So, in a way, that is kind of a decision not to make a decision. That is kind of using the NEPA process as a -- I mean, it could be construed from an outsider -- as I said, I don't know everything about this, but it could be construed as using the NEPA process to sort of cover your ass and actually avoid making a decision to say, Well, we're going to do one of the above.

I want to say something about PF-4. There is the Department -- the Department's statements about PF-4 in different venues aren't completely consistent. And I'm very sympathetic with that because it's complicated and it's a large set of bureaucracies that are interacting, and people have different specialties. And safety people are different than the security people and different from the program people, and everybody has their specialties, but they don't all mesh. So in some context, PF-4 is considered very crowded and there is not very much space for additional -- not enough space for the missions it already has.

But now we're talking about a very large new mission in PF-4; a type of mission for which the facility was not originally designed.

During the 1980s, PF-4 did a lot of plutonium

10

600-2 cont'd

600-3

600-3 DOE and LANL have evaluated potential space requirements for the proposed processing options and determined that the operations can be accommodated with the existing PF-4 rooms. Appendix B, Section B.2.1, of this *SPD Supplemental EIS* describes pit disassembly and conversion at PF-4 at LANL under the 2-metric-ton (2.2-ton) and expanded facility (35-metric-ton [38.6-ton]) options, including the amounts of materials processed and the throughputs. DOE does not expect that expanded pit disassembly and conversion operations at PF-4 would impact other LANL missions in this facility. For further discussion, refer to Section 2.3, Topic A, of this CRD.

DOE is aware of the seismic concerns associated with the continued operation of PF-4 and is aggressively pursuing additional analyses of and upgrades to this facility to ensure that it continues to operate safely. As described in Chapter 4 and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, risks to the public are expected to be minor from both normal operations and potential accidents under any proposed alternative.

processing, and it was very damaging for the facility. That was before its seismic vulnerabilities were known and, indeed, at this point, have not been fully addressed. There is still no path to closure on an active and confining ventilation system or even on the seismic structural safety of the facility, and so it's a little unclear why this is a viable pathway at this point for disposition of plutonium, when these very basic problems have not been fully resolved.

There are conflicts between existing missions at PF-4 which, we believe, could become apparent in the future when optimistic projections in budget and space don't really work out. So what happens when this mission conflicts with pit surveillance? Do the LEPs -- do the Life Extension Programs come to a grinding halt because of a problem or because of a conflict in space or in waste processing for MOX fuel fabrication? What about research? I know it's very important to people here.

I am wondering -- it's not that important to me. We feel that the plutonium research mission here in Los Alamos is overblown; however, I think that people who do plutonium research here at the laboratory need to be conscious of how the production missions may conflict with their research agenda, and I'm not sure

600-3 cont'd

600-4

600-4 Examining issues related to plutonium research and work assignments for LANL staff is not within the scope of this *SPD Supplemental EIS*.

that they fully understand that, because, again, we all have our little foxholes. We --

MR. BROWN: You have about a minute.

MR. MELLO: About a minute? Okay.

We think that the -- that one of the foxes we think that we ought to try to get out here is the one -- is the requirement to put the plutonium in a form that cannot be used for nuclear weapons. So we're not sure there needs to be a pit disassembly and conversion mission. We are wondering whether or not the Department of Energy should invest some time in the direct disposal of demilitarized pits without disassembly, permanently demilitarized pits. We are looking for simple, robust solutions which are safe, secure, and affordable for a country that does not have the financial resources that it had 10, 15, 20 years ago. So -- I'm running out of time?

MR. BROWN: Yeah.

MR. MELLO: Thank you.

MR. BROWN: Thanks very much.

Susan Gordon is next.

Sorry, Susan. I forgot to give you warning, but you are ready?

MS. GORDON: Yes.

MR. BROWN: And Scott will follow you.

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600-4 cont'd

600-5

600-5 Direct disposal of plutonium pits and metal was considered in this *Final SPD Supplemental EIS*, but was dismissed from further consideration for the reasons described in Chapter 2, Section 2.4. Direct disposal of demilitarized pits is not considered to render the plutonium into a form that would ensure that it can never again be readily used in nuclear weapons.

MS. GORDON: Good evening. My name is Susan Gordon, and I'm the director of the Alliance -- is this okay? Is it working? -- Alliance for Nuclear Accountability (ANA), which is a national network of 35 local, regional, and national organizations representing the concerns of citizens -- sorry, concerns of communities in the shadows of the U.S. nuclear weapon sites across the country, and I live in Santa Fe. I appreciate this opportunity to comment on the Department of Energy's Draft Supplemental Environmental Impact Statement on plutonium disposition, and I will submit my written comments for the record.

The document we're discussing tonight is part of the problem in the daunting challenge to deal with surplus weapons plutonium and not part of the solution. Almost five years in process, this document plows little new ground and only serves to reaffirm the misguided policy to fabricate plutonium into mixed oxide fuel, MOX. Given the significant changes to the plutonium disposition plan since preparation of the Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Environmental Impact Statement in 1996, ANA calls on DOE to amend that PEIS to review all options for disposing of plutonium as

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601-1

601-1 DOE does not agree with the commentor's opinion about the need to amend the *Storage and Disposition PEIS* (DOE 1996). As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* and the *SPD EIS* (DOE 1999) considered numerous alternatives for disposition of surplus plutonium, including immobilization and direct disposal of the entire surplus plutonium inventory. For further discussion, refer to Section 2.1, Topic A, of this CRD. As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS,* but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. The action alternatives evaluated for the 13.1 metric tons (14.4 tons) of surplus plutonium are the Immobilization to DWPF Alternative, MOX Fuel Alternative, H-Canyon/HB-Line to DWPF Alternative, and WIPP Alternative.

nuclear waste. In addition, a stand-alone "Plan B" for disposing of plutonium as waste is needed, in the event of the MOX program failure.

While presenting use of MOX fuel in the Tennessee Valley Authority's, Browns Ferry, and Sequoyah reactors as part of the so-called "preferred alternative," the draft document shockingly reveals that this outcome is far from certain and states that "TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose."

Though the document deals only with 13.1 metric tons of plutonium, it includes a "no action" alternative that simply reaffirms MOX production and use of 34 metric tons of plutonium. This is problematic in several ways, especially in that it affirms that "TVA would not receive MOX fuel from DOE."

Of special note is a very brief section entitled, "Commercial Nuclear Power Reactors," that mentions that NRC licensing is necessary. Yet any discussion of the need for NRC-license testing for MOX test fuel is studiously avoided in the document. MOX made from weapons-grade plutonium has never been used on a commercial scale in any reactor worldwide and has

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601-1 cont'd

601-2

601-3

601-4

601-2 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In the *Draft SPD Supplemental EIS*, the MOX Fuel Alternative was DOE's Preferred Alternative for surplus plutonium disposition. DOE's preferred option for disposition of surplus non-pit plutonium that is not suitable for MOX fuel fabrication was disposal at WIPP. DOE's preferred option for pit disassembly and conversion of surplus plutonium metal, regardless of its origins, was to use some combination of facilities at TA-55 at LANL and K-Area, H-Canyon/HB-Line, and MFFF at SRS, rather than to construct a new stand-alone facility.

In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose.

The disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts as required by NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors, including, but not limited to five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants. These reactors are explicitly considered because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Section I.1). However, the MOX Alternative also analyzes irradiation in generic commercial nuclear reactors including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2), and is not dependent on TVA participation.

Furthermore, any reactor license modifications that may be required for TVA or other commercial reactor plant operators who might plan to use MOX fuel would be subject to NRC NEPA regulations in 10 CFR 51, as part of the NRC licensing process under 10 CFR Part 50.

601-3 NEPA requires consideration of a No Action Alternative. For the purposes of this *SPD Supplemental EIS*, all alternatives including the No Action Alternative, include

never been tested at all in a boiling water reactor like Browns Ferry. Likewise, the failed MOX test in Duke's Catawba pressurized water reactor was halted prematurely and not taken to conclusion.

In its August 8, 2012, Global Nuclear Fuels presentation to the NRC on licensing of the boiling water reactor MOX fuel to the company's specifications, Global Nuclear Fuels made clear that a three-cycle test of "lead use assemblies" would be needed, meaning that a six-year test would be needed. As the test fuel could be made in the MOX plant only in 2019 at the earliest, according to GNF, the MOX test would only be over in 2025 at the earliest. Then, post-irradiation examination and licensing would mean that MOX use could not begin until 2026 or later, if the tests were successful, if TVA decided to pursue MOX in Browns Ferry, and if the NRC licensed the first-ever commercial use of MOX made from weapons-grade plutonium.

So you are getting the picture: MOX use by TVA is highly speculative and pursuit of any undefined, "generic" reactors is even more speculative. Such speculation is nothing to base this NEPA document on and affirms that the document which has been produced does not provide legitimate basis for issuance of a

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601-4 cont'd

fabrication of 34 metric tons (37.5 tons) of surplus plutonium into MOX fuel at MFFF. In addition, although the *SPD EIS* (DOE 1999) addressed the potential environmental impacts of using MOX fuel in Duke Energy and Virginia Power nuclear reactors, neither company is part of the MOX fuel program at this time. Therefore, the No Action Alternative for this *SPD Supplemental EIS* addresses the use of MOX fuel at generic reactor sites. All of the action alternatives address the use of MOX fuel at TVA and generic reactor sites.

601-4 Before any MOX fuel is used in the United States, NRC would perform a comprehensive safety review, which would include information prepared by TVA or other reactor operators, as part of the 10 CFR Part 50 license amendment process. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. If MOX fuel LTAs were required, they would likely be fabricated at MFFF from feedstock supplied by the existing plutonium inventory. There is currently no schedule for fabrication and testing of LTAs. For further discussion, refer to Section 2.4, Topic A, of this CRD.

As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. Post-irradiation examination results confirmed that MOX fuel containing weapons-grade plutonium generally performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant and established the relevance of the European MOX fuel experience using reactor-grade plutonium. For further discussion, refer to Sections 2.2, Topic A, and 2.4, Topic A, of this CRD.

The information presented by GNF was based on use of a GNF-designed fuel and did not address the potential use of AREVA-designed MOX fuel. AREVA has extensive data on the performance of reactor-grade MOX fuel in both BWRs and PWRs. As discussed above, additional information is available from the prior irradiation of MOX LTAs at the Duke Energy Catawba Nuclear Station.

DOE does not agree with the commentor's opinion about the need for a new programmatic EIS on surplus plutonium storage and disposition. As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) considered numerous alternatives for disposition

Record of Decision.

DOE must cancel the costly MOX program and prepare a new Programmatic Environmental Impact Statement on disposition of plutonium as waste and focus in the short term on safe, secure storage of plutonium now stored at the Savannah River Site, Pantex, and Los Alamos. A careful review of options to dispose of plutonium as an immobilized waste form will yield the best path forward, a path away from a proliferation-prone and risky attempt to commercialize the use of plutonium as a nuclear power fuel.

To be clear, the draft document is unrealistic and inadequate concerning MOX testing and use. No MOX plant operational schedule is presented, no plan or schedule for MOX testing in TVA or "generic" reactors is presented, and no schedule for full-scale use of MOX is presented. Therefore, no Record of Decision can be issued.

MR. BROWN: Thanks very much.

Mr. Scott Kovac is next, and David Clark will follow.

MR. KOVAC: Thank you. My name is Scott Kovac from Nuclear Watch New Mexico. I just have a couple of comments. First off, a supplemental modification of a bad idea is still a bad idea. I

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601-4 cont'd

602-1

of surplus plutonium, including immobilization and direct disposal of the entire surplus plutonium inventory as waste. DOE selected an approach for disposition of some of the plutonium declared surplus (68 FR 20134). As discussed in Section 2.2, Topic A, of this CRD, DOE's prior disposition decisions are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of an additional 13.1 metric tons (14.4 tons) of surplus plutonium, including use of the surplus plutonium as MOX fuel or its conversion into waste forms suitable for disposal.

Appendix B, Table B–2, of this *SPD Supplemental EIS* lists the duration of facility construction and operation in years. As shown in Appendix B, Table B–2, MFFF is estimated to operate between 21 to 24 years, depending on the amount of plutonium to be processed.

602-1 As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. The action alternatives evaluated for the 13.1 metric tons (14.4 tons) of surplus plutonium are the Immobilization to DWPF Alternative, MOX Fuel Alternative, H-Canyon/HB-Line to DWPF Alternative, and WIPP Alternative. In addition, DOE is reconsidering its decision to construct and operate a stand-alone PDCF at SRS for pit disassembly and conversion and is investigating other options.

would like to go back to the 2000 decision where DOE issued a ROD to construct and operate three facilities at SRS: The MFFF, the Pit Disassembly and Conversion Facility, and the Plutonium Immobilization Facility. Two of those three options are no longer on the board. In 2002, DOE issued an Amended Record of Decision that cancelled immobilization. This supplemental analysis is based on -- if, in fact, this supplemental analysis is based on the original EIS, it should include immobilization for all of the plutonium to be disposed of as waste. Thank you.

MR. BROWN: Thanks, Scott.

David Clark, and David will be followed by Evan Roberts.

MR. CLARK: So I'm David Clark. I'm a Los Alamos laboratory fellow. I have developed my career to developing knowledge and expertise on the science and technology of plutonium. I'm here tonight as a citizen, but also as an expert in the science and technology of plutonium.

As a scientific leader in this field, I would like to remind everyone that there's well over 2000 metric tons of plutonium in the world today. And regardless of your views on how this situation came to be, it's clear that these large inventories must be

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602-1 cont'd

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prudently managed for many centuries. To succeed, we'll have to stabilize, store, and/or destroy excess plutonium. I submit that converting 7 metric tons of plutonium from the pits of nuclear weapons into plutonium oxide is an essential step in any disposition plan that I can't imagine that anybody would disagree with.

Now, the NNSA is looking to many of the existing facilities to try to do that work. Yes, they talked about building their own facilities, but we've learned the nation can't afford multiple $8 billion facilities, so you have to look to existing capabilities. I'm betting most of those facilities there's room for this kind of work. In particular, as we think about Los Alamos, I would like to point out that Los Alamos scientists developed and demonstrated the seminal technology concepts for pit disassembly and conversion that would be used in any of the facilities under consideration.

Moreover, Los Alamos is, therefore, ideally suited for that portion of the mission, and they are disassembling pits today. They are doing it right now. It's already part of the mission; it's already being done. It was developed here. We have the depth and the skill and the knowledge, and it's already part of

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603-1 **603-1** DOE acknowledges the comment.

the waste stream, et cetera. So, personally, I support bringing that portion of the mission to Los Alamos.

The second part of the Supplemental EIS explores disposal of plutonium once its been extracted from the pits. The options include: Vitrification and storage; burial at the WIPP site; burial at some repository that doesn't exist, that we don't have in this country; or burning as MOX fuel in a reactor. Storing plutonium glass in canisters or underground will not reduce the global inventories of plutonium. I'm a chemist. I can tell you that you can put it into some glass or some ceramic, it will slow me down, but I can get it back; it does not solve the problem.

The way to solve the problem is to get rid of plutonium. I think there are people in the audience that would agree with that. The only one of the options that will destroy plutonium or make it unusable in weapons is to burn it in a nuclear reactor. Therefore, I support conversion to MOX fuel as the preferred disposition option for this country. Thank you for the opportunity to be involved in this public meeting.

MR. BROWN: Thanks, David.

Evan Roberts. Is Evan here? I think I saw you all sign up. How about Katy Roberts? Okay. I'll come

603-1 cont'd

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back to you.
Charles Bowman?
MR. BOWMAN: I will pass.
MR. BROWN: Catherine Yoder. You are here? Good. Sorry, I didn't give you much warning.
And then I will get back to you folks.
So, Catherine, welcome.
MS. YODER: My name is Catherine Yoder. I just have a quick comment. It relates to actual performance and execution of the Environmental Impact Statement. I haven't yet come across the name of the independent entity independent of the DOE and LANL who's doing the actual Environmental Impact Statement. I think it's important to disclose this and to know that there is an independent entity who is performing these Environmental Impact Statements. Thank you.
MR. BROWN: Thank you.
Again, let me ask if Evan Roberts, Katy Roberts, or Charles Bowman is available?
Okay. I think we are scheduled through eight o'clock; is that correct, Sachiko?
MS. MCALHANY: Yes.
MR. BROWN: Okay. What we will do is we will take a break now and in case those folks return to speak, or if somebody else decides they would like to

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604-1

604-1 Chapter 8 contains the List of Preparers. This chapter indicates that Leidos (formerly SAIC [Science Applications International Corporation]) was the primary contractor responsible for preparing this *SPD Supplemental EIS* for DOE. In support of this effort, Leidos was provided data by staff from DOE; TVA; Savannah River National Laboratory; LANL; Savannah River Nuclear Solutions, LLC; Shaw AREVA MOX Services, LLC; Pacific Northwest National Laboratory; and Battelle Memorial Institute.

speak, just let me know, and we will reconvene. We will take a break. Thank you.

(Recess taken from 7:30 to 7:48 P.M.)

Mr. BROWN: We do have one person who would like to give a very brief comment. So say your name and then proceed.

MS. TSOSIE: My name is Beata Tsosie Pena. And I just wanted to request that there is an extension given for public comment.

SPEAKER: I'm sorry, I can't hear her.

MS. TSOSIE: I just wanted to request that an extension was given for public comment.

MR. BROWN: Okay. Thanks very much. Would anyone else like to add any comments at this time? Okay, thank you.

(Recess taken from 7:48 to 8:00 P.M.)

MR. BROWN: It is now 8:00, and I'm reconvening the meeting. Noting that there's no additional speakers at this time and we have reached 8:00, which is the designated time to adjourn, this meeting is officially adjourned. Thank you very much.

(Hearing was adjourned at 8:00 P.M.)

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605-1

605-1 In response to requests for additional public hearings and an extension of the comment period, DOE added a public hearing in Española, New Mexico, held on September 18, 2012, to the six meetings that DOE had initially scheduled and extended the comment period through October 10, 2012.

IN RE:
U.S.DEPARTMENT OF ENERGY
DRAFT SURPLUS PLUTONIUM DISPOSITION
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT
PUBLIC HEARING COMMENTS, AUGUST 21, 2012

REPORTER'S CERTIFICATE

I, JANICE J. MURPHEY, RPR, NM CCR #135, DO HEREBY CERTIFY that on AUGUST 21, 2012, the Proceedings in the above-captioned matter were taken before me, that I did report in stenographic shorthand the Proceedings set forth herein, and the foregoing pages are a true and correct transcription to the best of my ability.

I FURTHER CERTIFY that I am neither employed by nor related to nor contracted with (unless excepted by the rules) any of the parties or attorneys in this case, and that I have no interest whatsoever in the final disposition of this case in any court.

JANICE J. MURPHEY, RPR, CCR
New Mexico CCR #135
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U.S. DEPARTMENT OF ENERGY

DRAFT SURPLUS PLUTONIUM DISPOSITION
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

CORRECTED TRANSCRIPT
10/9/2012

PUBLIC HEARING

DATE: August 23, 2012

6:00 P.M.

Courtyard by Marriott Santa Fe
3347 Cerrillos Road
Santa Fe, NM 87507

Homes Brown, Facilitator

PANEL MEMBER:
Sachiko McAlhany, U.S. Department of Energy, National Nuclear Security Administration

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U.S. DEPARTMENT OF ENERGY

SURPLUS PLUTONIUM DISPOSITION
SUPPLEMENTAL ENVIRONMENT IMPACT STATEMENT

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FORMAL COMMENTS FROM PUBLIC HEARING ON AUGUST 23, 2012
Courtyard by Marriott Santa Fe
(Meeting in session at 6:34 P.M.)

MR. BROWN: If folks will take their seats, we will get started with this meeting. They set up some additional chairs in the back row. I think there should be room for everyone.

Good evening. Welcome to this hearing on the Department of Energy Surplus Plutonium Disposition Draft Supplemental Environmental Impact Statement or Draft Supplemental EIS. I hope you had an opportunity to browse the displays and talk with project staff during the just-completed open house. I also want to point out the emergency exits. There is one here, and there is one right out to the side of the doors to the immediate left.

My name is Homes Brown, and I will serve as the facilitator for this evening's meeting. I'm not employed with the Department of Energy, nor an advocate for any party or position. My role this evening is to ensure that the meeting runs on schedule and that everybody has an opportunity to speak.

I will now explain the format and ground rules to assure a timely participation by all. At the registration table, you should have received a copy of

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the slide presentation we are all about to see. It contains information on the Surplus Plutonium Disposition Program and the Supplemental EIS. If you didn't receive a copy, please raise your hand and staff can get one to you. Everyone get one?

There are two parts to the hearing: The information segment and the formal comment segment. The information segment began with the just-concluded, hour-long open house and continues with welcoming remarks by a local site representative. This will be followed by a 25-minute presentation by Sachiko McAlhany, who is the Supplemental EIS Document Manager for the Department of Energy. Ms. McAlhany will discuss the Surplus Plutonium Disposition Program, the content of the Supplemental EIS, the Environmental Policy Act that governs the process, and the contents and schedule for completion of the Supplemental EIS. The formal comment segment will follow the slide presentation.

During this segment, members of the public will provide comments on the Draft SEIS. The court reporter will transcribe your comments verbatim, and they will be included as part of the permanent record. A DOE official will be present to hear your comments, but will not be responding to questions or comments.

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We also have a Spanish language interpreter available, in case anyone wishes to make their comments in Spanish. If you wish to make a comment and have not yet signed up to do so, please add your name to the list at the registration desk. I will call the speakers in the order their names appear on the sign-up sheet; and based on the number of people signing up, each speaker will be provided with a number of minutes in which to complete their remarks. Speakers will not be allowed to yield their time to other speakers.

We will now resume the information segment. I would like to introduce Kevin Smith, Manager of the Los Alamos Site Office. He will offer welcoming remarks and introduce Sachiko McAlhany.

MR. SMITH: Thank you, Mr. Brown.

Good evening everyone. As mentioned, I'm Kevin Smith, and I am a manager of the Los Alamos Site Office for the National Nuclear Security Administration for the Department of Energy, and it's my pleasure to actually welcome you to the NEPA process and the public briefing and comments tonight. We are here to take a look and talk about the Supplemental Environmental Impact Statement, the Surplus Plutonium Disposition Program. And the Los Alamos Site Office, as well as the Los Alamos National Labs, has been supporting

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NNSA's office of Fissile Materials Disposition on developing the Draft EIS that was issued on the 27th of July.

The Los Alamos National Lab has been involved in the technology and associated activities with surplus plutonium for more than a decade, and we've got a number of experts and posters around the room for your review. This is -- tonight is an opportunity to provide public comment. And, first of all, I would like to thank you for committing your time to be here for public comment, and in the interest of time, as the room is a tad bit warm, I would like to go ahead and make a quick introduction to Ms. Sachiko McAlhany. I couldn't pronounce your name even when you worked for me. Sachiko is the Program Manager within the NNSA's Office of Surplus Plutonium Disposition and the Document Manager for this particular effort. Sachiko will be providing an information briefing for you, and without further ado, let me introduce Ms. McAlhany.

(Slide show viewed from 6:40 to 6:59 P.M.)

MR. BROWN: Thank you, Ms. McAlhany.

This concludes the information segment. We will take a five-minute break, so I can review the number of people who have signed up and determine how many minutes each will be allotted. So as soon as we

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return, we will start the public comments on the draft Supplemental EIS. Thank you.

(Recess taken from 6:59 to 7:06 p.m.)

MR. BROWN: If folks will take their seats, we will get started for the public comments section. We have a number of speakers tonight, so if you-all can take your seats. Thank you.

It's now time to begin the formal comment segment. This is your opportunity to provide DOE with your comments on the content of the Supplemental EIS. Our court reporter for tonight is Janice Murphey, who did a fine job up in Los Alamos I should add, who will transcribe your comments.

Let me review a few ground rules for the formal comment period. Please step up to the microphone over there when your name is called. Introduce yourself, providing an organizational affiliation where appropriate. If you have a written version of your statement, please pass that on to the court reporter when you have concluded your remarks.

I will call two names at a time: The first of the speaker, the second of the person to follow. In view of the number of folks who have indicated an interest in speaking tonight, please confine your public comments to three minutes. Again, I apologize

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for that short time frame, but the number of people we have signed up means we're going to run fairly late, and I'm going to make sure that the folks who are at the end of the list who have made the effort to drive here to speak have an opportunity. My experience is if you run too late, you end up losing a lot of people off the end of the list. So I will ask that people please confine their remarks to three minutes.

If your written comments are longer than that, cover your main points and you can submit your written comments to the court reporter. Again, as Sachiko mentioned, all comments count equally in whatever form. So your verbal comments would be counted and any additional comments you add will be counted equally.

Again, let me remind you that Arturo Sandoval is available to provide Spanish language translation. If you would like to utilize his services, let us know. And Arturo is over in the corner -- if you want to raise your hand -- if anybody needs to talk to him.

Sachiko McAlhany of DOE will be serving as the hearing officer during the formal comments segment. She will, however, not be responding to comments or questions. So with that by way of introduction, we will begin our formal comments section.

Our first speaker signed up is David Clark, and

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he will be followed by Greg Mello.
MR. CLARK: Thank you for --
SPEAKER: Who is the timekeeper?
MR. BROWN: I am.
SPEAKER: Do you have a card for individuals that keeps track of the time?
MR. BROWN: Oh, thank you for reminding me. I missed that. I have this -- this is not even hand-lettered. So, yeah, I will hold up when you have a minute left --
MR. CLARK: Also, you missed -- Joe Martz was also the first speaker on the list. But I'm happy to go --
MR. BROWN: Oh, I'm sorry, it got crossed out. And I see -- okay.
MR. CLARK: Shall I go?
MR. BROWN: Yeah. Why don't you go ahead and -- yeah, I see Joe Martz is written in. So Joe will be following you.
MR. CLARK. Okay.
MR. BROWN: Okay. So please.
MR. CLARK: Thank you. So my name is David Clark, and I'm a senior scientist at Los Alamos. I'm here tonight as a citizen and as expert on plutonium science to say that I support the preferred

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alternative. I want to tell you why. There's over 2000 metric tons of plutonium throughout the world today in various forms. Regardless of your views on how that situation came to be, I think we would all agree that these large inventories must be prudently managed for many centuries, and we must secure it against theft and diversion.

The U.S. and Russia have agreed to dispose of 68 metric tons of weapons-usable plutonium as an essential step in reducing the global nuclear danger. Better still, the NNSA proposes to convert 7 metric tons of plutonium currently in weapons into plutonium oxide and MOX fuel as part of this plan. Again, I think we would all agree that that is a good thing.

Now, the NNSA is looking for existing facilities that can do that work, and all of the facilities that have been described in the plan are capable of performing parts of that mission. For Los Alamos, I point out that Los Alamos scientists developed and demonstrated the seminal science and technology concepts for pit disassembly and conversion that would be used by any of the facilities under consideration. It's, therefore, not a new activity for Los Alamos. We're currently disassembling pits and converting them into oxide using that science and technology today, 60

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miles from here. Los Alamos already has the work force with the appropriate depth, skill, and knowledge to support that effort, and I, therefore, support continuing that portion of that important plutonium disposition mission at Los Alamos.

The second part of the Supplemental EIS explores disposal of plutonium once you get it extracted from the weapon. The options include vitrification and storage at the DWPF, burial at the WIPP site, or burning as MOX fuel in a reactor. From my view, storing plutonium glass in ceramic -- in canisters under ground will not reduce global inventories of plutonium. The only one of those options that will destroy plutonium, through either fission burning or making it unusable for weapons by altering the isotopic mix, is by using MOX fuel in a reactor.

Okay. MOX is a proven fuel. It's been used for over 30 years around the word. It gives about a 60 percent reduction in plutonium inventory after 2 irradiation cycles. This is well-known science. And because of that, I support reducing global plutonium inventories, and I support conversion to MOX fuel as the preferred disposition option for this country. Thank you for the opportunity.

MR. BROWN: Thanks. And, Joe Martz, sorry

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700-1 **700-1** DOE and TVA acknowledge the commentor's opinion.

about denying you the opportunity to go first.

MR. MARTZ: Thank you.

Good evening. My name is Joe Martz. I'm a plutonium scientist at Los Alamos speaking tonight as a private citizen. I have spent a portion of my career engaged with the technical challenges of nuclear weapon dismantlement, specifically pits. I was one of the cofounders of the ARIES technology from which this plutonium disposition proposal is based. The science of pit management is nontrivial, and the techniques we developed were recognized in 1995 with an R & D award, sometimes called the "Oscars of Technology." Ours was the first pure nuclear weapons technology ever presented with such an award, a recognition of the technical creativity employed in overcoming the significant challenges in the recovery of plutonium from pits.

I support the preferred alternative presented here. A portion of the work under the preferred alternative will be conducted at Los Alamos, much of it by my very colleagues. These men and women are exceptional; I know them well. They have devoted decades to ensuring the safe and environmentally responsible dismantlement of pits. Given these technical challenges, it is essential that this

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701-1 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

expertise be available, along with the facility and capability to ensure the safe recovery of plutonium from pits.

I also support the recommendation that excess plutonium be used in the production of mixed uranium/plutonium oxide fuels, called "MOX," for use in nuclear power production. I note this is the only alternative among those proposed which truly destroys the plutonium, rendering it unusable in weapons. Given the challenges of nonproliferation, the example set by the United States in irreversibly destroying plutonium by burning it in reactors is an important symbol and message to the rest of the world of our commitment to nuclear disarmament.

Finally, I would like to correct a common misconception related to the preferred alternative. Plutonium exists in every single nuclear reactor in the world. It builds up naturally as a result of nuclear burn-up. In fact, roughly half of the power that is generated in a commercial light-water reactor derives from the fission of plutonium. Another way of saying this is to note that 10 percent of the electricity generated in the United States comes from plutonium. Think about that: 1 in 10 light bulbs in this very room is lit by the burning of plutonium. The plutonium

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from MOX poses no additional risk within a reactor compared to ordinary reactor fuel. Thank you for providing this opportunity to comment on a critical program of relevance to all of us here in New Mexico.

MR. BROWN: Okay. Greg Mello is next. Greg will be followed by Peter Neils.

MR. MELLO: Thank you, Joe. We'll come to you for technical advice, but we disagree about the engineering, the politics, and the practicality, and so we think we're more data driven and more scientific in the big picture.

We think -- I have to pause in this plutonium disposition process, I think, and get outside the box, as I said on Tuesday, and look again, try to dissociate ourselves with some costs and look at things from this point forward.

The data suggested MOX is not a very practical solution. MOX has not been a very successful technology. There is no -- there is no data out there that suggests that -- that is suggestive, with high certainty, MOX can be a plutonium disposition pathway. Yes, with risk; yes, speculative; but I also want to point out that there is no actual disposition in this pathwaywe're going.

We can see as far as making the MOX fuel, but in

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702-1 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. Use of surplus plutonium as MOX fuel would render the plutonium into a used fuel form that is not readily usable for nuclear weapons.

702-2 Disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts per NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors (see Appendix I, Section I.2).

As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel. In addition, as discussed in Appendix B, Section B.1.4, of this *SPD Supplemental EIS*, DWPF canisters containing vitrified plutonium with HLW would be stored in S-Area at SRS; these DWPF canisters would be managed in the same manner as other DWPF canisters containing HLW. DOE has terminated the program for a geologic repository for used nuclear fuel and HLW at Yucca Mountain, Nevada. Notwithstanding the decision to terminate the Yucca Mountain program, DOE remains committed to meeting its obligations to manage and ultimately dispose of used nuclear fuel and HLW. For further discussion, refer to Section 2.7, Topic A, of this CRD.

the little diagram of commercial nuclear reactors, there were no -- there are no commercial nuclear reactors that want this at the moment, and beyond that, there is no repository. So what we have is a plan for transforming plutonium, not disposing -- not disposition. And in the case of many of the antinuclear activists, like myself, we have to ask ourselves, are we -- do we actually have a disposition pathway ourselves, or are we actually just talking about storing plutonium, which is another thing? Also, do we actually have a disposition pathway?

For Joe, the plutonium is a resource. I think that we need to be very clear that it's not -- that it's a waste, and that there's a really big difference between plutonium that is produced in nuclear reactors in situ and the plutonium we would undertake at tremendous costs -- tens of billions -- to put into those nuclear reactors. The reactor owners don't want it, I remind you.

MR. BROWN: About a minute left.

MR. MELLO: A minute? We know that -- we're not too confident that DOE and NNSA are listening very closely to these remarks, so what we do with the information we have is substantially our own to figure out. We're not under the illusion that our comments

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702-3 All comments were considered equally in preparing this *Final SPD Supplemental EIS*. Responses to comments are provided in this CRD. Public comments are one of the factors that may be considered by the decisionmaker in formulating the ROD for this *Final SPD Supplemental EIS*.

here are going to have the -- that they will be read carefully by the decision-makers. We don't think they are.

We don't think that -- I want to suggest that we look at the question of whether we need to take apart pits. We don't think -- we think that we might not need to take apart pits. Joe has, I think, co-authored a paper with maybe 30 ways to demilitarize pits -- maybe chemical ways, mechanical ways, physical ways. There might be ways -- I think we should reopen the question of whether we can directly dispose of demilitarized pits as waste, directly dispose of them in the ground. And the spent-fuel standard that has been driving this, we think, is the -- was a mistake. Am I done?

MR. BROWN: Yeah. If you can wrap things up.

MR. MELLO: That's the -- it would be difficult to find a set of disposition pathways which were riskier, that involved more safety risks, more security risks, took a longer time, had more -- or are more harebrained in the end, and for these reasons, cost more money. So I would suggest that the way that this has come about is substantially because of parochial interest and contractor interest, not

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702-4 DOE believes that the alternatives analyzed in this *SPD Supplemental EIS* meet the goals of the Spent Fuel Standard. The Spent Fuel Standard is a term coined by the National Academy of Sciences and modified by DOE denotes the main objective of alternatives for the disposition of surplus weapons-usable plutonium: that such plutonium be made roughly as inaccessible and unattractive for weapons use as the much larger and growing stock of plutonium in civilian spent (used) nuclear fuel.

Direct disposal of demilitarized pits are not considered to render the plutonium into a form that would ensure that it can never again be readily used in nuclear weapons.

Under the PMDA (USA and Russia 2000), which entered into force in 2011, the United States and the Russian Federation agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. Russia plans to irradiate its MOX fuel in fast reactors (BN-600 and BN-800) under certain nonproliferation conditions. To that end, Russia has successfully irradiated 21 prototypic MOX fuel LTAs in its BN-600 fast reactor; completed over 50 percent construction of the BN-800 fast reactor; completed formal siting of its MOX fuel fabrication facility; established an integrating contracting office for implementation of PMDA activities; and actively participated with the United States and IAEA in negotiating a verification agreement that will enable IAEA to independently verify that the objectives of the PMDA are met. More information on the PMDA is located on the U.S. State Department website at www.state.gov/r/pa/prs/ps/2010/04/140097.htm.

national interest, and needs to be reexamined from the beginning. Thank you.

MR. BROWN: And Peter will be followed by Pam Gilchrist.

MR. NEILS: My name is Peter Neils. I'm president of the Los Alamos Study Group. And Greg and I didn't compare notes, and probably the material he didn't get the chance to present would not be duplicative of the material that I have prepared; however, there's a couple of points I want to touch upon and will only take a minute or two.

And it appears to us that the NNSA selected the most expensive alternative of all of the alternatives, and that seems to suggest a cavalier attitude toward the American taxpayer at a very difficult economic time in our nation's history. And that's a problem; that arrogance is a problem.

From our perspective, the most cost-effective option is a deep geologic burial. And that sentiment is echoed by some very highly regarded scientists, including Dr. Frank von Hippel, who's the co-chair of the International Panel on Fissile Materials; Dr. Richard Garwin, who's an IBM Fellow Emeritus at the Thomas J. Watson Research Center; and Dr. Allison MacFarlane, who is now the chair of the Nuclear

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703-1 Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

703-2 Direct disposal of demilitarized pits is not considered to render the plutonium into a form that would ensure that it can never again be readily used in nuclear weapons.

Under the PMDA (USA and Russia 2000), which entered into force in 2011, the United States and the Russian Federation agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. Russia plans to irradiate its MOX fuel in fast reactors (BN-600 and BN-800) under certain nonproliferation conditions. To that end, Russia has successfully irradiated 21 prototypic MOX fuel LTAs in its BN-600 fast reactor; completed over 50 percent construction of the BN-800 fast reactor; completed formal siting of its MOX fuel fabrication facility; established an integrating contracting office for implementation of PMDA activities; and actively participated with the United States and IAEA in negotiating a verification agreement that will enable IAEA to independently verify that the objectives of the PMDA are met. More information on the PMDA is located on the U.S. State Department website at www.state.gov/r/pa/prs/ps/2010/04/140097.htm.

Regulatory Commission. So we do need to back up and reflect on our options in terms of fiscal reality. Thank you.

MR. BROWN: Thanks.

Pamela Gilchrist will be followed by Dan Rice

MS. GILCHRIST: MOX is not a viable option because of its costs, dangers, and the need to make changes to the reactors. Recently required MOX testing and then converting plutonium into MOX fuel would be many billions of dollars, while immobilizing the material would cost a few billion. The dangers are real: Look at the situation at the No. 3 reactor in -- at Fukushima. MOX is far more dangerous than enriched uranium. 1 milligram of MOX is as deadly as 2 million milligrams of normal enriched uranium. Only a small percent of MOX is used in the fuel cycle in a reactor, but it will generate high-level contamination throughout the fuel -- the fuel rods. We've heard tonight that the mission of disassembly of the pits and mixing the plutonium into MOX for nuclear reactor fuel is to ensure that the plutonium can never be used again, but the 90-plus percent of the plutonium not burned in the reactor fuel rods leaves us with a trillion-pound elephant for secure disposition.

William Lawless, an expert on radioactive waste,

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704-1 As described in Chapter 4 and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, risks to the public are expected to be minor from normal operations, potential accidents, and transportation under any proposed alternative. As summarized in Chapter 4, Section 4.1.2, and described in detail in Appendices I and J, the risks associated with both normal operations and accidents for a partial MOX fuel core and full LEU fuel core are expected to be comparable. The analysis in this *SPD Supplemental EIS* indicates that only minor modifications would be needed at commercial nuclear reactors to use MOX fuel.

Cost, schedule, technical viability, worker and public safety, environmental impacts, security, and the ability to carry out international agreements are among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

704-2 Appendix J, Section J.3.3.3, of this *SPD Supplemental EIS*, describes the NRC recommendations developed in response to the March 11, 2011, accident at the Fukushima Dai-ichi Nuclear Power Station in Japan and the subsequent actions that TVA has taken to further reduce the likelihood and severity of accidents at its nuclear plants. For further discussion, refer to Section 2.5, Topic C, of this CRD.

See the response to comment 704-1 regarding the risks of MOX fuel use in commercial nuclear power reactors.

704-3 Footnote 3 in Chapter 2 of this *SPD Supplemental EIS* describes a 60 percent reduction in plutonium-239 after irradiation for two cycles in a domestic commercial nuclear power reactor. As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel, by storing it in the reactor's used fuel storage pool or placing it in dry storage. The use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would displace LEU fuel that otherwise would have been used to power the nuclear power reactor. Use of MOX fuel could increase used nuclear fuel generation by 8 to 10 percent for TVA's Browns Ferry and Sequoyah Nuclear Plants, and from 2 to 16 percent for generic reactors during the period MOX fuel could be used at a reactor. It is expected that increases of this magnitude would be managed within the reactor's normal planning for storage of its used fuel.

says: "MOX being used as a way of controlling weapons proliferation is a myth. You will decrease the amount of plutonium minutely, but you will increase the amount of waste inside the fuel rod greatly."

LANL is currently not meeting its waste cleanup schedule, and its facilities do not meet seismic standards in case of a severe earthquake. Bringing thousands of plutonium pits to LANL would further endanger public health, safety, and divert resources away from cleanup. Doubling the amount of TRU waste coming from Savannah River will exceed WIPP's capacity. As a result, TRU waste from LANL and other sites might not fit into WIPP.

We need to immobilize plutonium so that it can be safely stored until new disposition options are available. Thank you for the opportunity.

MR. BROWN: Thank you, Ms. Gilchrist. Just, before you start -- if folks are going to carry on conversions -- and I'm talking about you-all in the corner there -- folks, if you're going to be talking, talk outside.

Okay. And Jay Coghlan, I think, will follow you.

MR. RICE: My name is Dan Rice. I'm a citizen of Santa Fe, and I'm not one of the esteemed

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704-4 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. Potential consequences of postulated accidents can be found in Tables 4–6 through 4–8; however, the chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD. Section D.1.5.2.11 describes the completed and planned seismic upgrades to PF-4. To be conservative, the accident analysis in this *SPD Supplemental EIS* considers the current state of PF-4 without future seismic upgrades.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

Disposal of CH-TRU waste under all alternatives evaluated in this *Final SPD Supplemental EIS* would be in accordance with the WIPP waste acceptance criteria and, with the exception of a scenario that would use only POCs for disposal of 13.1 metric tons (14.4 tons) of surplus plutonium under the WIPP Alternative, would remain within WIPP's disposal capacity (see Chapter 2, Section 2.6.2; Chapter 4, Section 4.5.3.6.3; and Appendix B, Sections B.1.3 and B.3). All disposal of CH-TRU waste at WIPP would be done in accordance with the WIPP waste acceptance criteria, and would thus be consistent with its mission. For further discussion, refer to Section 2.2, Topic B, of this CRD.

DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

colleagues that I have been listening to up here, who have a considerable amount of expertise, both from the Lab and from the antinuclear side. I'm just a citizen who drinks the water and breathes the air and hears about these hearings in -- you know, without a lot of time to consider these issues as seriously as the experts have. But I have -- it doesn't take more than a lot of, you know, standard common sense to recognize that the mesas up on the edge of a dormant volcano are not the place to have a nuclear weapons facility. It's great that they had a secret location in the '40s to do this work, but it's high time that we move that facility off the mesa and into a much more secure location.

Metalization of plutonium into reactor fuel, from what I'm gathering from the experts that have spoken here, sounds like a very poor technology for managing this waste product, and I don't support the preferred alternative as a consequence.

I do support reopening the discussion of immobilization of plutonium or other options for storing this material until better technology exists for its disposition, and certainly bringing more plutonium to the mesas on the Jemez, when we have all seen the potential disasters narrowly averted in recent

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705-1 DOE recognizes that LANL is in the vicinity of active geologic faults and potential volcanic activity and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades, as deemed necessary. For further discussion, refer to Section 2.3, Topic B, of this CRD.

705-2 As described in Appendix B, Section B.1.1.2, of this *SPD Supplemental EIS*, MOX fuel is fabricated from plutonium oxide, not plutonium metal. As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. For further discussion, refer to Section 2.5, Topic B, of this CRD.

Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In the *Draft SPD Supplemental EIS*, the MOX Fuel Alternative was DOE's Preferred Alternative for surplus plutonium disposition. DOE's preferred option for disposition of surplus non-pit plutonium that is not suitable for MOX fuel fabrication was disposal at WIPP. DOE's preferred option for pit disassembly and conversion of surplus plutonium metal, regardless of its origins, was to use some combination of facilities at TA-55 at LANL and K-Area, H-Canyon/HB-Line, and MFFF at SRS, rather than to construct a new stand-alone facility.

In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

705-3 As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS*. This *SPD Supplemental EIS* evaluates alternatives, including immobilization, for disposition of an additional 13.1 metric tons (14.4 tons) of surplus plutonium, as well as alternatives to PDCF for pit disassembly and conversion using existing facilities at SRS and LANL.

time, is absolutely an unacceptable option. Thank you.

MR. BROWN: Okay. Jay is next. He'll be followed by Don Hancock.

MR. COGHLAN: So I'm Jay Coghlan with Nuclear Watch New Mexico, and I appreciate my 3 minutes to comment on what's taken the DOE 15 years to screw up. But, you know, to be objective about it and demonstrate that I'm nondiscriminatory, I will note that the Russians have screwed it up too.

And then starting, you know, with the basic premise of MOX, you know, it's a weird game of poker, where you're forced to bid on the hand that's down on the table at the moment, and by that I mean to point to the fact that we're not going to revisit the fundamental decision to use MOX.

And I recall going back to -- now, this is both an American and Russian thing. Now, both of our countries have agreed, respectively, to dispose of 34 metric tons of plutonium and now we're adding more. And all of that is a good thing, but I'm going to point out that it was left up to each country which method of disposal to choose. And I recall a senior DOE official back in 1999 who was at Los Alamos at the time, Bob Degrasse. I remember him saying that, "We Americans have to do MOX because the Russians are going to do

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As described in Chapter 4 and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, environmental impacts are generally expected to be minor, no LCFs are expected, and there would be little offsite impact on the public from normal operations of surplus plutonium disposition facilities at LANL. As described in Chapter 4, Section 4.5, operation of surplus plutonium disposition facilities would contribute little to cumulative effects, including health effects among the offsite population. For further discussion, refer to Section 2.3, Topic A, of this CRD.

MOX." And then the following year I was in Moscow, visiting with the equivalent of the Russian Nuclear Commission; and, lo and behold, they're saying, "We have to do MOX because the Americans are going to do MOX."

So, basically, I think the whole MOX program is a house of cards built on circular reasoning and is a nuclear boondoggle whose primary mission is to enrich the contractors. And, oddly enough, in this case it's not even American contractors. It's going to be the French through AREVA.

And then it's nice to hear the LANL folks talk, and, you know, I believe their sincerity about the need to dispose of weapons-grade plutonium. There's no argument about that. But I would assert that the MOX program is actually a proliferating program. And the reason I do that, just for starters, is kind of three-fold. But, first of all, through MOX, we're going to introduce plutonium to the global commercial market; and, you know, inherently, that's not a good idea. And then in an attempt to appeal to, you know, hard-core national security concerns, I would point out you can't trust the Russians, and they're going to burn MOX in a regular reactor which, depending on how the reactor is configured, can produce yet more plutonium.

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706-1 The use of MOX fuel is consistent with U.S. nonproliferation policy and international nonproliferation agreements. Use of MOX fuel in commercial nuclear power reactors would render surplus plutonium into a form that is not readily usable for nuclear weapons. For further discussion, refer to Section 2.4, Topic A, of this CRD.

Under the PMDA (USA and Russia 2000), which entered into force in 2011, the United States and the Russian Federation agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. Russia plans to irradiate its MOX fuel in fast reactors (BN-600 and BN-800) under certain nonproliferation conditions. To that end, Russia has successfully irradiated 21 prototypic MOX fuel LTAs in its BN-600 fast reactor; completed over 50 percent construction of the BN-800 fast reactor; completed formal siting of its MOX fuel fabrication facility; established an integrating contracting office for implementation of PMDA activities; and actively participated with the United States and IAEA in negotiating a verification agreement that will enable IAEA to independently verify that the objectives of the PMDA are met. More information on the PMDA is located on the U.S. State Department website at www.state.gov/r/pa/prs/ps/2010/04/140097.htm.

Under the PMDA, Russia must operate its fast reactors as plutonium burners, not breeders; cannot reprocess any of its used fuel during the life of the Agreement; and, after the agreement expires, can only reprocess under an international monitoring regime and only for commercial purposes. Operations of the Russian fast reactors will be monitored and verified by IAEA.

So it doesn't fit the bill there.

And then I would note -- you know, I'm not just a naysayer. I do believe that the National Nuclear Security Administration and the labs have good nonproliferation programs, but MOX, as a so-called nonproliferation program, consumes 40 percent, around that, of the NNSA's nonproliferation budget. So in an era of increasing fiscal constraints, that's just entirely the wrong way to go.

So, I got through the first 4 of perhaps my 20, but, again, I got 3 years to comment -- or 3 minutes to comment on 15 years to screw it up. I could take 3 years; I mean, I'm capable of doing that. I will try to abbreviate the remaining comments.

MR. BROWN: Very, very quickly, Jay. I've got a lot of speakers to go.

MR. COGHLAN: On the American side of things, we have yet to have MOX fuel pass the fuel cycle -- a full cycle of fuel tests, both for pressurized-water reactors and for boiling-water reactors.

The business of Los Alamos reducing the pits to plutonium oxide, the public is not aware of the scale involved here, or the potential scale. And you have to be a nut like me and go back into the weeds and find

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706-2 Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

706-3 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

It is important to note that, whether using reactor- or weapons-grade plutonium, the total quantity of fissile plutonium within a fuel element is adjusted so that it represents only small fraction of the material within the fuel rod (currently planned to be approximately 4 to 5 percent fissile plutonium within each MOX fuel rod).

706-4 Transportation risks are analyzed for all alternatives proposed in this *SPD Supplemental EIS*, including the threat of theft and diversion of radioactive materials. In developing the proposed action and reasonable options for pit disassembly and conversion and surplus plutonium disposition, DOE has determined that transportation of plutonium materials from the Pantex Plant to SRS or LANL cannot be avoided. The alternatives evaluated in this *SPD Supplemental EIS* were developed recognizing that plutonium materials are currently stored at multiple DOE sites and individual sites have their own specific capabilities with respect to pit disassembly and conversion and plutonium disposition. Appendix E of this *SPD Supplemental EIS* presents the transportation analysis methodology, assumptions, and results. The packaging to be used would meet all applicable regulatory requirements, as summarized in Appendix E, Section E.3. As presented in Section E.12, for all alternatives, it is unlikely that the transportation of radioactive material and waste would cause an additional fatality as a result of radiation, either from incident-free operation or postulated transportation accidents.

out from the 2008 LANL site right there, we're talking about potentially up to 500 pits per year being transported from Pantex to Los Alamos. Now, that's ridiculous.

My final comment is, you know, to invoke a cliche: Why did the thief rob the bank? The answer is: Because that's where the money is. Put the pit conversion facility at Pantex, where there's 20,000 pits, crush 'em, send them to a future geologic repository and have done with it, instead of, you know, having a proliferating program and further enriching the nuclear contractors, which is not necessary. So thank you.

MR. BROWN: Okay. Don is next, and Joni Arends will be following Don.

MR. HANCOCK: Good evening. I'm Don Hancock from Southwest Research and Information Center, a 41-year-old organization -- nonprofit organization that's worked on nuclear waste and dealt with literally dozens of DOE Environmental Impact Statements over the years. We have made many comments already in the scoping process. Unfortunately, the draft document doesn't represent either reality or a responsible response to the kind of comments that we've made, because three minutes isn't enough for the kind of

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706-5 As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) considered numerous alternatives (technologies and locations) for pit disassembly and conversion and disposition of surplus plutonium; those alternatives included locating facilities at the Pantex Plant and immobilization and direct disposal of the entire surplus plutonium inventory as waste. DOE selected an approach for disposition of some of the plutonium declared surplus (68 FR 20134). As discussed in Section 2.2, Topic A, of this CRD, DOE's prior disposition decisions are not addressed in this *SPD Supplemental EIS.* DOE is, however, reconsidering the decision to construct and operate a stand-alone PDCF and is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. All of the action alternatives evaluated in this *SPD Supplemental EIS* are considered to render surplus plutonium into a proliferation-resistant form or result in proliferation-resistant disposal.

As discussed in Chapter 1, Section 1.7, of this *SPD Supplemental EIS*, pits are currently stored at the Pantex Plant. In the *SPD EIS* (DOE 1999), DOE analyzed and dismissed locating pit disassembly and conversion activities at the Pantex Plant (see 65 FR 1608) because it possesses neither the experience nor the infrastructure needed to support plutonium processing. DOE is reconsidering options for pit disassembly and conversion capabilities only at locations with existing plutonium processing capabilities (i.e., LANL and SRS).

With respect to the 13.1 metric tons (14.4) tons of surplus plutonium addressed in this *SPD Supplemental EIS*, DOE is considering alternatives for its disposition, including preparation into MOX fuel, immobilization, vitrification with HLW, and preparation for potential disposal at WIPP. DOE does not believe that an alternative involving crushing the plutonium pits and placing the result into containers for geologic disposal would be a reasonable alternative. Pit crushing would not change the chemical form of the plutonium metal and, therefore, would present a criticality risk and would not be as proliferation-resistant as the other alternatives considered in this *SPD Supplemental EIS.*

detailed discussion that needs to be had, if the National Nuclear Security Agency were really concerned about public comment and understanding people.

There's only time for me to touch on two points. So the first issue is: In our scoping comments we've pointed out that the Department of Energy is not complying with the National Environmental Policy Act. Sachiko spent some time talking about the law. She should have talked about the noncompliance, which we have pointed out numerous times in our comments.

This process actually started with this document, the 1996 Programmatic Environmental Impact Statement, to say what it is, what should we think about, what should we be doing with the surplus plutonium. This document -- this is only Volume 1. I didn't bring them all along, but I have them all. This document didn't consider that WIPP was appropriate for any of the disposition. So the program says: Can't do WIPP. The program says: LANL is not appropriate for the Pit Disassembly and Conversion Facility. Huh.

The programmatic document doesn't consider the need for new geologic repository sites for this, as several people have already mentioned tonight, so that's not included in the program. And also not included in the program was the need for long-term

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707-1 cont'd

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707-1 The format used for the public hearings is a standard NEPA public meeting format that has been implemented successfully by DOE and other Federal agencies for many years. The primary reason for holding the public hearings was for DOE to gather public input on the *Draft SPD Supplemental EIS*. DOE needed to ensure that this primary goal was achieved. Therefore, it was necessary to impose a time limit on public comments due to the number of meeting attendees and limitations on the amount of time available. As described in the materials available at the public hearings, DOE considers all comments received, and all comments have equal weight, whether written or oral. Commentors were also provided the opportunity to submit comments via U.S. mail, fax, and email. Despite the stated closing date of the comment period, DOE considered all comments received on the *Draft SPD Supplemental EIS*, including those received after the close of the comment period. This CRD provides responses to all comments received. Public comments are one of the factors that may be considered by the decisionmaker in formulating the ROD for this *Final SPD Supplemental EIS*.

707-2 DOE previously considered a wide range of disposition alternatives in Chapter 2, Section 2.1.4, of the *Storage and Disposition PEIS* (DOE 1996). Construction and operation of a new geologic repository for surplus plutonium is similar to those disposition alternatives considered in the *Storage and Disposition PEIS*. In the *Storage and Disposition PEIS* ROD (62 FR 3014), DOE announced its decision to pursue a dual-path strategy for disposition that would allow immobilization of some or all of the surplus plutonium for disposal in a geologic repository, as well as fabrication of some surplus plutonium into MOX fuel for irradiation in existing domestic commercial nuclear power reactors, with subsequent disposal of the used fuel in a geologic repository. DOE is not revisiting the decisions made in the ROD for the *Storage and Disposition PEIS* (62 FR 3014).

As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel, by storing it in the reactor's used fuel storage pool or placing it in dry storage. The use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would displace LEU fuel that otherwise would have been used to power the nuclear power reactor. Use of MOX fuel could increase used nuclear fuel generation by 8 to 10 percent for TVA's Browns Ferry and Sequoyah Nuclear Plants, and from 2 to 16 percent for generic reactors during the period MOX fuel could be used at a reactor. DOE expects that increases of this magnitude would be managed within the reactor's normal planning for storage of its used fuel.

storage, 50-years-plus, of the surplus plutonium before we're ever going to get to disposition. So the current program is not reflected in this document.

What does that mean? As a legal matter, something's wrong. That's not a legal way of going, so we shouldn't even be talking about a Supplemental EIS. We need to go back and redo this document and start over with what the program is now, and what we should all be talking about is what the program should be, including some of the things that have been mentioned tonight.

So Conclusion 1 is the draft document that we're here to talk about doesn't address any of these fundamental, technical, legal flaws; and, therefore, a final -- if this draft goes to final, it will be, by definition, an illegal, inadequate document that is not the basis for anything. DOE should stop this process that we're currently doing, go back and start over with the programmatic document. That's Conclusion 1.

Number two, the idea of using WIPP -- as I said, this document said, No way. So let's -- this was 1996, before WIPP was even open. WIPP opened in 1999. So let's talk about the performance of WIPP and whether WIPP actually would fit in any of this.

MR. BROWN: You have 1 minute.

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As described in Appendix B, Table B–2, of this *SPD Supplemental EIS*, 40 years of storage of surplus non-pit plutonium is analyzed under the No Action Alternative. Storage for fewer years is analyzed under the action alternatives. DOE's alternatives for surplus plutonium disposition would complete these activities within the 50-year storage period previously analyzed.

DOE does not agree with the commentor's opinion about DOE's compliance with NEPA or about the need to a new programmatic NEPA document. In this *SPD Supplemental EIS*, DOE evaluated the potential environmental impacts of a range of reasonable alternatives for the disposition of 13.1 metric tons (14.4 tons) of surplus plutonium, in accordance with the requirements of NEPA. As described in Chapter 2, Section 2.4, additional alternatives were considered but dismissed from detailed evaluation. This *SPD Supplemental EIS* supplements the *SPD EIS* (DOE 1999), which tiers from the *Storage and Disposition PEIS* (DOE 1996). These parent documents considered additional alternatives that do not need to be considered in this *SPD Supplemental EIS*. The *Storage and Disposition PEIS*, *SPD EIS*, supporting supplement analyses, and decisions announced in the related RODs remain valid and, in accordance with CEQ and DOE NEPA regulations, do not need to be updated before this *Final SPD Supplemental EIS* can be issued. For further discussion, refer to Section 2.1, Topic A, of this CRD.

MR. HANCOCK: The DEIS, the draft document, is fundamentally inaccurate when it talks about WIPP. It doesn't talk about the fact that WIPP is failing its mission to handle remote-handled waste, and that it doesn't have the practical capacity to handle this surplus plutonium that we're talking about, none of which, by the way, is in the WIPP inventory now. So if plutonium is converted, brought to WIPP, that means one of two things: Either waste from Los Alamos and other places that is supposed to come to WIPP won't come, and what happens then? That needs to be analyzed. Or they will have to change the law to expand WIPP, which is also not something that should be done.

As a practical matter, therefore, the idea that WIPP could handle up to the 6 metric tons -- by the way, the document admits it won't handle the 13.1 metric tons -- the idea that WIPP could practically handle it, is inaccurate. It's also inaccurate to think that the law that limits WIPP to 6.2 million cubic feet of waste requires WIPP to hold that much waste. That's not what the law said. WIPP is a, quote, pilot plant. What does that mean? Limited mission, limited amounts of waste.

Congress knew in 1992, when they passed the WIPP

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707-3 In response to comments on the *Draft SPD Supplemental EIS*, DOE expanded the WIPP Alternative to include potential disposal of all 13.1 metric tons (14.4 tons) of the surplus plutonium for which a disposition path is not assigned. As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative using POCs) of the unsubscribed WIPP disposal capacity. If FFTF fuel can be disposed directly and criticality control overpacks are used instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative would use 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

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707-4 See the response to comment 707-2 regarding the need for more geologic repositories.

Land Withdrawal Act, there was the need for more geologic repositories. That is even more the case now. So they have to analyze the option of other disposition, other geologic repositories. WIPP won't work now as it's currently operating, and it won't work for this kind of expansion. Thank you.

MR. BROWN: Thank you very much.

Don forgot to wind his watch, so it runs a little slow. Thanks. Joni is next and Floy Barrett will follow.

MS. ARENDS: Good evening. I'm Joni Arends with Concerned Citizens for Nuclear Safety. If anybody doesn't have a comment, I would like for the letters from Representative Lujan and Senators Bingaman and Udall to be read into the record, asking, number one, for a hearing in Taos and in Española. And Representative Lujan asked for an extension of time for this smorgasbord of options that are being presented to us.

MR. BROWN: Let me stop you. You have those letters?

MS. ARENDS: Yes.

MR. BROWN: Okay. So you can --

MS. ARENDS: I gave them to the reporter --

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707-5 See the response to comment 707-3 regarding WIPP's capabilities.

MR. BROWN: Wonderful. Thank you.
MS. ARENDS: -- and asked that they be submitted into the record.
MR. BROWN: That's fine.
(Exhibits 1 and 2 made part of the record.)
MS. ARENDS: So with that, I will say CCNS contends that the Department of Energy and National Nuclear Security Administration has violated the National Environmental Policy Act, as Don has described, as this process and the Draft SEIS disclose that the agencies have dropped the dual-path approach to surplus plutonium disposition by fiat, outside the public NEPA process. Neither the public nor the federal and state agencies participated in an open and informed process concerning this significant decision that supports the entire Draft SEIS for this project. The DOE and NNSA failure to go forward with construction and operation of the facilities to immobilize and treat as waste the surplus plutonium, while going forward with the Shaw-AREVA mixed-oxide, or the MOX fuel production facility at the Savannah River Site -- and you can see a photo over there -- and the commitment of major federal resources to MOX fuel fabrication as the preferred option at the expense of the immobilization-as-waste option for surplus

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708-1 DOE does not agree with the commentor's opinion about DOE's compliance with NEPA. DOE believes that the decision to prepare this *SPD Supplemental EIS* complies with CEQ and DOE regulations and guidance. For further discussion, refer to Section 2.1, Topic A, of this CRD.

plutonium. The DOE and NNSA made and carried out the decision, despite the fact that the agencies knew, or should have known, that the immobilization and treatment as waste of the surplus plutonium can be accomplished more rapidly, at less cost, and with less environmental and occupational and public health and safety risks than utilization of surplus plutonium as MOX fuel for domestic nuclear power reactors.

Finally, there's no basis in the record of this process that supports the notion that the public and relevant state and federal agencies were informed that WIPP and LANL were included in it. The prior record of this NEPA process did not disclose that DOE and NNSA intention to utilize these facilities in relation to surplus plutonium disposition.

For these reasons, CCNS contends that the entire Draft SEIS is flawed and that a new Programmatic -- as Don said, Programmatic EIS must be redone in order to offer the public and relevant state and federal agencies real choices in meaningful and informed participation in this decision-making process.

CCNS, therefore, requests that DOE and NNSA withdraw the current Draft SEIS. It is essential for the DOE and NNSA to reinitiate the Programmatic EIS process in order to reopen both options for public and

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708-2 As described in Chapter 4, Section 4.1.2, and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, risks to the public are expected to be minor from both normal operations and potential accidents at the evaluated plutonium disposition facilities and commercial nuclear reactors under any proposed alternative.

Cost, schedule, technical viability, worker and public safety, environmental impacts, security, and the ability to carry out international agreements are among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

708-3 The 2010 amended NOI (75 FR 41850) described the inclusion of a WIPP Alternative, and the 2012 amended NOI (77 FR 1920) described the inclusion of options for pit disassembly and conversion at LANL.

708-4 DOE does not agree with the commentor's opinion about the need for a new programmatic EIS on surplus plutonium disposition. See the response to comment 708-1 regarding the NEPA process for this *SPD Supplemental EIS*, as well as the responses for comments 708-2 and 708-3.

state and federal agency review and examination prior to making a final decision in this matter. CCNS incorporates by reference the comments of the Natural Resources Defense Counsel, Southwest Research and Information Center, the Alliance for Nuclear Accountability, TEWA Women United, Honor Our Pueblo Existence, the George WAND Group and Nuclear Watch New Mexico. Thank you.

MR. BROWN: Thank you.

Floy Barrett is next, to be followed by J.K. -- I believe it's Frenzel?

MR. FRENKEL: It's Frenkel.

MS. BARRETT: My name is Floy Barrett, and I live in Albuquerque, New Mexico, and I'm here as a member of Citizens for Alternatives to Radioactive Dumping and Southwest Network Research and Information Center. And I have just a few short things here, and some of them have already been stated, but I think they bear restatement.

Why more plutonium waste should not come to LANL: One, LANL facilities do not meet seismic standards in case of a severe earthquake. Bringing thousands of plutonium pits to LANL would further endanger public health and safety.

LANL has a mission to clean up TRU and low-level waste

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709-1 As described in Chapter 4 and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, risks to the public are expected to be minor from both normal operations and potential accidents under any proposed alternative at LANL. The accidents evaluated include those that could occur due to natural phenomena such as earthquakes. In this regard, Chapter 3, Section 3.2.2, describes geology and soil conditions at PF-4 at LANL, including the location of faults and a discussion of seismic hazards. Appendix D, Sections D.1.5.2.11 and D.2.9, provide more-detailed information on accidents at PF-4, including natural phenomena hazards such as earthquakes. Section D.1.5.2.1.1 describes the completed and planned seismic upgrades to PF-4. To be conservative, the accident analysis in this *SPD Supplemental EIS* considers the current state of PF-4 without future seismic upgrades.

709-2 Examining issues related to cleanup and remediation is not within the scope of this *SPD Supplemental EIS*. As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic A, of this CRD.

As described in Chapter 4, Section 4.1.4, and summarized in Chapter 2, Section 2.6, Table 2–3, waste treatment, storage, and disposal capacities at LANL are sufficient to manage the waste stream that would be generated from the proposed surplus plutonium disposition activities.

at Area G, which is behind schedule and will cost millions of dollars. Thus, bringing thousands of plutonium pits to LANL would divert resources away from cleanup. We want cleanup.

Alternatives that are better than using LANL and WIPP: One, pit disassembly: Do at sites that minimize transportation, which does not include LANL.

Two: Immobilization. Surplus plutonium should be immobilized so that it can be safely stored and would be difficult to introduce into nuclear weapons.

Three: Storage. Immobilized waste should be safely stored until new disposition options are available. Disposition will require development of technical standards before site selection should start. One option is new geologic repositories for surplus plutonium, defense high-level waste, commercial spent fuel, and Greater-than-Class-C waste. WIPP's mission should not be expanded to include any of these additional missions. Thank you.

MR. BROWN: The name I have is J.K. -- looks like Frenzel.

MR. FRENKEL: It's Frenkel. My views have been adequately stated.

MR. BROWN: Thanks very much.

The next speaker, then, is Alex -- is it

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709-3 As discussed in Chapter 1, Section 1.7, pits are currently stored at the Pantex Plant. In the *SPD EIS* (DOE 1999), DOE analyzed and dismissed locating pit disassembly and conversion activities at the Pantex Plant (see 65 FR 1608) because it possesses neither the experience nor the infrastructure needed to support plutonium processing. DOE is reconsidering options for pit disassembly and conversion capabilities only at locations with existing plutonium processing capabilities (i.e., LANL and SRS).

The current pit disassembly and conversion operations ongoing at LANL are performed in accordance with previous DOE NEPA analyses and decisions including the 2008 *LANL SWEIS* (DOE 2008) and ROD (73 FR 55833). This *SPD Supplemental EIS* evaluates the impacts from potentially expanding these existing operations. Impacts to the public from transportation of radioactive material and waste are presented in Chapter 4, Section 4.1.5, with additional information provided in Appendix E. Under all alternatives, no LCFs are expected in the general public or to transport crews due to incident-free transport.

709-4 DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative.

709-5 Any surplus plutonium evaluated in this *Final SPD Supplemental EIS* and sent to WIPP for disposal as CH-TRU waste would be in accordance with the WIPP waste acceptance criteria; therefore, such disposal would be consistent with WIPP's mission.

Examining new geologic repositories for surplus plutonium, defense HLW, commercial used fuel, and Greater-than-Class-C low-level radioactive waste is not within the scope of this *SPD Supplemental EIS*. For further discussion, refer to Section 2.7, Topic A, of this CRD and Chapter 2, Section 2.4, of this *SPD Supplemental EIS*.

Theodorou?

MR. THEODOROU: Theodorou.

MR. BROWN: Theodorou. Okay. And Alex will be followed by Ellie Voatselus, I believe.

MR. THEODOROU: Hello. My name is Alex Theodorou. I live in Albuquerque. I represent myself. In the last page, or second-to-last page of this handout, it says here that, "The MOX Fuel Alternative is DOE's preferred alternative for surplus plutonium disposition." And then it talks about the preferred alternative for disposition of surplus plutonium is not suitable for MFFF waste -- is not suitable for turning into MOX fuel that is supposed to be going into the Waste Isolation Pilot Plant.

Well, I remember when I first started hearing about WIPP -- and I think I echo the sentiments of some of the previous speakers, like Don -- but I remember hearing things like, Okay, like, we're gonna build WIPP -- we want to build WIPP in Carlsbad, and we're going to put low-level-grade radioactive stuff there. We're going to put booties and gloves -- contaminated booties and contaminated gloves.

And I remember you guys talked about -- I don't know if it was you, in particular, or I guess maybe it was the New Mexico Environmental Department, which was

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sort of co-opted by the DOE, that there wouldn't be any high-level radioactive waste put into WIPP. Okay?

But then, like, as the years go by, they say, Okay, let's up the ante a little bit. We're going to put a little more of this stuff here. It's a little more radioactive, but don't worry about it; it's still like low-level stuff. And then every year it keeps on going up and up and up and up, and now we're talking about 6 metric tons of surplus plutonium that's not suitable for this MOX fuel cycle, this MFFF. I don't even care what it stands for, but we know what we're talking about here.

So I think, in a sense, New Mexico has been bamboozled by DOE, and the New Mexico Environmental Department has also been bamboozled. Maybe they've been bribed. I mean, maybe the people that work for -- I mean, the people that work for the DOE kind of said -- you guys kind of said, Yeah, we're doing this mission, you know; we're doing it for the good of the country, and all that kind of stuff, you know. But if you guys weren't paid, would you be doing this job? I mean, I doubt it. You know, I don't even think you people believe in these kinds of things. If you weren't paid, you wouldn't do it; right?

Well, I don't get paid to come over here and

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speak, you know. And a lot of people, like these researchers who spend all their time trying to scrutinize this data, I mean, they don't get paid and they do the work anyway. But you guys, I mean, you guys probably -- how many of you would actually continue doing your jobs if you didn't get paid? So -- I don't really like paying the salary of you guys, you know, especially when you lie. You know, you lied about this WIPP thing, you know. How many of you heard booties and gloves? Now we're talking about like 6 metric tons of facility stuff and then 7 metric tons of this other stuff that you want to process at Los Alamos.

We have enough stuff in New Mexico. I mean, if you were like -- say, if your kid was -- picked up a landmine and brought it into your house, you know, how would you feel about that? I mean, that's kind of what it's like. I mean, more plutonium in the state of New Mexico. I mean, somebody else mentioned that Los Alamos is already behind, you know, on their cleanup. They can't even clean up the low-level stuff. What are they going to do with this high-level stuff?

Anyways, look, you know, think about it, man. I mean, like, do you have any ethics or morals? Like, think about it.

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710-1 Sufficient disposal capacity exists at WIPP for all CH-TRU waste projected to be generated under all of the *SPD Supplemental EIS* alternatives, and all CH-TRU waste sent to WIPP for disposal would be compliant with the WIPP waste acceptance criteria. For further discussion, refer to Section 2.2, Topic B, of this CRD.

MR. BROWN: The next name I have is Ellie -- it looks like Voatselus?

MS. VOATSELUS: Very good.

MR. BROWN: Good. Okay. Great. Well, I missed on Alex, but I got it on you. And then Susan Gordon will follow you

MS. VOATSELUS: Hi. Good evening. I'm Ellie Voatselus, and I'm representing New Mexico Pax Christi, which is a Catholic peace and justice organization. I'm not a scientist, and I'm not a nuclear expert, but I am a concerned citizen, who lives here in Santa Fe. I find it very troubling the DOE plans to ship 13.1 metric tons of plutonium from nuclear weapons to both Los Alamos National Labs and to the Waste Isolation Pilot Plant.

My first question is: Does WIPP have the capacity and safe storage requirements for all this surplus plutonium? Does this surplus plutonium contain materials that are not permitted at WIPP? Is New Mexico becoming the nuclear dumping ground for facilities throughout the United States? And in regards LANL, bringing 7.1 tons of metric plutonium pits, triggers for nuclear bombs which will be disassembled here, will further add to the public health and safety problems already created by LANL.

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711-1 The current pit disassembly and conversion operations ongoing at LANL are performed in accordance with previous DOE NEPA analyses and decisions, including the 2008 *LANL SWEIS* (DOE 2008) and ROD (73 FR 55833). This *SPD Supplemental EIS* evaluates the impacts of expanding these existing operations from a total of 2 metric tons (2.2 tons) of plutonium to up to 35 metric tons (38.6 tons). All of the alternatives evaluated in this *SPD Supplemental EIS* would generate CH-TRU waste, which would potentially be disposed of at WIPP. One of the alternatives – the WIPP Alternative – would include potential disposal of 13.1 metric tons (14.4 tons) of surplus plutonium as CH-TRU waste at WIPP. For further discussion, refer to Section 2.2, Topic B, of this CRD.

Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

711-2 All CH-TRU waste sent to WIPP would be compliant with the WIPP waste acceptance criteria. See the response to comment 711-1 regarding WIPP's disposal capacity and waste acceptance criteria.

711-3 The alternatives evaluated in this *SPD Supplemental EIS* include bringing up to 35 metric tons (38.6 tons) of plutonium pits to LANL for disassembly and conversion and then transporting the plutonium product to SRS for disposition. As described in Chapter 4, Section 4.1.2.1, and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, no LCFs are expected, and there would be little offsite impact on the public from normal operations of surplus plutonium disposition facilities at LANL. As described in Section 4.5.3.3, operation of surplus plutonium disposition facilities would contribute little to cumulative health effects among the offsite population.

Just the fact of the increasing dangers of forest fires here in the Southwest, and the failure of LANL to meet seismic standards is a real danger and worry to us citizens here in Santa Fe. The labs are really -- already behind and not meeting the waste cleanup -- their waste cleanup schedule. Why not push for more funds for this cleanup project that would provide jobs for many New Mexicans and create a less toxic facility? I fervently hope that DOE will come to realize that creating toxic, long-lasting nuclear waste will soon become an insolvable problem, if it isn't already. Thank you.

MR. BROWN: Susan will be followed by Thomas Jaggers.

MS. GORDON: Good evening. My name is Susan Gordon, and I'm the director of the Alliance for Nuclear Accountability, which is a national network of 35 member organizations that watchdog for the Department of Energy's nuclear weapons sites across the country.

(Ringing phone interrupts the proceedings.)

MR. BROWN: You're not losing time.

MS. GORDON: Have we got a nuclear emergency or something?

SPEAKER: What is that?

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711-4 See the response to 711-1 regarding concerns about public safety at LANL.

711-5

711-5 As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As described in Chapter 4, Section 4.1.4, and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, waste treatment, storage, and disposal capacities at LANL and SRS are sufficient to manage the waste stream that would be generated from the proposed surplus plutonium disposition activities.

SPEAKER: It's a phone.
MS. GORDON: Okay. Sorry. I thought it was more like a fire alarm.
MR. BROWN: No, it's not. Don't start yet. Okay.
MS. GORDON: I do want to express my frustration of having to cut my 5 minutes down to 3 minutes, but moving forward, the document --
SPEAKER: You can have my minutes.
MS. GORDON: -- the document we're discussing tonight is part of the problem and the challenge to deal with the surplus weapons plutonium and not part of the solution. What is urgently needed is for DOE to start over and begin a new process to determine the best options to dispose of this surplus plutonium as nuclear waste.
Crossing out comments. In 2003, DOE estimated the construction of the MOX plant would be finished in 2007 and the cost would be $1.6 billion. Under the terms of the plutonium disposition agreement with Russia, both countries were to begin operating MOX facilities in 2007. However, as Jay was stating, Russia never wanted a MOX plutonium fuel program unless they were able to reprocess their spent fuel, which is not something that the United States would agree to.

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712-1 The primary reason for holding the public hearings was for DOE to gather public input on the *Draft SPD Supplemental EIS*. DOE needed to ensure that this primary goal was achieved. The hearings were managed by an experienced meeting facilitator to ensure that all attendees had a chance to be heard and provide comments within the allotted meeting time. Therefore, it was necessary to impose a time limit on public comments due to the number of meeting attendees and limitations on the amount of time available.

So at the point that it became clear that Russia's disposition program had turned into an effort to build new breeder reactors that could reduce weapons-grade plutonium, the U.S. should have abandoned its MOX program and moved quickly towards immobilization.

And now we get to the money, as in taxpayer dollars, spent on a failing program. The MOX plant construction has cost an estimated $3 billion, with another $3 billion needed to complete construction. Remember, it was only supposed to cost 1.6 billion and start operating 5 years ago. The fiscal year 2013 budget request is for $388 million for construction costs for the MOX plant, and an additional $499 million for associated plutonium disposition costs.

So looking in -- at out-years through 2017, the MOX program is going to be costing approximately $900 million a year, for an estimated total of the 3.6 billion. We estimate, as in ANA estimates, $17.4 billion will be needed -- will be spent through the remaining life of the program, and NNSA refuses to release their numbers or their estimate on that.

Skipping more parts of my comments. So after DOE has spent all this money, the draft document only hints at the problems remaining. They include, first and foremost, there is no reactor or customer

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712-2 Under the PMDA (USA and Russia 2000), which entered into force in 2011, the United States and the Russian Federation agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. Russia plans to irradiate its MOX fuel in fast reactors (BN-600 and BN-800) under certain nonproliferation conditions. To that end, Russia has successfully irradiated 21 prototypic MOX fuel LTAs in its BN-600 fast reactor; completed over 50 percent construction of the BN-800 fast reactor; completed formal siting of its MOX fuel fabrication facility; established an integrating contracting office for implementation of PMDA activities; and actively participated with the United States and IAEA in negotiating a verification agreement that will enable IAEA to independently verify that the objectives of the PMDA are met. More information on the PMDA is located on the U.S. State Department website at www.state.gov/r/pa/prs/ps/2010/04/140097.htm. The use of MOX fuel in nuclear power reactors is consistent with U.S. nonproliferation policy and international nonproliferation agreements. Use of MOX fuel in commercial nuclear power reactors would render surplus plutonium into a used fuel form that is not readily usable for nuclear weapons.

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712-3 Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

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712-4 Disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts per NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors (see Appendix I, Section I.2).

identified to use MOX fuel. The document is unrealistic and inadequate concerning MOX testing and use. No MOX plant operational schedule is presented. No plan or schedule for MOX testing in the Tennessee Valley Authority reactors or generic reactors is presented, and no schedule for full-scale use of MOX is presented. Therefore, no Record of Decision can be issued.

As it appears that DOE could prepare 34 metric tons of plutonium for disposal as waste for a sum of only $3.4 billion -- and that's a figure based on cost estimates given to ANA of $100,000 per kilogram to prepare for disposal of waste -- there simply is no choice on what option must now be pursued: DOE must cancel the costly MOX program, prepare a new Programmatic Environmental Impact Statement on disposition of plutonium as waste, and focus in the short term on safe, secure storage of plutonium now located at the Savannah River Site, the Pantex site, and Los Alamos. A careful review of options to dispose of plutonium as an immobilized waste form will yield the best path forward, a path away from a proliferation-prone and the risky attempt to commercialize the use of plutonium as a nuclear power fuel. In addition to submitting --

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712-5 Before any MOX fuel is used in the United States, NRC would perform a comprehensive safety review, which would include information prepared by TVA or other reactor operators, as part of the 10 CFR Part 50 license amendment process. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. If MOX fuel LTAs were required, they would likely be fabricated at MFFF from feedstock supplied by the existing plutonium inventory. There is currently no schedule for LTA fabrication and testing. For further discussion, refer to Section 2.4, Topic A, of this CRD.

A detailed program schedule is not required to perform the environmental impacts analysis in this *SPD Supplemental EIS*. The actual production schedule for MFFF would depend on factors such as license conditions and the specific contracts received from customers to manufacture specific types of MOX fuel. As shown in Appendix B, Table B–2, MFFF is estimated to operate for 21 to 24 years, depending on the amount of surplus plutonium to be fabricated into MOX fuel.

Use of MOX fuel in one or more domestic commercial nuclear power reactors would be under the terms of NRC license(s). NRC would only issue a license agreement or license amendments to each applicable reactor operator when it is satisfied that the reactor can operate safely and within all design parameters.

712-6 See the response to comment 712-2 regarding other alternatives evaluated for disposition of surplus plutonium.

DOE does not agree with the commentor's opinion about the need for a new programmatic EIS on surplus plutonium storage and disposition. As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) considered numerous alternatives for disposition of surplus plutonium, including immobilization and direct disposal of the entire surplus plutonium inventory as waste. DOE selected an approach for disposition of some of the plutonium declared surplus (68 FR 20134). As discussed in Section 2.2, Topic A, of this CRD, DOE's prior disposition decisions are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of an additional 13.1 metric tons (14.4 tons) of surplus plutonium, including use of the surplus plutonium as MOX fuel or its conversion into waste forms suitable for disposal.

MR. BROWN: If you can wrap up.
MS. GORDON: -- my complete comments tonight, I also will be turning in a press release we sent out today talking about the obstacles for the boiling-water reactors and the plan that has been -- the time line that has been prepared by the Global Nuclear Fuels, which looks at not being able to actually have a MOX product until 2026. Thank you.
MR. BROWN: Thanks a lot.
Okay, Thomas Jaggers, and he will be followed by Janet Greenwald.
MR. JAGGERS: My name is Thomas Jaggers. I've lived in Santa Fe for nine years, and I have two young children, ages 8 and 10. While I support the move to disassemble plutonium pits, and anything else that leads to disarmament, the DOE's plan to convert these plutonium pits into MOX fuel at LANL is deeply flawed. The Los Alamos Historical Document Retrieval and Assessment Report clearly showed how incapable LANL has been of preventing widespread radioactive contamination of the surrounding environment. The DOE's own proposal shows how ill-equipped LANL is to handle waste.
In addition to this, as we know all too well, the facilities at LANL are at risk, both for fire and

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713-1 Although surplus plutonium would be manufactured into MOX fuel at SRS, this *SPD Supplemental EIS* evaluates options for the precursor step of pit disassembly and conversion to plutonium oxide. These options include expanding the existing pit disassembly and conversion activities at LANL.

Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely.

earthquakes, and are not constructed well enough to withstand those threats. So, bringing another 7 metric tons of weapons-grade plutonium to LANL for further processing does not inspire me with confidence for the health of myself, my children, the neighboring communities, or our environment.

Furthermore, the intent of the plan is to convert that plutonium into MOX fuel, which then has to be used in nuclear power plants in order to be irradiated. That is just kicking the can down the road. It commits the U.S. to years more of nuclear energy which, in light of the Fukushima disaster, we can all see is absolute folly. It threatens worker health because, as the DOE's own proposal states, "MOX fuel presents a slightly higher risk of higher doses to workers."

And, thirdly, it begs the question of what is to be done with the spent fuel when it is spent, and where will that take place? Are there other communities to be placed at risk of further radioactive contamination for thousands of years to come?

Based on those facts, this plan is both foolhardy and, frankly, immoral. Rather than proceed with this plan, the DOE needs to present the nation with plans to rid ourselves of all nuclear weapons and

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713-2 The alternatives evaluated in this *SPD Supplemental EIS* include bringing up to 35 metric tons (38.6 tons) of plutonium pits to LANL for disassembly and conversion and then transporting the plutonium product to SRS for disposition. As described in Chapter 4, Section 4.1.2.1, and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, no LCFs are expected, and there would be little offsite impact on the public from normal operations of surplus plutonium disposition facilities at LANL. As described in Section 4.5.3.3, operation of surplus plutonium disposition facilities would contribute little to cumulative health effects among the offsite population.

713-3 DOE notes the commentor's opposition to nuclear power. As discussed in Appendix J, Sections J.1 and J.2, of this *SPD Supplemental EIS*, continued assurance of the safe operation of commercial nuclear power reactors is the responsibility of the plant operator which operates under the independent regulatory oversight of NRC, including NRC regulations and license conditions. If the plant operator were to make a decision to use MOX fuel, it would be the joint responsibility of the plant operator and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely. For further discussion, refer to Section 2.5, Topics A and B, of this CRD. Appendix J, Section J.3.3.3, of this *SPD Supplemental EIS*, describes the NRC recommendations developed in response to the March 11, 2011, accident at the Fukushima Dai-ichi Nuclear Power Station in Japan and the subsequent actions that TVA has taken to further reduce the likelihood and severity of accidents at its nuclear plants. For further discussion, refer to Section 2.5, Topic C, of this CRD.

The only occasion when a small increase in worker dose could potentially occur would be during acceptance inspections at the reactor(s) when the fuel assemblies are first delivered. Workers would be required to inspect the assemblies to ensure there are no apparent problems. As stated in the discussion of human health impacts on workers in Chapter 2, Section 2.6.1, of this *SPD Supplemental EIS*, TVA has indicated that any potential increases in worker dose would be minimized through the continued aggressive implementation of existing radiation protection programs, including the use of additional shielding and remote handling equipment, if necessary.

713-4 Examining the disposition of used (spent) nuclear fuel is not within the scope of this *SPD Supplemental EIS*. The use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would replace LEU fuel that otherwise would have been used to power the nuclear power reactor. As described in Appendix I, Sections I.1.2.4

all nuclear power plants as soon as possible, and to look after and secure all radioactive waste in a completely safe manner for as long as it takes. That is something I would be happy to see my tax dollars spent on.

MR. BROWN: Janet Greenwald, and she will be followed by Marlene Perrotte.

MS. GREENWALD: Hi. I'm Janet Greenwald from Citizens for Alternatives to Radioactive Dumping. I want to say a few words about New Mexico. At Laguna, unremediated uranium tailings wash down into the valley where the Pueblo people live. At Los Alamos, even though there are elevated rates of thyroid cancer, the Canary cancer radiation exposure, there has been no health study done on the surrounding communities, which are the communities which provide Los Alamos with most of their workers.

Plus, the radioactive waste washes down the canyons into the Rio Grande River. Now Albuquerque drinks out of the Rio Grande, and in the finished water, there is still plutonium. At Sandia National Labs and Kirtland Air Force Base, carcinogenic contaminants have leaked into Albuquerque's aquifer.

In the case of the Eubank well field, they are only a quarter of a mile away. With the Ridgecrest

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and I.2.2.4, use of MOX fuel could increase used nuclear fuel generation by 2 to 16 percent during the period MOX fuel could be used at a reactor, and DOE expects that increases of this magnitude would be managed within the reactor's normal planning for storage in its used fuel storage pool or dry storage casks. DOE is evaluating various options for the long-term storage of used fuel; however, there would be no substantial increase in risk to the public if used MOX fuel were managed instead of used LEU fuel.

713-5 The United States' nuclear weapons and energy policies are not within the scope of this *SPD Supplemental EIS*.

714-1 Chapter 3, Section 3.2.6.3, Health Effects Studies, in this *SPD Supplemental EIS* presents information regarding the occurrence of cancer in the vicinity of LANL. As indicated, a 1996 study found an increased thyroid cancer incidence in the 1980s and posited that it was likely the result of several causes. A 2003 study also found a higher incidence of thyroid and other cancers in Los Alamos County compared to a New Mexico reference population. The study did not find a higher thyroid cancer mortality rate. Table 3–37 in Section 3.2.6.3 presents more recent data provided by the National Cancer Institute on the incidence of selected cancers, but does not associate these rates with causes.

714-2 Chapter 3, Section 3.2.3.1, of this *SPD Supplemental EIS* describes surface water and groundwater resources at and near LANL. As described in Chapter 4, Sections 4.1.2 and 4.1.7.3, DOE does not expect that pit disassembly and conversion operations at PF-4 at LANL would impact the quality or quantity of surface water or groundwater resources. One of the objectives of LANL's extensive environmental monitoring program, which is annually reported (e.g., LANL 2012) and includes analyses of surface water, ground water, and sediment, is assessment of LANL's impacts on the Rio Grande. These impacts are believed to be minimal, as noted in Volume 2, Section 2.10, of the *Final Supplemental Environmental Impact Statement for the Nuclear Facility Portion of the Chemistry and Metallurgy Research Building Replacement Project at Los Alamos National Laboratory, Los Alamos, New Mexico* (DOE 2011b). Examining activities at Sandia National Laboratories and Kirtland Air Force Base are outside the scope of this *SPD Supplemental EIS*.

well field, we're not sure. The contaminants could be there already because there isn't adequate monitoring.

There is the Waste Isolation Pilot Plant. The transportation route goes through environmental justice communities, villages that are mostly Hispanic. These communities have requested -- or individuals from these communities have requested that the trucks, WIPP trucks, park in the overnight parking areas instead of right in front of the stores where the low-level radiation could affect pregnant women and children. There's never been a study about the effects of this radiation on pregnant women or children.

In southeastern New Mexico, where WIPP is located, there is the highest cancer death rate in the state. If you are a respecter of environmental justice, you don't bring your waste and your dangerous nuclear projects to the same minority/majority state over and over again, where people are already devastated by nuclear projects. Our organization tries to help people get compensation. And we usually fail, even though the child of a dead worker has cysts on their ears that have to be cut off every month; even though the grandmother, who worked at Sandia, died of a malignant brain tumor and that is on the list of relevant cancers. Please take your projects elsewhere.

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714-3 Transportation risks are analyzed for all alternatives proposed in this *SPD Supplemental EIS*, including the threat of theft and diversion of radioactive materials. The analysis presented in Chapter 4, Section 4.1.5, shows the doses from the transportation of radioactive materials and wastes, including shipments to WIPP, and indicates that the public along the transportation routes would be exposed to very small doses over the life of the program, with no LCFs expected from incident-free operations. The same is true for the minority and low-income populations in the potentially affected areas. For further discussion, refer to Section 2.6, Topic A, of this CRD.

Thank you.

MR. BROWN: Marlene will be followed by Michael Truax Collins.

MS. PERROTTE: My name is Marlene Perrotte. I am a Sister of Mercy and a member of the Partnership for Earth Spirituality. Time and time and time again, I have come up to Los Alamos, to Santa Fe, to Albuquerque, constantly testifying to DOE. I'm not a scientist, but I stand -- and not only I, but I recognize so many others, we that have come here trying to speak truth to power. I stand, and not myself only, with moral indignation at the hypocrisy that DOE has created. The hypocrisy is that we are here to really struggle with the large existing inventory of plutonium and uranium waste.

What are we going to do as a society? Some of it is, Oh, we're going to reduce it to this MOX stuff; we're going to destroy plutonium. I'm sorry. You do not stand with authority, with credible authority. If you said to me, There is going to be -- there is a moratorium on the creation of plutonium pits; if you told me, No more nuclear weapons, no more new nuclear power plants, then I would believe you. But the context of the hearings over and over again -- DOE has spent billions of dollars, multiple public meetings and

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715-1 The United States' policy on the continued use of nuclear energy is not within the scope of this *SPD Supplemental EIS*.

hearings regarding how to dispose of plutonium waste without ever committed to stopping the creation of plutonium pits and nuclear reactors. Thank you.

MR. BROWN: Michael.

MR. TRUAX COLLINS: A great speaker to follow.

MR. BROWN: And Joan Brown will follow Michael.

MR. TRUAX COLLINS: You might notice that some of us are a little emotional. You show us -- when we come in, you tell us where the emergency exits are. Where does New Mexico go?

Safe disposition is a question, and a big question. There still is no safe way to dispose of nuclear material. Supposedly, like others have said, only low-level radioactive materials like gloves and odds and ends, booties, were promised us, because that was the limit. Someone lied -- did someone lie? You know, you don't produce something extremely dangerous and not know how to dispose of it or diffuse it. That's called the "Doe factor," D-O-E, DOE. WIPP's Sully Hole (phonetic spelling) leaks, like we told you many times before. The LCF, the lousy cancer fatalities -- that's a real nice acronym -- it's really great.

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I was looking at the flag while other people were talking, and I noticed there's plenty of stars. So maybe we can dispose of a couple of them. Maybe they're disposable. Maybe Texas, New Mexico, Georgia, wherever. You know, it's hard to be civil. You expect us to be civil. You talk about your rules and your three minutes. I don't see -- I don't see how you have the right to tell us, if we want to -- if I want to give my time to Jay Coghlan, or anyone else here, that I should be allowed to give that time. What's the difference? It's F'ing free speech. Excuse me.

I understand that a microscopic particle of some plutonium, breathed, can kill. And you want to bring us not pounds, but tons. What do you know about MOX emission safety or possible pollutants? You say that plutonium becomes unusable for weapons. What waste will result from burning it? LANL is already a mess, like Rocky Flats, and is incapable of additional responsibility. Clean it up now for the Pueblos and for all of us.

Terms such as "immoral," "harebrained," and "arrogant" that I heard others speaking of earlier, I think they describe it quite well. We're speaking for future generations and the children and for their voices. Thank you.

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716-1 The primary reason for holding the public hearings was for DOE to gather public comments on the *Draft SPD Supplemental EIS*. The hearings were managed by an experienced meeting facilitator to ensure that all attendees had a chance to be heard and provide comments within the allotted meeting time. Therefore, it was necessary to impose a time limit on public comments due to the number of meeting attendees and limitations on the amount of time available. DOE preferred that individuals not defer their speaking time to others because this practice delays the speaking times of later speakers.

716-2 As addressed in Appendix I, Section I.1.2.1, of this *SPD Supplemental EIS*, nonradioactive air pollutant emissions from use of a partial MOX fuel core at a TVA reactor or other nuclear power reactor are not expected to change from those from use of an LEU core. Similarly, the projected radiation doses and risks received by the public from use of a partial MOX fuel core are not expected to appreciably change from those from use of an LEU core (Section I.1.2.2). Appendix G, Table G–1, presents the estimated nonradioactive air pollutant emissions from operation of MFFF. Chapter 4, Section 4.1.1, presents estimated emissions from activities associated with the *Final SPD Supplemental EIS* alternatives, and Section 4.5.3.2.1 presents the cumulative emissions from all projected SRS activities. Risks to the public from operation of MFFF are discussed in Section 4.1.2 and Appendix G. Impacts from operation of MFFF are also discussed in NRC's *Environmental Impact Statement on the Construction and Operation of a Proposed Mixed Oxide Fuel Fabrication Facility at the Savannah River Site* (NRC 2005).

716-3 Once MOX fuel is irradiated in domestic commercial nuclear power reactors, the amount of plutonium-239 in the fuel is reduced, highly radioactive fission products are increased, and the plutonium can no longer be readily used in nuclear weapons.

Irradiating MOX fuel in a nuclear power reactor does not generate waste. After irradiation, the used MOX fuel must be managed along with the used LEU fuel. As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel, by storing it in the reactor's used fuel storage pool or placing it in dry storage. The use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would displace LEU fuel that otherwise would have been used to power the nuclear power reactor. Use of MOX fuel could increase used nuclear fuel generation by 8 to 10 percent for TVA's Browns Ferry and Sequoyah Nuclear Plants, and from 2 to 16 percent for generic reactors during the period MOX fuel could be used at a reactor. It is expected that

MR. BROWN: Joan Brown is next, and Leslie Alderwick will follow Joan.

MS. BROWN: My name is Joan Brown, and I'm a Franciscan sister out of the Partnership for Earth Spirituality and also a member of a Catholic peace organization, Pax Christi. I'm not a technician, but I am someone who deals daily and works with the issues of ethics, morality, and environmental justice. And those are issues that, I think, need to be brought into this room, which is this issue -- this issue that needs to be held within a larger lens.

I do believe that the people that work at LANL, and even the people at DOE, are capable, intelligent people. I think that their intelligence and the work that they are doing really needs to be redirected with this particular issue to find a real solution for this nuclear waste that we continue to have, and we have had for decades, that there has been no solutions for; and now we're wanting to put it into nuclear power plants, which are no solution at all. It's creating more disasters for health, for the environment, and for the people.

And I think we need to address the real root issue of this, and that is the waste. We have spent billions and billions of dollars on this, and continue

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increases of this magnitude would be managed within the reactor's normal planning for storage of its used fuel.

716-4 As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

717-1 Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

Chapter 4, Section 4.5.4.2, of this *SPD Supplemental EIS* addresses possible general impacts from climate change and more-specific possible impacts in the southeast and southwest, as well as the possible future need for adaptation at SRS, LANL, and WIPP as a result of climate change. Examining the funding of activities related to climate change is not within the scope of this *SPD Supplemental EIS*.

to, and we're in financial straights as a country and as a world. And there is a huge issue that we're not addressing, which this money really needs to be going towards, and that is climate change. This government is not addressing that. The people who are very intelligent at LANL could really be addressing that, and they are not. So I think we need to redirect and address this once and for all. Stop the creation of nuclear weapons.

For more than a decade, the Pentagon has said that the greatest national/international threat is climate change. It is not the nuclear proliferation, we need nuclear weapons to keep us safe as a nation. So we're not really dealing with the real issue and the correct issue with this.

As an environmental justice issue, it seems to me that New Mexico really is a sacrificial zone and continues to be a sacrificial zone. There are all kinds of areas that have not been cleaned up from past uranium legacies with the Navajo, with the Laguna, with the Acoma. And then we have the whole contamination of the mesa, and all of the people that live below the mesa, and all of the people who eat the food, who drink the water, clear into Mexico. I just think it's very irresponsible to bring more of this waste into a state

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717-2 Examining issues related to the cleanup of uranium mines in the southwestern United States is not within the scope of this *SPD Supplemental EIS*. Chapter 3, Section 3.2.11, of this *SPD Supplemental EIS* describes minority and low-income populations near LANL.

DOE does not regard New Mexico as a sacrificial zone. Chapter 4, Section 4.1.6, analyzes the environmental justice impacts of the options for pit disassembly and conversion at LANL and concludes that Native Americans living near LANL would not be exposed to elevated risks compared to nonminority populations living in the same area from the proposed activities and that the risks associated with these activities are small. No LCFs are expected among the offsite population, including minority and low-income populations, as a result of the normal operations of the proposed surplus plutonium disposition facilities.

For this *Final SPD Supplemental EIS*, the results of a dose assessment similar to that for the MEI were added to Chapter 4, Section 4.1.6, to show the impact on a hypothetical individual living at a pueblo boundary near LANL. The maximum annual dose for a person at the Pueblo de San Ildefonso boundary would be 0.044 millirem; at the Santa Clara boundary, the annual dose would be 0.0046 millirem. These values can be compared to the MEI dose of about 0.081 millirem per year and the average annual dose from natural background radiation of 469 millirem per year (see Chapter 3, Section 3.2.6.1). For further discussion, refer to Section 2.6, Topic A, of this CRD.

This *SPD Supplemental EIS* includes an analysis for a special pathways receptor that was developed for the 2008 *LANL SWEIS* (DOE 2008) using the best information available to DOE to reflect exposures that could result from traditional living habits, including subsistence consumption of native vegetation (pinyon nuts and Indian Tea [Cota]), locally grown produce and farm products, groundwater, surface water, fish (game and nongame), game animals, other foodstuffs, and incidental consumption of soils and sediments (on produce, in surface water, and ingestion of inhaled dust); absorption of contaminants in sediments through the skin; and inhalation of plant materials. These pathways are in addition to the meat, milk, produce, water, and sediment consumption reflected in the "offsite resident" pathway assumption. The analysis concludes that persons living near LANL who practice traditional living habits would receive a higher dose than the rest of the populations living in the same area, but the risks associated with the exposures from LANL would be small (see Chapter 4, Section 4.5.3.8.2).

that is already a sacrificial zone, and it's very immoral and very much an environmental and a social justice issue.

Related to that, the money that we keep spending on this and the poverty that continues to exist, I really, really think that this needs to go back to the drawing board; that there needs to be spending the money in a way of getting rid of the waste, once and for all, whether it's burying it, or whatever technically would work. But it is not in nuclear power plants, and I do not think that more should be brought into this state, this Land of Enchantment, which is a very, very polluted land and one which is degrading its people and the Americans. Thank you.

MR. BROWN: Thank you.

Leslie?

MS. ALDERWICK: Yes.

MR. BROWN: You're next, and Gail Giles will follow you.

MS. ALDERWICK: Hi. My name is Leslie Alderwick, and I'm not quite sure where I'm going to go because coming to these meetings is always interesting. I learn so much that I didn't know. I thought to stand up here to ask questions. 13 tons -- tons of plutonium? And now it's not 13, it's 34. And now it's

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717-3 DOE acknowledges the commentor's opinion.

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718-1 As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) evaluated numerous alternatives for disposition of surplus plutonium. DOE selected an approach for disposition of some of the plutonium declared surplus (68 FR 20134). As discussed in Section 2.2, Topic A, of this CRD, DOE's prior disposition decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium are not addressed in this *SPD Supplemental EIS*. This *SPD Supplemental EIS* evaluates alternatives, including immobilization, for disposition of an additional 13.1 metric tons (14.4 tons) of surplus plutonium. Chapter 2, Table 2–2, describes the quantities of surplus plutonium evaluated under each alternative.

not 34, there's just a whole lot more. And where is the truth? Who speaks the truth here? Are you speaking the truth? This woman at the table is writing and writing. Is she even listening? Who is listening? Who's listening? Who's speaking the truth? Who can we trust?

It sounds like, from what I learned tonight from Don, that maybe this is even illegal; that the DOE has gone into an area of total illegality that we are paying -- I, I, I am paying my tax dollars for. I am paying you to be illegal; am I right? Is this illegal? It's illegal. Hello?

The flag, what do we stand for? Democracy? I don't think so. You are not giving us a chance, the public, to put our mind, our thoughts, our heads together and maybe actually help you guys, because you need some help, and it's going to come from the people. And if you kill them off, they won't be around to help you. We can't afford to lose other human beings. We need every one of us to pull us out of the mess that we are headed for.

My sister tells me that the oceans around Boston, and probably every coast, are rising. Have we saved our money wisely? Do we have reserves to help Boston? New York? Paris? Whatever part of the world

718-1 cont'd

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that's going to need us, and they are going -- we're going to need them.

And what do we do? We represent one of the most powerful countries in the world, and what do we do with that power? We kill people. We steal their governments. We steal their resources. That's what the United States stands for? Really? Is that what we've become?

We could figure this out, if we all do it together. Don't leave us out. You need us all. Every human being is here for a reason, and, boy, it looks like that reason is coming real clear because this planet is in deep trouble and you're playing games with plutonium. We've got a lot of problems. You really ought to slow down and think very carefully about how you want to proceed with our precious resources, and how you want to affect the entire planet and everyone on it and every living thing. That responsibility is huge, and I do not see responsible actions here, and I think it's time we start to talk to one another and learn a whole lot more.

MR. BROWN: Thank you.

Gail will be followed by Carla Cooper.

MS. GILES: My name is Gail Giles, and I'm a citizen of Santa Fe, a citizen of the United States,

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and I'm a world citizen. And, first of all, I'd like to go through the book. At page 15 of your summary, their first sentence says: DOE must disposition of U.S. surplus weapons-usable -- it's in shorthand form here, but the keys words are "safe, secure and environmentally sound manner." That is fact-proven not to be LANL. It's on a seismic fault.

I was at a community water conference barely a month ago, where we had factual evidence regarding the significant environmentally-seismic factors there. It is already affecting our water. We have multiple superfund sites that haven't even been taken care of. If you look at one of the maps that Joni put out sometime earlier this year, you would be amazed to see what's in this -- "Land of Enchantment" is the land of death, I guess.

In fact, may be they ought to call the DOE and make it to be another, DOD, which is the Department of Death. Because what we need is the Department of Peace to stop this proliferation of nuclear waste. My understanding is that converting this nuclear-weapons product will not ever create a nuclear-safe product. It's still going to be highly toxic and kill us for thousands of years, just a mere drop of it.

And, obviously, the information presented here

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719-1

719-2

719-1 DOE is aware of the seismic concerns associated with the continued operation of PF-4 and is aggressively pursuing additional analyses of and upgrades to this facility to ensure that it continues to operate safely. This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9). The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD.

Examining existing environmental contamination is outside the scope of this *SPD Supplemental EIS*. DOE and the LANL operating contractor have entered into a Compliance Order on Consent (Consent Order) with the New Mexico Environment Department to address environmental contamination from past practices. The purposes of the Consent Order are to define the nature and extent of releases of contaminants at or from LANL; to identify and evaluate, where needed, alternatives for corrective measures to clean up contaminants in the environment and prevent or mitigate the migration of contaminants at or from LANL; and to implement such corrective measures.

719-2 As described in Chapter 4 and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, risks to the public are expected to be minor from both normal operations and potential accidents under any proposed alternative. One element of the analysis that was performed was consideration of potential accidents at the facilities that would be used for surplus plutonium disposition activities. A broad range of accidents was considered, but those selected for inclusion in this analysis were those that had a potential for impacting the public. Because facilities, systems, and procedures are designed to ensure safe operations, only those accidents with a low probability of occurrence have the potential of releasing radioactive materials to the environment. The terms, such as "extremely unlikely," have a frequency range ascribed to them, as shown in Chapter 4, Section 4.1.2.2.

The LCF discussions in this *SPD Supplemental EIS* are geared toward providing a clear and representative comparison of impacts between alternatives using the most widely accepted measure of potential impacts from exposure to radiation.

by the DOE is not factually based, is potentially illegal, and there's a lot of farce. And we're finding out what is going on. Look at what has happened since Fukushima. Why is it a month afterwards the EPA has quit, all of a sudden -- it's just a coincidence -- of reporting the nuclear and radioactivity that's coming across the U.S. I know for a fact there's not a lot here presently because we was tested up in Truchas this past week -- I have friends that have a Geiger Counter and they check it regularly -- and that's because the winds have shifted northward, but they're finding it in rain all over the country. They're finding it in animals. They found within four months nuclear radiation killing 30 percent of the new births in California alone. We're not hearing this unless you listen to the alternate news.

It says here, "The impacts of alternatives are similar and would result in minor impacts to the public." Obviously, that's not true. We're looking at a China Syndrome in Fukushima, which they are not telling the general public. I talked to my uncle about it. He listens to CNN and all the mainstream news: Oh, it's harmless. It's not any more than what we would get in a chest X-ray. B.S. to that. That's not the case.

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719-3

719-3 See the response to comment 719-2 regarding risks to the public from normal operations and potential accidents.

The other interesting information here I think is on page S37 about these LCFs, which make it seem like we're not even human beings here. "An accident considered extremely unlikely which would be a natural phenomenon-initiated accident."

How can they think -- we've got dead -- thousands, hundreds of thousands of fish on the -- in Galveston. I used to live in Texas for 20-some years. I left Fort Worth because of the fracking and found I've come to just the right place to be an activist because of fracking here. Our water is in danger. Go look on the East Coast. You've got millions of --

MR. BROWN: You have a minute.

MS. GILES: Perfect. I can get a lot said in a minute.

MR. BROWN: That'd be good.

MS. GILES: We've got thousands, hundreds of thousands of fish on the East Coast that are dying. We have -- actually, the water temperature has risen to the point that I think there was a nuclear reactor that was, all of a sudden, not working. We're talking about solar flares coming in that potentially could knock out our whole electrical system. My understanding is that a lot of these nuclear facilities require electricity in order to keep this stuff cool or they're going to

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719-3 cont'd

719-4

719-4 As summarized in Chapter 4, Section 4.1.2, and described in detail in Appendices I and J of this *SPD Supplemental EIS*, the risks associated with both normal operations and accidents for a partial MOX fuel core and full LEU fuel core are expected to be comparable. To be licensed, operators of nuclear reactors in the United States must ensure the safety of reactor operations under all credible normal and potential accident conditions. including the possible loss of offsite power. For further discussion, refer to Section 2.5, Topic B, of this CRD.

have the same thing as Fukushima. This is nuts and insane.

And we need to quit being lied to by our legislators, by the people that -- granted, you want a job. But, I mean, I have gone to lots of lectures and listened to KSFR and Dave Bacon, who has been trying to get a lot of things going on and bring attention here in Santa Fe. And what we need to do is rebuild the Jemez. We had 20,000-plus barrels of nuclear waste that was still there ten years after the last fire that nearly put them up and would have obliterated most of New Mexico and how far from there.

And so how can you say that it's going to be a 1 chance in 500, 1 in 5, that this is the -- the accidents are considered extremely unlikely to beyond extremely unlikely? That is asinine to think. Go look at any -- I just want to finish here. Go look at what is going on with seismic activity on this planet. It's activated by a lot of what is going on in the solar flares. The likelihood of having a seismic activity is very likely; and, therefore, I would like to say in finality, LANL is not the place for this 13-billion-plus, what you're saying now, which will give you 26 and 54. This is deadly. Enough.

MR. BROWN: Thank you.

719-4 cont'd

719-5

719-5 The accident analyses in Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9, of this *SPD Supplemental EIS* consider external fires as one of the possible initiators of facility fires. The facilities evaluated in this *SPD Supplemental EIS* are all in cleared, industrial-like areas that are not immediately vulnerable to wildfires and are constructed of noncombustible materials.

719-6

719-6 See the response to comment 719-1 regarding seismic concerns at LANL.

Carla Cooper?

MS. COOPER: What I have to say has already been represented.

MR. BROWN: All right. Thank you, Carla. And is it Brian Bylenok?

MR. BYLENOK: Close enough.

MR. BROWN: Is that close enough?

MR. BYLENOK: Yes.

MR. BROWN: All right. You are next. Do you have anything?

MR. BYLENOK: Yes.

MR. BROWN: You can give the court reporter the correct pronunciation. And Brian will be followed by -- I think it's Beata Tsosie.

MR. BYLENOK: All right. My name is Brian Bylenok. I'm just a concerned citizen. Didn't know a lot about this till I came here tonight. I believe nuclear safety is not a scientific or a technical challenge. The challenge is to avoid human error, greed in politics, and also national disasters, and we all know from experience that all of that is virtually impossible. I believe the most environmentally responsible thing to do is render all weapons-grade plutonium

720-1 **720-1** DOE acknowledges the commentor's opinion.

either permanently isolated or unusable by the most expeditious means possible. We should not put a monetary value on human and planetary safety.

MR. BROWN: Okay. And, again, if you will help the court reporter out. Thank you. And Jeff, whose last name I can't read, but Jeff, the student, is next.

MS. TSOSIE: My name is Beata Tsosie. I'm from Buffalo Indian. "Un bi agin di, posejemu kuda no hah Nan Thagi, Taekiribo irisagi ami, hera iri agin ami Heranho, Naa Ogah poo, geh sedori eh, amijouri eh, Nan Achun Quidjo." We are sorry. Please forgive us.

Surplus plutonium is not wanted here. Keep it where it's made. MOX fuel has no place here where reactors don't exist and our lands are already contaminated beyond capacity. WIPP must be used for its original purpose and facilitate the removal of legacy waste in accordance with New Mexico consent order.

Expanded pit processing at PF-4 in Los Alamos and other proposals must be addressed in a way that allows indigenous peoples time to do our own analysis in a space of elemental time and ancestral wisdom. The risk and harm to our indigenous human rights, as stated in the Rights of Indigenous Peoples, needs to be

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720-1 cont'd

721-1

721-2

721-1 As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

721-2 As discussed in Chapter 1, Section 1.7, pits are currently stored at the Pantex Plant. In the *SPD EIS* (DOE 1999), DOE analyzed and dismissed locating pit disassembly and conversion activities at the Pantex Plant (see 65 FR 1608) because it possesses neither the experience nor the infrastructure needed to support plutonium processing. DOE is reconsidering options for pit disassembly and conversion capabilities only at locations with existing plutonium processing capabilities (i.e., LANL and SRS). This *SPD Supplemental EIS* does consider the environmental impacts of the alternatives that DOE has identified as reasonable for carrying out pit disassembly and conversion. Specifically, the discussion in Chapter 4, Section 4.1.2, and summary in Chapter 2, Section 2.6, Table 2–3, set out the basis for DOE conclusions that risks to the public are expected to be minor from normal operations, potential accidents, and transportation under any proposed alternative.

DOE has also engaged with those tribes that have requested it to arrange for government-to-government consultation. Chapter 3, Section 3.2.11, of this *SPD Supplemental EIS* describes minority and low-income populations near LANL. Chapter 4, Section 4.1.6, analyzes environmental justice impacts of the options for pit disassembly and conversion at LANL and concludes that Native Americans and other minority or low-income populations living near LANL would not be exposed to elevated risks compared to nonminority populations living in the same area from the proposed activities, and that the risks associated with these activities are small.

For this *Final SPD Supplemental EIS*, the results of a dose assessment similar to that for the MEI were added to Chapter 4, Section 4.1.6, to show the impact on a hypothetical individual living at a pueblo boundary near LANL. The maximum annual dose for a person at the Pueblo de San Ildefonso boundary

honored and needs to be addressed. Too often, industries that no one else would allow in their local environment are proposed as being appropriate adjacent to Native communities or people of color. This has to stop.

Articles 7, 11, 29, Sections 1-3, Articles 30 and 31, need to be honored as stated in this Declaration of which the United States is party to. The expansion of LANL in any form is a continuation of the cultural violence that has impacted our physical, mental, and spiritual well-being. Equality of Pueblo and private land in impacted communities has been diminished, and our continued existence is threatened when choices are made that place populations adjacent to nuclear weapons production, disposal, research, storage and transportation.

Community meetings need to be held in each Pueblo and connecting river communities in partnership with tribal government, yet also on nontribal lands and lands with land grant heirs and acequia parciantes.

There are no nuclear power plants in New Mexico, and given the high risk and expense of transporting surplus plutonium back to LANL, it does not make sense that this is our issue, when there are greater cleanup issues and seismic concerns. I am strongly opposed to

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721-2 cont'd

721-3

721-4

would be 0.044 millirem; at the Santa Clara boundary, the annual dose would be 0.0046 millirem. These values can be compared to the MEI dose of about 0.081 millirem per year and the average annual dose from natural background radiation of 469 millirem per year (see Chapter 3, Section 3.2.6.1). For further discussion, refer to Section 2.6, Topic A, of this CRD.

This *SPD Supplemental EIS* includes an analysis for a special pathways receptor that was developed for the 2008 *LANL SWEIS* (DOE 2008) using the best information available to DOE to reflect exposures that could result from traditional living habits, including subsistence consumption of native vegetation (pinyon nuts and Indian Tea [Cota]), locally grown produce and farm products, groundwater, surface water, fish (game and nongame), game animals, other foodstuffs, and incidental consumption of soils and sediments (on produce, in surface water, and ingestion of inhaled dust); absorption of contaminants in sediments through the skin; and inhalation of plant materials. These pathways are in addition to the meat, milk, produce, water, and sediment consumption reflected in the "offsite resident" pathway assumption. The analysis concludes that persons living near LANL who practice traditional living habits would receive a higher dose than the rest of the populations living in the same area, but the risks associated with the exposures from LANL would be small (see Chapter 4, Section 4.5.3.8.2).

721-3 DOE invited Native American tribes, as well as representatives of other Federal agencies and state governments and the public, to provide comments at seven public hearings held in Alabama, New Mexico, South Carolina, and Tennessee. DOE will continue its long-standing practice of engaging area tribal authorities through several mechanisms as noted in Chapter 5, Section 5.5.2, of this *SPD Supplemental EIS*.

DOE continues its long-standing practice of engaging Los Alamos-area tribal authorities through several mechanisms, including accords with four pueblo governments (Cochiti, San Ildefonso, Jemez, and Santa Clara) whose lands are adjacent to or near LANL. In addition, DOE maintains a working relationship with member tribes of the Eight Northern Indian Pueblos Council, the All Indian Pueblo Council, and others as relevant to the programs and activities at LANL.

721-4 As discussed in Chapter 1, Section 1.7, pits are currently stored at the Pantex Plant. In the *SPD EIS* (DOE 1999), DOE analyzed and dismissed locating pit disassembly and conversion activities at the Pantex Plant (see 65 FR 1608) because it possesses neither the experience nor the infrastructure needed to support plutonium processing. DOE is reconsidering options for pit disassembly and conversion capabilities only at locations with existing plutonium processing capabilities (i.e., LANL and SRS).

any activities that would increase expansion of LANL facilities and would only contribute to the extensive harm already enacted upon our sacred Jemez Plateau and families by LANL legacy waste contamination and current activities.

Operations to disassemble pits should happen where they are currently located and stored. I'm against the necessary transportation and relocation of radioactive materials. These materials are not wanted in our backyards, where they will only contribute to the negative cumulative impacts on our people. I condemn the possibility of testing and using MOX and ice-condenser pressurized-water reactors. We must respect and honor water or water will go away.

There is still reason for life to continue with other healing options. As with any influences of control gone beyond the comprehension of man who manipulated the system, there is no shame in admitting the MOX program was mismanaged and a mistake from the beginning. I request additional hearings in Española and with eight northern Pueblos and an extension for public comment on this issue for creative dialogue and solutions amongst those most impacted, inclusive of our unique cultural comprehensive expertise. The indigenous peoples of this land are experts at being

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721-4 cont'd

The current pit disassembly and conversion operations ongoing at LANL are performed in accordance with previous DOE NEPA analyses and decisions including the 2008 *LANL SWEIS* (DOE 2008) and ROD (73 FR 55833). This *SPD Supplemental EIS* evaluates the impacts of expanding these existing operations under the action alternatives.

As described in Chapter 4, Section 4.1.2.1, and summarized in Chapter 2, Section 2.6, Table 2–3, of this *Final SPD Supplemental EIS*, no LCFs are expected, and there would be little offsite impact on the public from normal operations of surplus plutonium disposition facilities at LANL. As described in Section 4.5.3.3, operation of surplus plutonium disposition facilities would contribute little to cumulative health effects among the offsite population. As described in Appendix E, under all alternatives, no LCFs are expected among the general public or transport crews due to incident-free transport of nuclear material, MOX fuel assemblies, or radioactive waste.

The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. Before MOX fuel is used in any reactor in the United States, NRC would perform a comprehensive safety review of the use of MOX fuel in the proposed reactor as part of the 10 CFR Part 50 licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

721-5

721-5 In response to requests for extension of the public comment period and additional public hearings, DOE extended the end of the comment period from September 25 to October 10, 2012, and added a public hearing in Española, New Mexico, on September 18, 2012. DOE has a substantial outreach program with the tribes surrounding LANL and routinely meets with interested tribal governments to discuss issues of mutual concern. During the public comment period, DOE briefed the four pueblo governments on the *Draft SPD Supplemental EIS*.

stewards and caretakers of our homelands and need to be given this equality. (Inaudible.)

MR. BROWN: Our next speaker is Jeff, who identifies himself as a student. You will have to help the court reporter out on your last name. Sorry, I couldn't read it.

JEFF: My last name is not relevant.

MR. BROWN: I'm sorry, and Donna Doran will be next.

JEFF: I don't care if you have my last name or not.

MR. BROWN: Okay.

JEFF: I'm not going to repeat what others have stated in opposition to this Surplus Plutonium Disposition Supplemental Impact Statement. I do want to touch on a couple of things that have not been mentioned so far.

Most people would agree that climate change is one of the gravest, if not the most serious, environmental problems that we face as a civilization. There's almost no mention of it in this document. What about the drought that we're facing right now? What about our rivers drying up? What is going to happen when Los Alamos runs out of water? How are they going to function as a state entity? The Pecos and the Rio

721-5 cont'd

722-1

722-1 Chapter 4, Section 4.5.4.2, of this *SPD Supplemental EIS* addresses possible general impacts from climate change and more-specific possible impacts in the southeast and southwest, as well as the possible future need for adaptation at SRS, LANL, and WIPP as a result of climate change. Examining the adaptation of DOE sites and facilities to climate change is outside the scope of this *SPD Supplemental EIS*. However, adaptation of SPD-related facilities would be addressed in the design of such facilities. As discussed in Chapter 3, Section 3.2.9, DOE has instituted a number of conservation and water-reuse projects at LANL.

Grande are already running dry, and other military facilities are already running out of water.

Second, as we heard from the last speaker, traditional indigenous people in this region are deeply impacted by the continuation and expansion of plutonium and other nuclear activities at Los Alamos. There is a statement in this document that there's no impact to traditional American Indians. That's just absurd. You must not actually talk to any natives here. It's just ludicrous, and very offensive actually, to claim that there's no impact to native communities.

There's not really much to say, aside from (expletive) this shit. Give it up. Give up -- give up the nuclear weapons. We -- our future is being mortgaged to the nuclear 1 percent. I really feel like I have no future. Our whole planet is burning up. There's more environmental crises than I can count. Our oceans are dying, our food is genetically modified, and all our scientists can do is create more and more problems. Where are the solutions?

MR. BROWN: I have -- I think it's Donna Doran. Is Donna here?

MR. DORAN: Do you mean Doug?

MR. BROWN: It may be Doug. I need new glasses or some folks need a little help in their

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722-1 cont'd

722-2

722-2 Chapter 3, Section 3.2.11, of this *SPD Supplemental EIS* describes minority and low-income populations near LANL. Chapter 4, Section 4.1.6, analyzes environmental justice impacts of the options for pit disassembly and conversion at LANL and concludes that Native Americans living near LANL would not be exposed to elevated risks compared to nonminority populations living in the same area from the proposed activities, and that the risks associated with these activities are small. No LCFs are expected among the offsite population, including minority and low-income populations, as a result of the normal operations of the proposed surplus plutonium disposition facilities.

For this *Final SPD Supplemental EIS*, the results of a dose assessment similar to that for the MEI were added to Chapter 4, Section 4.1.6, to show the impact on a hypothetical individual living at a pueblo boundary near LANL. The maximum annual dose for a person at the Pueblo de San Ildefonso boundary would be 0.044 millirem; at the Santa Clara boundary, the annual dose would be 0.0046 millirem. These values can be compared to the MEI dose of about 0.081 millirem per year and the average annual dose from natural background radiation of 469 millirem per year (see Chapter 3, Section 3.2.6.1). For further discussion, refer to Section 2.6, Topic A, of this CRD.

This *SPD Supplemental EIS* includes an analysis for a special pathways receptor that was developed for the 2008 *LANL SWEIS* (DOE 2008) using the best information available to DOE to reflect exposures that could result from traditional living habits, including subsistence consumption of native vegetation (pinyon nuts and Indian Tea [Cota]), locally grown produce and farm products, groundwater, surface water, fish (game and nongame), game animals, other foodstuffs, and incidental consumption of soils and sediments (on produce, in surface water, and ingestion of inhaled dust); absorption of contaminants in sediments through the skin; and inhalation of plant materials. These pathways are in addition to the meat, milk, produce, water, and sediment consumption reflected in the "offsite resident" pathway assumption. The analysis concludes that persons living near LANL who practice traditional living habits would receive a higher dose than the rest of the populations living in the same area, but the risks associated with the exposures from LANL would be small (see Chapter 4, Section 4.5.3.8.2).

handwriting, because actually --

MR. DORAN: Excuse me?

MR. BROWN: No, wait. You can take a look.

MR. DORAN: I can see that.

MR. BROWN: You're not too bad, but some of them --

MR. DORAN: Okay.

MR. BROWN: All right.

MR. DORAN: I don't have that much to say.

MR. BROWN: Okay, before Doug starts, the next person -- I believe the last name is Day, and they identified themselves as "self-represented." So if your first initial is M and your last name is something close to Day, you are next.

And, Doug, I apologize.

MR. DORAN: Oh, Donna is fine.

I wrote this earlier today, and I am just going to confess, I'm way off. I'm way off base. So I'm not going to give -- I'm not going to give this to you. I'm going to say a few words until I get a notice here.

I have given it -- I have given it some thought, and if we could turn off the light that is powered by the plutonium, I don't think -- I think we could live with one less light. That's fine, fine with me. The

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reason I'm not going to read this is because I was feeling very moderate, and I knew I'd be going out on a limb among my hard-core-truth-reality compadres, but that limb would break for sure, and I'm not going to go out on it. I am going to say that these ideas, I think, in the situation are really desperate measures. We're not looking at viable solutions. I know there are a lot of energies put into coming up with these ideas, but we're moving into a situation which renders them to be, like I said, desperate.

We're grasping here. We're grasping at straws, and we're -- we've got to be better than this. We've got to be better for our ancestors, and we've got to be better for the, you know, the kids and our future generations. This is just not working. That's all there is to it. I mean, goodness.

I will mention that the likelihood that a new scientific solution which has the potential of meeting with all concerns is at work this summer outside of Geneva at the particle accelerator and may provide us some relief here. It's possible. It's possible.

MR. BROWN: And here's your minute time.

MR. DORAN: The other thing I want to point out is that what we have is a shifting baseline; okay? When we're doing our studies, we've got to have

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723-1

723-1 Chapter 3 of this *SPD Supplemental EIS* describes the affected environments at the potentially affected sites. The affected environments at the sites are the "baseline" conditions for the environmental consequences analysis presented in Chapter 4. Although the environment is always changing, a snapshot must be used to perform environmental impact analyses.

a baseline to work off of. Now what we've got is a baseline that's moving around and it's changing. So the darkest hour is before the dawn, and that's as good as it gets. And I'm just really honored to be here and talk with so many brilliant minds to listen to and learn from. Thank you.

MR. BROWN: Thank you.

So was I clear enough to try and identify our next speaker? Let me try then Michelle Victoria. Are you here?

MS. VICTORIA: I'm here. Present.

MR. BROWN: And Scott Kovac will follow you.

MS. VICTORIA: Hi. I'm Michelle Victoria. Thank you for this opportunity to be able to speak about this solution that, to me, seems insane. And I have to say, as I was sitting here, I'm always amazed, coming to these meetings, at how plutonium and nuclear weapons and nuclear waste is discussed as if we're talking about car parts or vegetables or something harmless. We have a mess on our hands, and to have tons and tons of plutonium that we need to come up with a solution for is a really serious problem. And somehow, when I come in these rooms, I feel that the people who are making these lovely presentations for us

723-1 cont'd

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don't really grasp the magnitude of what we're facing.

When I read that, you know, maybe there will be an accident and one person killed, we're talking about trucks carrying this material across our state. There's car accidents every day. Why is it these people don't think that one of these trucks will ever be involved in an accident? To me, this is foolhardy. Albert Einstein wisely stated that you cannot solve a problem from the same consciousness that created it. You must learn to see the world anew.

I asked the people at the DOE and Los Alamos and all these other places, Are you seeing this with a different consciousness? I don't think so. I don't think so, when native people in these lands are sickened by what is going on here for decades. There has been opportunities to clean it up and it hasn't happened. We're sitting here today, when there are still tens of thousands of barrels with waste at Los Alamos that are not supposed to be there anymore and you want to bring up more dangerous material? There's lands that are still polluted, and they are not being cleaned up. Why aren't -- why isn't all this money, that we supposedly have, going to do that? If you want people to show up in these meetings and support solutions, clean up the mess that's already

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724-1 Similar transports of radioactive materials and wastes routinely occur over the Nation's roads. DOE has an excellent record of transporting materials, especially SNM. In spite of this record, accidents cannot be totally eliminated. Therefore, state-specific accident and fatality rates are used in the transportation analysis when determining the risks of an accident that would result in a release of radioactive material and the risk of a traffic accident fatality.

724-2

724-2 Chapter 3, Section 3.2.6.3, of this *SPD Supplemental EIS* summarizes health effects studies performed near LANL. As described in Chapter 4, Section 4.1.2.1, and summarized in Chapter 2, Section 2.6, Table 2–3, no LCFs are expected, and there would be little offsite impact on the public from normal operations of surplus plutonium disposition facilities at LANL. As described in Section 4.5.3.3, operation of surplus plutonium disposition facilities would contribute little to cumulative health effects among the offsite population.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

there before you bring in more.
MR. BROWN: You have a minute left.
MS. VICTORIA: Okay. Someone had said that Los Alamos National Lab works under the premise of being safe and environmentally responsible. And if you want us to believe that in New Mexico, start cleaning things up. Start being environmentally responsible and show us some safety because we're not seeing it.
The whole issue around MOX fuel, it's totally controversial. And maybe for some it's not even controversial; it's known that this is not the solution. This country should not be producing fuel for nuclear power plants. We should be closing nuclear power plants. Accidents happen. And if anyone can think that they are safe and they will always be safe, look at Japan. Just look at Japan. We don't need the same happening in this country, but every few years there's disasters from climate change, from nuclear weapons, from nuclear power plants. We're talking about the survival of our planet. And when we read reports that say, you know, a few people might die of cancer deaths, we know that the rest of the report is probably also not truthful.
So it's time for truth, and it's time to change our consciousness in looking at these problems and to

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724-3

724-3 DOE acknowledges the commentor's opinion. DOE believes the MOX fuel technology is a viable approach to achieving disposition of surplus plutonium. Several national regulatory agencies, including NRC, have evaluated the use of MOX fuel in nuclear power reactors and found that it can be used safely. As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. For further discussion, refer to Section 2.4, Topic A, of this CRD.

start working together and stop wasting billions of dollars on programs that are making things more dangerous. Thank you.

MR. BROWN: Thank you.

Scott Kovac is next, and Susan Rodriguez is after Scott.

MR. KOVAC: Thank you.

Thank you, everyone, for hanging in here. My name is Scott Kovac with Nuclear Watch New Mexico. This program is a great example of why the best way to deal with nuclear waste, nuclear materials, including plutonium, is to not make it in the first place. The disposition of tons of weapons-grade plutonium is an important national security issue. We strongly urge -- we strongly urge and support safeguarding the plutonium against future use in nuclear weapons, but we must keep the plutonium out of the environment.

The controversial mixed-oxide, MOX fuel program, which has been going on for 16 years, is not the solution. We support building immobilization or vitrification facilities, crushing the pits. We need to analyze other ways to dispose of -- to treat the plutonium as waste and dispose of it.

An Environmental Impact Statement is required to analyze all major impacts of a proposed project and

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725-1 DOE does not agree that this *SPD Supplemental EIS* should consider an alternative involving termination of the MOX fuel program. As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) considered numerous alternatives for disposition of surplus plutonium, including immobilization and direct disposal of the entire surplus plutonium inventory as waste. DOE selected an approach for disposition of some of the plutonium declared surplus (68 FR 20134). As discussed in Section 2.2, Topic A, of this CRD, DOE's prior disposition decisions are not addressed in this *SPD Supplemental EIS.* In addition to addressing options for pit disassembly and conversion, this *SPD Supplemental EIS* evaluates alternatives for the disposition of an additional 13.1 metric tons (14.4 tons) of surplus plutonium; these alternatives address use of the surplus plutonium as MOX fuel, as well as alternatives such as immobilization, where the surplus plutonium would be prepared for disposal as waste.

compare those impacts to credible alternatives. This EIS should weigh and consider the public security and economic benefits of terminating the MOX program in favor of plutonium immobilization, which is a more credible alternative and should be offered as such in this EIS.

Another request I have is that the reference documents be placed on line. DOE should make all cited reference documents immediately available on the Internet, and at that point they should restart the 60-day clock after placing those -- the 60-day comment-period clock after placing those comments -- those documents on line. It's just what we need is more reading.

So here is the summary. It's 60 pages, and it's got 3 full pages of reference documents. Line 1 of the actual EIS is -- I don't know how long it is, but it's pretty long. It has 25 pages of reference documents. Right now DOE's solution is to have the reference documents at these libraries, of which there are 6 or 8 -- there's 8 in New Mexico. So that's a great start, but this is -- this year is 2012; we have the Internet. These documents should have been on line already. I have been requesting this since these scoping comments started, at least in 2010, and they are still not on

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725-2

725-2 The period for submitting comments on the *Draft SPD Supplemental EIS* closed on October 10, 2012. On the same day, DOE posted the references on the *SPD Supplemental EIS* website at http://nnsa.energy.gov/aboutus/ouroperations/generalcounsel/nepaoverview/nepa/spdsupplementaleis. Nonetheless, the *Draft SPD Supplemental EIS* and the cited resources on which DOE relied to support the analysis in the *Draft SPD Supplemental EIS* were available to the public for the duration of the comment period. Copies of the cited reference materials were sent along with copies of the *Draft SPD Supplemental EIS* to all of the reading rooms and libraries listed in the Summary, Section S.13, of the *Draft SPD Supplemental EIS* prior to the beginning of the public comment period. However, there are certain types of sensitive information that cannot be posted at publicly accessible locations and may be exempt from public release, including UCNI, OUO, PII, and proprietary information. This information was not posted on the project website or provided to the reading rooms and libraries. Despite the stated closing date of the comment period, DOE considered all comments received on the *Draft SPD Supplemental EIS*, including those received after the close of the comment period.

line and this should be a gathering -- you know, it should be part of it. It should be on line.

Am I supposed to, you know, go -- wait till the library opens in the morning and go down there and look at them? No. No. These documents should be on line. You have the technology. If you have a question on how that works, look at the Complex Transformation EIS. There's thousands of documents on line for that. That was no problem. Look at the LANL SWEIS back in '08. Another -- there are hundreds of documents on line, still on line as a library. That is a good library, and we need to have that on line and available to everyone in the future.

I'll just wrap it up by saying that -- back to this EIS: Three-quarters, or maybe more, of the Original EIS -- of this EIS has been thrown out the window. Now we're here -- we're here today considering more options. We need to end this. You know, at the very least -- I mean, I hate to say it -- but we need to start over. We need to start at the beginning. Even the Original Programmatic Environmental Impact Statement is now no longer valid, and this, this EIS is tiering off an invalid Programmatic EIS. Thank you.

MR. BROWN: Thanks, Scott.

Susan Rodriguez is speaking now, and Drew

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725-3 In this *SPD Supplemental EIS*, DOE evaluated the potential environmental impacts of a range of reasonable alternatives for the disposition of 13.1 metric tons (14.4 tons) of surplus plutonium, in accordance with the requirements of NEPA. As described in Chapter 2, Section 2.4, additional alternatives were considered but dismissed from detailed evaluation. This *SPD Supplemental EIS* supplements the *SPD EIS* (DOE 1999), which tiers from the *Storage and Disposition PEIS* (DOE 1996). The parent documents considered additional alternatives that do not need to be considered in this *Final SPD Supplemental EIS*. The *Storage and Disposition PEIS*, *SPD EIS*, supporting supplement analyses, and the decisions announced in the related RODs remain valid and, in accordance with CEQ and DOE NEPA regulations, do not need to be updated before this *Final SPD Supplemental EIS* can be issued. For further discussion, refer to Section 2.1, Topic A, of this CRD.

Kornreich will follow.

MS. RODRIGUEZ: My name is Susan (inaudible) Rodriguez, and I have lived in Albuquerque for 24 years. I have lived in New Mexico for 24 years, and I have raised my child, who is 23 now, and I have always used reverse osmosis, thank God. I don't think -- I don't know. I was thinking -- I belong to AVAT, Agua Vida Action Team, and I belong to Citizens Action, two organizations in Albuquerque that are concerned about the quality of the drinking water in Albuquerque.

And at this point, Albuquerque -- it hasn't always, but I don't know actually how long now they have been using river water. And we have been trying to get the DOE, by the way, to say that they will clean up the mixed-waste landfill, which they think all they have to do is throw a bunch of dirt over it, and that's their precedent for doing it around the rest of the country. And that is totally wrong. I mean, those wells were put in wrong. We were actually measuring the water, looking at the water coming into and under the mixed-waste landfill and not actually what was coming out of it. That's a whole 'nuther thing. So we already know about DOE.

There are four points here which I just want to

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repeat again and again and again. And I'll just say LANL is not meeting its waste cleanup schedule, and its facilities do not meet seismic standards in case of a severe earthquake. Bringing thousands of plutonium pits to LANL would further endanger public health and safety and divert resources away from cleanup.

Two: Doubling the amount of T-R-U, TRU waste coming from SRS, which is Savannah River Site, will likely exceed WIPP's capacity and, therefore, more funds are needed for existing waste, which I understand are stored in tents, in metal drums, and they are leaking.

Three: Plutonium should be immobilized so that it can be safely stored until new disposition options are available. Immobilization would also be less expensive than MOX. MOX is not viable as there are no utilities that want to use MOX fuel and existing power plants because of its cost, dangers, and the need to make changes to the reactors. You know, Fukushima, wasn't this a plant that GE convinced them, and they were really willing to do it? I don't know why, knowing the history of Japan, why they were willing to do that. But they really learned their lesson.

My other comments are two comments about NPR. I think it was this morning, they talked about the way

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726-1 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults. DOE and LANL are continuing to take appropriate actions to further improve the safety policies and controls in place at the laboratory and implement facility modifications and upgrades as necessary to improve safety in the event of an earthquake.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9), including a beyond-design-basis earthquake with fire, and describes concerns identified by DNFSB. For further discussion, refer to Section 2.3, Topic B, of this CRD.

As described in Chapter 1, Section 1.4, under all alternatives, DOE would disposition as MOX fuel 34 metric tons (37.5 tons) of surplus plutonium in accordance with previous decisions. The pit disassembly and conversion options analyzed in this *SPD Supplemental EIS*, including the PDCF Option, apply to 27.5 metric tons (30.3 tons) of pit plutonium that DOE has decided to fabricate into MOX fuel (a portion of the 34 metric tons [37.5 tons]), as well as the 7.1 metric tons (7.8 tons) of pit plutonium for which disposition is under consideration in this *SPD Supplemental EIS,* for a total of approximately 35 metric tons (38.6 tons). Appendix B, Table B–3, lists the annual and total plutonium throughput for the various pit disassembly and conversion options at SRS and LANL. For example, the maximum annual throughput for the PF-4 at LANL is 2.5 metric tons (2.8 tons) per year, while the maximum amount of plutonium to be processed could be 35 metric tons (38.6 tons) over the life of facility operation. The amount of plutonium that would be allowed at LANL at any given time would be limited, and shipments of pits to be disassembled there would be timed to support pit disassembly and conversion activities such that the amount of plutonium at PF-4 did not exceed the established material safety limit.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the

forest fires start is when -- one of the ways they start is when there are controlled burns and the burns get out of control. Well, the only one I heard them mention was up here at Cerro -- what is it called? -- Grande. And that was the end of their comment. You guys, it was on the news this morning and it was on NPR and it was in Albuquerque. I don't remember what time, eight or -- eight o'clock.

Someone has to send them a letter, and say, You know, when that fire happened and then the rain came down, hell really broke lose. All that ash moved into, I guess, the well over here in Los Alamos and moved into the river, the Rio Grande. And there was so much ash, and we have been down there -- not me, but the water people down there, the Water Utility Authority. They don't admit to anything. They just said, Oh, there was just too much ash and we couldn't deal with it, because now that we're drinking the water, it was screwing it up. They had to clean it up.

MR. BROWN: If you can make a final comment.

MS. RODRIGUEZ: Anyway, I think NPR has to be a lot more open about what that meant, when there was a fire like that, especially in Los Alamos.

Then there's -- Washington D.C. had a safety

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unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD. Wastes received at WIPP are handled at the surface for a short time before being moved into the below ground disposal areas. Wastes are not stored in "tents," and WIPP has not had a problem with leaking drums.

DOE considers immobilization a viable disposition pathway for at least some portion of the approximately 13.1 metric tons (14.4 tons) of surplus plutonium for which a disposition path is not assigned and has analyzed immobilization options it could potentially implement in this *SPD Supplemental EIS* (see Chapter 4). The analyses in this *SPD Supplemental EIS* indicate that none of the alternatives analyzed, including Immobilization to DWPF, involve any substantial risk to the safety of the public. The decisionmaker may consider cost, among other factors, when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

726-2 Disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts per NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors (see Appendix I, Section I.2).

The environmental, human health, and socioeconomic impacts of using MOX fuel in a nuclear reactor are described in Section I.2 and summarized in Chapter 2, Section 2.6, of this *SPD Supplemental EIS*. The impacts of the use of a partial MOX fuel core are not expected to be meaningfully different from the impacts of reactor operation using a conventional full LEU fuel core. As described in Appendix B, Section B.4, and Appendix I, only minor changes would be needed to commercial nuclear power reactors to use a partial MOX fuel core.

726-3 The accident analyses in Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9, of this *SPD Supplemental EIS* consider a range of internal and external events as one of the possible initiators of facility fires. The

board to come up here in February to speak to the Ph.D.s over there in Los Alamos, and this was the first time they ever came. I asked them, "Have you been here before?" "No."

It was, what, 40, 50 years? They never came. And there were these guys from Los Alamos being questioned by the safety board, and the safety board -- at least one or two of them were really on the ball, and I said, "Listen, there are so many mistakes; how does that happen? Why are there so many mistakes?"

And they said -- I couldn't believe it. I went to the back of the other room and spoke to John Fleck, who tried to get it into the paper, but it wasn't in there because Charlie Worth didn't want it to be in there. They said that, "Oh, you have to understand that our scientists are young and inexperienced; they make mistakes." Get that? They make mistakes.

MR. BROWN: Do you want to make one final point?

MS. RODRIGUEZ: All right. Remember Rocky Flats? The feds had to come in and close it down because of the Goddamn mess, and it's still not open. They want to make an animal park there and they haven't opened it yet. You know, it's not even a joke. It's really shocking that you'd think that they can open

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facilities evaluated in this *SPD Supplemental EIS* are all in cleared, industrial-like areas that are not immediately vulnerable to wildfires and are constructed of noncombustible materials. The actions that would be taken in the event of a wildfire, such as the Cerro Grande fire, are discussed in Section D.1.5.2.11.

that up and make it an animal park.

MR. BROWN: We've got some speakers --

MS. RODRIGUEZ: Thank you.

MR. BROWN: Thank you.

Drew will be followed by Jeanne Green.

MR. KORNREICH: My name is Drew Kornreich. I live in Los Alamos, New Mexico. I'm an employee of Los Alamos National Laboratories, but I'm speaking as a private citizen today. And I beg your forgiveness if you feel like you have whiplash after my comments.

I fully support both the specific mission for Los Alamos to disassemble pits and send the plutonium to Savannah River and the overall mission to dispose of plutonium via irradiation in commercial nuclear reactors. The excess plutonium has served its purpose in protecting America during the Cold War, and it's only fitting that it's now used to continue supporting American domestic interests via power generation and mixed-oxide fuel.

Regarding concerns for certifying MOX fuel, we should all recognize that in a typical light-water reactor approximately one-third of the power generated at the end of core life is from plutonium-based fissions, as Dave Clark said earlier -- or Joe Martz. The U.S. commercial fleet of reactors is constantly

727-1 **727-1** DOE acknowledges the commentor's opinion.

converting low-enriched uranium to some form of MOX fuel. We have a ton of MOX fuel throughout this country, as we speak. Reactors in Europe and Japan continue to safely use MOX fuel, and the U.S. should not be afraid to use this technology either.

Based on an approximate calculation with the Origen Code, the reactor burn-up code, a BWR fueled with MOX will remove about one-half of the fissile inventory at the end of cycle and about one-third of all plutonium. Thus, burning weapons-grade plutonium in commercial reactors not only converts the weapons-grade plutonium to reactor-grade plutonium, making it unusable in weapons, but also eliminates part of the plutonium inventory. Assuming this one-third reduction at the end of this program, the work we're here for today, the U.S. will have converted 34 metric tons of weapons-grade plutonium into 23 metric tons of reactor-grade plutonium. The rest of that mass was turned into fission products that are thereby protecting that 23 metric tons and energy to power millions of American homes.

The only thing that could make this program even more attractive to me would be for the program to work with the Office of Nuclear Energy to either restart fast-reactor development to further burn reactor-grade

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plutonium, or to work toward closing the fuel cycle via construction of a facility that could reprocess commercial nuclear fuel and feed the MOX plant with reactor-grade plutonium, further increasing the value of the investment in the MOX facility and continuing to provide carbon-free energy for the indefinite future for me and my children and my grandchildren. Thank you.

MR. BROWN: Thank you.

Okay. Jeanne Green, and I believe Marilyn Holt will follow Jeanne.

MS. GREEN: Hi. I'm actually Jeanne (pronounced John) Green. Looks like Jeanne, but that's okay. I don't have a prepared speech, so please bear with me. And I don't feel that well. I'm disabled; I have a hidden disability. So, anyway, Jeanne Green from Taos.

Number one, people who work at LANL have a vested interest in continuing nuclear weapons production, no matter what. Their salaries depend on it. They should be disqualified from speaking at these hearings.

Number two, why isn't this meeting being recorded for the public so that it can be broadcast on the radio stations? I'd like an answer to that one. I

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728-1 Under NEPA, all persons, regardless of their affiliation, are allowed to provide comments on EISs released for public review.

728-2 DOE announced to the public that it was providing a webcast of the North Augusta, South Carolina, hearing held on September 4, 2012. This was a test to determine whether enough interest exists to warrant the cost for webcasting DOE NEPA public hearings. The recording was available on the project website (http://nnsa.energy.gov/aboutus/ouroperations/generalcounsel/nepaoverview/nepa/spdsupplementaleis) throughout the public comment period. The webcast provided the same information presented by DOE at all of the *Draft SPD Supplemental EIS* public hearings. In addition, a court reporter transcribed the comments presented at the public hearings to document the hearings for the administrative record. The comments are presented in this *Final SPD Supplemental EIS*.

will repeat it. Why isn't this meeting being recorded for the public so that it can be heard by the people who cannot make it to this meeting?

MR. BROWN: I think there's time after the meeting, and you can talk to Sachiko about that.

MS. GREEN: I would just like to know right now. What is the problem with recording this meeting? You have the equipment. You have microphones. The rest of the public needs to know what people are saying here besides what LANL is saying that -- what we need. So in your purpose and need for action you said, "To reduce the threat of nuclear weapons proliferation worldwide by conducting disposition, disposal of surplus plutonium in the U.S. and in an environmentally sound manner."

MOX -- making MOX fuel is not disposal. That is not in your mission statement. It's making more plutonium. That's the first page of your little presentation here, and it's just not true. You're not sticking to your mission, to begin with. So the plutonium should be immobilized so that it can be safely stored until new disposition options are available.

Transporting plutonium around the country, which is what this proposal suggests, is absolutely insane.

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728-3 As described in Chapter 2 and Appendix B of this *SPD Supplemental EIS*, surplus plutonium would be used to fabricate MOX fuel, which would be irradiated in commercial nuclear power reactors in place of some of the conventional LEU fuel. The use of MOX fuel in commercial nuclear power reactors would reduce the quantity of weapons-usable plutonium and support accomplishing DOE's nonproliferation goals. Footnote 3 in Chapter 2 describes a 60 percent reduction in plutonium-239 after irradiation for two cycles in a domestic commercial nuclear power reactor. For further discussion, refer to Section 2.4, Topic A, of this CRD.

Examining the construction and operation of a geologic repository for used (spent) nuclear fuel and HLW is not within the scope of this *SPD Supplemental EIS*. As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel. In addition, as discussed in Appendix B, Section B.1.4, of this *SPD Supplemental EIS*, DWPF canisters containing vitrified plutonium with HLW would be stored in S-Area at SRS; these DWPF canisters would be managed in the same manner as other DWPF canisters containing HLW. DOE has terminated the program for a geologic repository for used nuclear fuel and HLW at Yucca Mountain, Nevada. Notwithstanding the decision to terminate the Yucca Mountain program, DOE remains committed to meeting its obligations to manage and ultimately dispose of used nuclear fuel and HLW. For further discussion, refer to Section 2.7, Topic A, of this CRD.

728-4 Transportation of radioactive materials and wastes routinely occur on the Nation's roads. DOE has an excellent record of transporting materials, especially SNM, with no accidents leading to any release. In spite of this record, accidents cannot be totally eliminated. DOE complies with incident reporting requirements associated with the transportation of radioactive materials and wastes set forth in DOT regulations in 49 CFR 171.15, 171.16, and 174.750. The DOT Office of Hazardous Materials Safety, Pipeline and Hazardous Materials Safety Administration, maintains a publicly available database of transportation incidents involving hazardous (including radioactive) materials. This database can be accessed at http://phmsa.dot.gov/hazmat/library/data-stats/incidents. For security purposes, DOE does not announce the shipment of SNM.

We see -- we don't even hear about accidents. We aren't told when these things happen. You know, Rocky Flats, we were not told about the fires at Rocky Flats until the FBI went in and busted them. You know, we haven't been told about the accidents that have happened in the CMR. Half the building is contaminated. That's why they think they need a new building. We didn't hear about those problems. They don't tell us when they have accidents, and they say, "We're going to do this in a safe and environmentally sound manner."

Wild fires, we had three huge wild fires in the last two decades that the last one, last year, came within a mile of Area G, with all those tens of thousands of waste containers.

MR. BROWN: You've got a minute left.

MS. GREEN: One minute? Okay. You're saying that MOX fuel can be used in reactors, and you even have a sign here saying the Tennessee Valley Authority is a potential user. This is propaganda. This is propaganda. This is not -- you do not have them on line yet. You're not saying -- you're saying that you might be able to use MOX fuel in this reactor. None of the -- none of the reactors, none of the nuclear power plants want to use this because they have

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728-5 Examining legacy TRU waste stored in Area G is outside the scope of this *SPD Supplemental EIS*. Nonetheless, DOE is aware of the potential for wildfires in the Los Alamos region. Recognizing the risks posed by wildfires, forests at LANL are thinned as part of an ongoing Wildfire Hazard Reduction Program to reduce the fuel load available in the event of a fire and DOE is actively reducing the Area G inventory by preparing TRU waste and shipping it to WIPP for disposal. DOE expects the proposed surplus plutonium disposition activities at LANL would not negatively impact progress in disposing of the stored TRU waste.

728-6 The disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts as required by NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors, including, but not limited to five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants. These reactors are explicitly considered because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Section I.1). However, the MOX Alternative also analyzes irradiation in generic commercial nuclear reactors including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2), and is not dependent on TVA participation. As described in Section I.1.1, only minor modifications to reactors using MOX fuel are expected to be needed.

to make major changes, and in here you say not major changes.

And you also say that, okay, one latent cancer fatality -- this is a bogus computer model that is being used to decide it's one latent cancer fatality. Look at the Pueblos. Look at how many people have cancer here in New Mexico. Go to the Pueblos. Go door-to-door, see if you can't find a cancer victim. They're everywhere. So this is a bogus computer model. It does not match reality. And if you want to use a real model, then do the dose-risk analysis as a follow-up to the LAHDRA Program. Put your money there. Thank you.

MR. BROWN: Thank you.

Okay. Marilyn Holt --

MS. HOFF: It's Hoff.

MR. BROWN: -- and Donald Silversmith will be next.

MS. HOFF: My name is Marilyn Hoff. I'm from Taos, New Mexico. I came down specifically to go to this hearing. I would, first of all, like to make a plea that these hearings be held in Taos, Española, and all the other places that are severely impacted by radiation coming from Los Alamos National Laboratory.

Last summer I spent about three weeks inside my

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728-7 As described in Appendices C and D of this *SPD Supplemental EIS*, state-of-the-art computer models were used in preparing this EIS. These computer codes have been independently verified and validated. The GENII Version 2 computer code (used to assess impacts from normal operations) is sponsored by EPA, and the MACCS2 Version 1.13.1 computer code (used to assess impacts from facility accidents) is sponsored by NRC. As described in Chapter 4 and summarized in Chapter 2, Section 2.6, Table 2–3, risks to the public are expected to be minor from both normal operations and potential accidents under any proposed alternative.

Regarding the incidence of cancer, Chapter 3, Table 3–37, of this *SPD Supplemental EIS* presents data from the National Cancer Institute that compares the incidence of selected cancers in United States, New Mexico, and counties near LANL. For some cancers, the rates in the counties around LANL are higher than national and state rates. The National Cancer Institute does not provide an association of these rates with their causes.

729-1 In response to requests for additional public hearings, DOE added a public hearing in Española, New Mexico, held on September 18, 2012, to the six meetings that DOE had initially scheduled. In addition, DOE extended the comment period through October 10, 2012. DOE held three public meetings related to the *Draft SPD Supplemental EIS* in the areas most likely to be affected by the proposed surplus plutonium disposition activities at LANL: Los Alamos, Santa Fe, and Española. None of these locations is expected to be severely impacted by radiation from LANL. As described in Chapter 4, Section 4.1.2.1, and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, no LCFs are expected, and there would be little offsite impact on the public from normal operations of surplus plutonium disposition facilities at LANL. As described in Section 4.5.3.3, operation of surplus plutonium disposition facilities would contribute little to cumulative health effects among the offsite population.

It should also be noted that although Española can be considered downwind of LANL, it is not downstream; the Santa Cruz River enters the Rio Grande in Española, well upstream of LANL.

house with all the windows and doors shut, and every time I ventured out, I wore a mask. My Aunt Sophie didn't wear a mask, and now she's dead of lung cancer. I survived, but it was very clear to me that the smoke coming from Los Alamos and the fire that was threatening Los Alamos last year makes it all the way to Taos very easily. We are downwind of everything that Los Alamos does and we deserve a hearing. Española is downwind and downwater. Española deserves a hearing.

You are not really consulting all of the people who are most strongly affected by what Los Alamos is doing, if you don't give hearings to all of the communities that are downwind and downwater of Los Alamos. It is a disgrace that you are just limiting yourself to these small, niggling, little forums, where only -- everybody only gets to speak for three minutes. I'm outraged by that.

Now Los Alamos, to me, is a self-perpetuating bureaucracy that is continually trying to find a way to continue to do something useless, and people are making a great deal of money doing it. And they are the second-richest county in the whole United States. You know, they are surrounded by poverty. So in order to keep Los Alamos going, now they have this scheme to

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729-2 See the response to comment 729-1.

729-3 The format used for the public hearings is a standard NEPA public meeting format that has been implemented successfully by DOE and other Federal agencies for many years. The primary reason for holding the public hearings was for DOE to gather public input on the *Draft SPD Supplemental EIS*. DOE needed to ensure that this primary goal was achieved. Therefore, it was necessary to impose a time limit on public comments due to the number of meeting attendees and limitations on the amount of time available. As described in the materials available at the public hearings, DOE considers all comments received and all comments have equal weight, whether written or oral. Commentors were also provided the opportunity to submit comments via U.S. mail, fax, and email. Despite the stated closing date of the comment period, DOE considered all comments received on the *Draft SPD Supplemental EIS*, including those received after the close of the comment period. This CRD provides responses to those comments. Public comments are one of the factors that may be considered by the decisionmaker in formulating the ROD for this *Final SPD Supplemental EIS*.

729-4 The United States remains committed to the PMDA (USA and Russia 2000) with the Russian Federation, under which both countries have agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. It is important that DOE begin plutonium disposition operations to demonstrate progress to the Russian government, meet U.S. legislative requirements, and reduce the quantity of surplus plutonium and the concomitant cost of secure storage. Use of MOX fuel in commercial nuclear power reactors would render surplus plutonium into a used fuel form that is not readily usable for nuclear weapons. For further discussion, refer to Section 2.4, Topic A, of this CRD.

Chapter 3, Section 3.2.11, of this *SPD Supplemental EIS* describes minority and low-income populations near LANL. Chapter 4, Section 4.1.6, analyzes the environmental justice impacts of the options for pit disassembly and conversion at LANL and concludes that minority and low-income populations living near LANL would not be exposed to elevated risks compared to nonminority and non-low-income populations living in the same area from the proposed activities, and that the risks associated with these activities are small. For further discussion, refer to Section 2.6, Topic A, of this CRD.

make -- to convert plutonium pits into MOX fuel, and MOX fuel, of course, will also give some kind of a boost and some further validation to the nuclear power industry. And the nuclear power industry is another thing that's absolutely useless. It creates more problems than it solves. It is polluting the planet.

We are now, all of us, having our health threatened by Fukushima. A MOX-fuel nuclear power plant would be even more dangerous. Plutonium is simply the most dangerous element on earth, and the thing that always strikes me about plutonium is that it is pyrophoric. This means that plutonium can catch fire at very low temperatures. Even sometimes if it's in granulated form, it can catch fire spontaneously at room temperature. This is why Rocky Flats became such a mess. It had plutonium fires that threatened almost to make Denver uninhabitable. If we continue with this in this unstable terrain, we are courting suicide for all of New Mexico. Los Alamos has to find a new mission, clean itself up, or get off of our map.

MR. BROWN: Okay. Donald Silversmith is now speaking, and then Lisa Putkey will follow.

MR. SILVERSMITH: My name is Don Silversmith. I'm a new resident of Santa Fe. I retired about six months ago from the Defense Threat

729-4 cont'd

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729-5 At the time of the March 11, 2011, accident at the Fukushima Dai-ichi Nuclear Power Station in Japan, Unit 3 was operating using a partial MOX fuel core. However, at least one authority has determined that the accident involved failures unrelated to the use of MOX fuel, and there is no evidence to suggest that the presence of MOX fuel in Unit 3 increased the consequences of the accident (ONR 2011). For further discussion, refer to Section 2.5, Topic C, of this CRD.

The awareness and knowledge of the dangers associated with plutonium have resulted in DOE's continuous improvement of the safety of its facilities by using special designs, operations, and procedural measures to protect workers, the public, and the environment. The activities proposed in this *SPD Supplemental EIS* would take place in highly controlled environments, including gloveboxes with inert gas atmospheres to control the dangers associated with plutonium's pyrophoric properties.

Reduction Agency. And in my remarks I want to say that I affirm and approve the focus on MOX, except I have certain caveats.

The first caveat is that with MOX conversion programs already in progress, both in Russia and in France, one alternative that's not been considered here is, in fact, outsourcing this program to countries overseas. There is no reason why we shouldn't do that, since we have a long tradition in this country of outsourcing activities to other countries.

The other thing I would like to mention is that it appears that we ought to centralize this program, in that with a program that involves an expansion of LANL activities which parallel proposed activities at the Savannah River plant where, in fact, the intent is to fabricate the nuclear fuel rods, it probably makes more sense to -- not so much to expand the Los Alamos activities, and, rather than, to focus on developing the capability at Savannah River rather than expanding Lawrence -- I'm sorry, not Lawrence -- the Los Alamos activity at this time.

I think that some thought has to be given to the inefficiencies of scale aimed at one particular facility for this entire program, rather than diverting the program all over the country; in fact, moving

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730-1 **730-1** DOE acknowledges the commentor's opinion.

730-2 **730-2** DOE did not consider sending pits to France, Russia, or any foreign country for disassembly and conversion for a number of reasons; sending U.S. pits or plutonium from pits to a foreign country would involve nonproliferation and national security concerns among others.

Regarding centralizing activities, the alternatives in this *SPD Supplemental EIS* were developed recognizing that plutonium materials are currently stored at multiple DOE sites and individual sites have their own specific capabilities with respect to pit disassembly and conversion and plutonium disposition. LANL is included because of its unique capabilities with respect to pit disassembly and plutonium processing. DOE is also considering options for locating pit disassembly and conversion activities at SRS.

things, you know, where pit conversion will takes place in an expanded facility in Los Alamos where it's going on in parallel at Savannah River facilities, which are probably more suitable, since that would be also the ultimate location for the metallic plutonium and oxide which would then be converted into pellets for use in fuel rods.

So that is basically what I want to say; that we ought to keep the activity at Los Alamos at the level that it is right now. It's important in terms of a pilot plant and research activity. I don't really think it should be expanded. It merely ought to be the expansion should take place at Savannah River. Thank you.

MR. BROWN: Thank you.

Lisa Putkey?

MS. PUTKEY: Yeah.

MR. BROWN: Okay.

MS. PUTKEY: Hello. My name is Lisa Putkey, and I work with a youth organization called "Think Outside the Bomb." And on my way here today, I was driving -- well, I had to drive over 40 minutes because, even though I live in Chimayo in the Española Valley, more directly affected downwind and downstream, we don't have any public hearings there. I plead with

730-2 cont'd

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731-1 In response to requests for additional public hearings and an extension of the comment period, DOE added a public hearing in Española, New Mexico, held on September 18, 2012, to the six meetings that DOE had initially scheduled and extended the comment period through October 10, 2012. In total, DOE held four public hearings on the *Draft SPD Supplemental EIS* in New Mexico. It should also be noted that although Chimayo can be considered downwind of LANL, it is not downstream. Chimayo and the Santa Cruz River, on which it is located, are on the opposite side of the Rio Grande; the Santa Cruz River enters the Rio Grande in Española, well upstream of LANL.

you to give us the public hearings that we deserve because, driving down, I was just so angry. I was gripping my steering wheel and getting so upset about how stupid this program is.

But after being here for a while and hearing all of my beautiful fellow love warriors speak, I just want to take a moment and say thank you. Thank you for being here today. Thank you for inspiring me. Thank you for standing up for what is right and for our communities and for our health.

And I want to take a second just to pray. I want to pray for love and for life; for our families; for our environment; for new life -- our babies; for our elders; for our water; for our soil; for our air; and I pray -- I pray for us all to have the strength to continue in this struggle for justice.

Just a few things that I wanted to say about this program, which I do not support, is that one, the idea of bringing 7 tons, metric tons of plutonium, up that one route to Los Alamos, 500 pits a year, is so absurd. Especially considering the fact that the LAHDRA Report, the CDC's -- on the CDC list showed that LANL, just in a few years period, contaminated through airborne plutonium this area more than the Savannah River Site, than the Hanford Site, than the Rocky Flats

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731-1 cont'd

731-2

731-2 The alternatives evaluated in this *SPD Supplemental EIS* include bringing up to 35 metric tons (38.6 tons) of plutonium pits to LANL for disassembly and conversion and then transporting the plutonium product to SRS for disposition. The activities proposed in this *SPD Supplemental EIS* would result in releases of very small amounts of plutonium to the environment, as discussed in Appendix C, Section C.2.4. These releases would result in very small doses to the public surrounding LANL (0.025 to 0.21 person-rem, annually), as discussed in Section C.4.1. As described in Chapter 4, Section 4.1.2.1, and summarized in Chapter 2, Section 2.6, Table 2–3, no LCFs are expected, and there would be little offsite impact on the public from normal operations of surplus plutonium disposition facilities at LANL. As described in Section 4.5.3.3, operation of surplus plutonium disposition facilities would contribute little to cumulative health effects among the offsite population.

Chapter 3, Section 3.2.6.3, of this *SPD Supplemental EIS* lists the health effects studies performed in the region around LANL, including the LAHDRA project. As indicated in the LAHDRA final report (CDC 2010), "The LAHDRA project's primary purpose was to identify all available information concerning past releases of radionuclides and chemicals from the Los Alamos National Laboratory" (the vast majority of the releases occurred between the 1940s and the 1970s). This *SPD Supplemental EIS* analyzes the potential environmental impacts from operation of facilities at LANL that employ current technologies and practices that minimize the releases of radioactive materials and hazardous chemicals to the environment to protect workers, the public, and the environment, as evidenced by the reporting in LANL's Annual Site Environmental Reports and NESHAPs reports. As shown in Chapter 4 of this *SPD Supplemental EIS,* the potential environmental releases associated with the normal operation of proposed surplus plutonium disposition activities at LANL are very small and pose minimal risk to the public.

Site, which we know was closed -- more plutonium was contaminated in our community up here than in all those sites in their entire existences combined. And you want to bring more?

And I just -- I just want to say that, Yo' really need to check yo'self when it comes to environmental justice. The fact that because within a 1-mile radius of the lab all these white people that were imported there on seeing this indigenous holy land live there, that, Oh, it's not an environmental justice factor? No. That's ridiculous.

In Española, it's like 99 percent Hispanic. And all of the Pueblos surrounding, we drink that water, breathe that air, we grow food from that ground. To say that there's no impact? (expletive) you.

Anyway, I would also like to say that 7 tons of plutonium -- again, I have heard that just 1 pound, spread evenly across the entire world, would kill everyone -- man, woman, child. So 7 tons? And you're making it. You're taking apart the pits and making it into granulated powder. What? Are you kidding me? This is the most absurd, stupid idea, and no power plants in the United States want this. What are you doing?

MR. BROWN: You've got a little less than

731-2 cont'd

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731-3 The past establishment of LANL and the townsite are not environmental justice issues within the scope of this *SPD Supplemental EIS*. Chapter 3, Section 3.2.11, describes minority and low-income populations near LANL and Chapter 4, Section 4.1.6, analyzes environmental justice impacts of the options for pit disassembly and conversion at LANL. The analysis concludes that there are no disproportionate impacts on minority populations, including Hispanics and Native Americans living near LANL, and that the risks associated with these activities are small. Comparative analyses were performed for populations within 5, 10, 20, and 50 miles (8, 16, 32, and 80 kilometers) of LANL. For further discussion, refer to Section 2.6, Topic A, of this CRD.

This *SPD Supplemental EIS* includes an analysis for a special pathways receptor that was developed for the 2008 *LANL SWEIS* (DOE 2008) using the best information available to DOE to reflect exposures that could result from traditional living habits, including subsistence consumption of native vegetation (pinyon nuts and Indian Tea [Cota]), locally grown produce and farm products, groundwater, surface water, fish (game and nongame), game animals, other foodstuffs, and incidental consumption of soils and sediments (on produce, in surface water, and ingestion of inhaled dust); absorption of contaminants in sediments through the skin; and inhalation of plant materials. These pathways are in addition to the meat, milk, produce, water, and sediment consumption reflected in the "offsite resident" pathway assumption. The analysis concludes that persons living near LANL who practice traditional living habits would receive a higher dose than the rest of the populations living in the same area, but the risks associated with the exposures from LANL would be small (see Chapter 4, Section 4.5.3.8.2).

731-4 Regarding the hazards of plutonium and the mass of plutonium pits that may be disassembled and converted to oxide at LANL, see the response to comment 731-2. Disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts per NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors (see Appendix I, Section I.2).

731-5 DOE provided notice of the public hearings that were held in August and

a minute. But you have made a good point.

MS. PUTKEY: Anyway, I'd also appreciate, if you're having public hearings, that you do a better job to let the public know that you're having a hearing. Put it in the Rio Grande Sun, please, the Española newspaper. Española, by the way -- 33 percent work at LANL; 99 percent Hispanic. To say that that's not an environmental justice issue, I'm -- uh, what kind of -- what is going on?

But I have so much faith in my fellow beautiful people here that we can make a change, and we can protect our communities and our families and the water and our land. And I send you all so much love. Even the ones who, during your speeches, those of you that work at LANL and I was making faces and giving you the thumbs down and hissing a little bit, I send you love too. Thank you.

MR. BROWN: Thank you.

That concludes the speakers who've signed up. We've run well over time. I appreciate your patience, your participation, and we are officially adjourned. Thank you.

(Hearing adjourned at 9:14 P.M.)

* * * * *

731-5

September 2012 using a variety of communication mechanisms. These included publication of *Federal Register* notices on July 27, 2012 (77 FR 44222), and on September 6, 2012 (77 FR 54908); posting the announcement on the project website; press announcements sent to local media outlets; postcard mailings; email; notification to interested stakeholders on the project mailing list; and publication of advertisements in local newspapers, including the Rio Grande Sun. The advertisements in the Rio Grande Sun were published on August 2, 2012; August 16, 2012; and September 6, 2012.

IN RE:
U.S.DEPARTMENT OF ENERGY
DRAFT SURPLUS PLUTONIUM DISPOSITION
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT
PUBLIC HEARING COMMENTS, AUGUST 23, 2012

REPORTER'S CERTIFICATE

I, JANICE J. MURPHEY, RPR, NM CCR #135, DO HEREBY CERTIFY that on AUGUST 23, 2012, the Proceedings in the above-captioned matter were taken before me, that I did report in stenographic shorthand the Proceedings set forth herein, and the foregoing pages are a true and correct transcription to the best of my ability.

I FURTHER CERTIFY that I am neither employed by nor related to nor contracted with (unless excepted by the rules) any of the parties or attorneys in this case, and that I have no interest whatsoever in the final disposition of this case in any court.

JANICE J. MURPHEY, RPR, CCR
New Mexico CCR #135
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JANICE J. MURPHEY, RPR, NM CR NO. 135

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U. S. DEPARTMENT OF ENERGY

DRAFT SURPLUS PLUTONIUM DISPOSITION
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

PUBLIC HEARING

TUESDAY, AUGUST 28, 2012
6:30 P.M.
PECOS RIVER VILLAGE CONFERENCE CENTER
711 MUSCATEL AVENUE
CARLSBAD, NEW MEXICO 88220

Holmes Brown, Facilitator
PANEL :
Sachiko McAlhany, U.S. Department of Energy,
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F O R M A L C O M M E N T S E S S I O N

I N D E X

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MR. HOLMES BROWN: My name is Holmes Brown and I will serve as the facilitator for this hearing. I'm not an employee of the Department of Energy nor advocate for any party or position. My role this evening is to insure that the hearing runs on schedule, that everyone has an opportunity to speak. I will now explain the format and ground rules to assure timely participation by all.

At the registration table you should have received a copy of the slide presentation we're about to see. It contains information.

(NOTE: Presentation begins.)

(NOTE: Comments commenced at 6:53 p.m)

MR. HOLMES BROWN: Thank you, Ms. McAlhany. This concludes the information segment of tonight's hearing. We'll take a five-minute break to review the sign up sheet for speakers. When we return we'll start with public comments on the draft supplemental EIS.

(NOTE: 6:54 p.m. recess.)

MR. HOLMES BROWN: It's now time to begin the formal comment segment. So this is your turn to begin with your comments on the content of the draft Supplemental EIS. Your court reporter for tonight is Belen Soto, who will transcribe your statements.

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Let me review a few rules for the formal comment period. Step up to that microphone over there. When your name is called, introduce yourself, providing an organization affiliation where appropriate. If you have a written version of your statement, please provide a copy to the court reporter after you've completed your remarks. I will call two names at a time. The first will be the speaker, and second of the person to follow.

In view of the number of people who have indicated interest in speaking tonight, please confine your public statement to four minutes. I will let you know when you have a minute left by holding up this card. It used to be hand letters.

If you have a statement longer than four minutes, please summarize the key points in the allotted time. All comments count equally whether verbal or presented in any of the ways which Sachiko described in the last slide spell. Sachiko McAlhany is hearing officer during this formal comment period but will not be responding to questions or comments.

So with that we have an introduction. Let me call on our first speaker. And actually I would like to -- there's a concern about the cord here. John was pointing out that there is a cord here.

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Please be careful not to trip over it.

Again, by way of introduction, let me call on our first speaker. Dale Janway is here, once again, who will present our first comments, and will be followed by Senator Carol Leavell.

DALE JANWAY: Good evening, my name is Dale Janway, I'm the mayor of Carlsbad. I'd like to thank the Department of Energy for giving me the opportunity to comment in a possible disposition of up to six metric tons of surplus plutonium at WIPP. Also, I want to note that a great number of city and elected officials are not here tonight due to the annual municipal meeting being held in Las Cruces.

As I've said many times before, I'm very proud to have a world-class facility like the Waste Isolation Pilot Plant as a neighbor. WIPP has been an amazing success story due to its outstanding safety record. An increasing number of scientists and political leaders are turning to WIPP because it is a disposable facility that works. I was especially thrilled to recently read positive comments by Allison McFarlane, the head of the NRC, about WIPP's effectiveness.

This Supplemental Environmental Impact

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Statement recommends that some of the surplus plutonium being considered be sent to WIPP, and I know of no reason why this waste should not be sent to this world-class facility. As I understand, it is defense-generated transuranic waste that is very similar to the other materials in other waste extremes previously sent to WIPP. There is plenty of space in the WIPP underground for this waste, and no regulatory changes are needed for this material to go to WIPP.

WIPP has the safest transportation system in place and has already received around 1,400 shipments from the Savannah River Site. Bringing this waste safely to WIPP will use existing transportation and infrastructure.

Finally, I understand that the surplus plutonium that would be available through this SEIS would stabilize shipping rates to WIPP, which helps stabilize WIPP's workforce.

WIPP is the safest place for the surplus plutonium. The Department of Energy recommends for this site. As a mayor of Carlsbad, I support the DOE's preferred alternative listed in its Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement.

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800-1 **800-1** DOE acknowledges the commentor's opinion.

Thank you.

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MR. HOLMES BROWN: Next speaker Senator Leavell followed by Tim Burns.

SENATOR CAROLL LEAVELL: Thank you very much. Good evening. I'm Senator Carroll H. Leavell and I appreciate the opportunity to give this testimony before the Department of Energy this evening. I have served in the New Mexico State Senate for 16 years representing Senate District 41, Lea and Eddy Counties. I represent approximately 50,000 constituents in South Eddy and Lea Counties. I also, in my service in the state senate, serve on Radioactive and Hazardous Materials Oversight Committee.

The Waste Isolation Pilot Plant has proven to be one of the safest operated facilities in Southeast New Mexico with millions of hours worked without a serious accident. WIPP is well situated to take the surplus plutonium from Savannah River Site, process it and bury it 2150 feet underground in the salt bed. I can think of no safer place to have it disposed.

My understanding and my research indicates the material in question is no more dangerous than

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much of the nuclear waste already processed and buried in WIPP. Over the past 10 years our nation has run up the national debt that is in an amount that is beyond imagination. We do not need to reinvent the wheel as we look for a place to dispose of the surplus plutonium in question. There's no need to reinvent another WIPP while the current facility has the capacity to take care of the material involved. The WIPP is a tried and true safe operation that is well capable of disposing necessary materials.

The WIPP transportation history is one that can make our nation proud. There have been many thousand loads of nuclear material carried from all parts of our nation to the facility without a major at fault accident. DOE has spent millions of dollars in perfecting containers that will keep our citizens safe in the event an accident did occur. The drivers are some of the best trained and tested drivers in the industry. The trucks and drivers have proven to be the safest on our highways.

There is strong support for the WIPP in Southeast New Mexico among the constituents in Senate district 41. There have been good jobs provided our citizens. The DOE contracts and

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801-1 **801-1** DOE acknowledges the commentor's opinion.

subcontractors are a good corporate citizens that have a record of supporting the communities in southeast New Mexico.

The Waste Isolation Pilot Plant has a proven report of being a strong positive for the quality of life in southeast New Mexico.

For all the above reasons, I stand in strong support of the proposal to dispose of the surplus plutonium in question and Waste Isolation Pilot Plant, Eddy County, New Mexico.

Thank you very much.

****

MR. HOLMES BROWN: Thank you.

Tim Burns followed by Ron Galbraith. This is number one on the list.

TIM BURNS: Hi, my name is Tim Burns, I've been a Carlsbad resident for 12 years. I have a Ph.D. in chemistry and am employed by Los Alamos National Laboratory in Carlsbad, supporting of the Waste Isolation Pilot Plant.

I'm here tonight representing myself, not the national lab. I wish to register my support for the Surplus Plutonium Disposition Supplemental EIS preferred options.

With respect to the SPD that is MOX-able,

802-1 **802-1** DOE acknowledges the commentor's opinion.

I support the path forward of converting it to mixed oxide fuel to be used to support the future energy needs of the U.S. As a taxpayer, it is important to me that I continue to receive a return on the tax dollars that have been invested in production, purification, storage and protection of that nuclear material.

With regard to the material that does not lend itself to conversion to MOX, I support disposal in the Waste Isolation Pilot Plant.

The bedded salt present at WIPP is a national resource that has sealing and annealing properties that make it suitable for long term geologic isolation of nuclear waste from the environment while minimizing other risks.

It's been my privilege to have been involved with aspects of packaging, characterizing, transporting and disposing of defense transuranic waste at WIPP. WIPP has a good and proper process and it should be utilized for national problems of this nature.

Thank you.

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MR. HOLMES BROWN: Ron Galbraith is next, Rowdy Schenck will follow.

802-1 cont'd

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RON GALBRAITH: My name is Ronald Galbraith and I'm a long time resident of Carlsbad. I do work at the WIPP facility for a contractor who supports the safe disposal of waste at the Waste Isolation Pilot Plant. And I stand here today to support the draft supplemental environmental impact study on the plutonium disposition that my predecessor speakers have covered, obviously, things that I can't cover, won't cover, won't intend on covering.

My background is in law enforcement. I've spent a lot of years participating in these kind of hearings and, of course, the concerns are many. But you can see here that we have a representative sampling of the community and that the WIPP site is by far one of the safest, if not the safest method of disposing of waste materials. And I think that you'll find that people within this area, within this region have a tremendous respect for the things that we do at WIPP.

Now, I would like to say that I do appreciate the opportunity to speak tonight, looking at the time-line, this was a very complicated and is a very complicated issue. But what I appreciate out of this is there has been information available

803-1 **803-1** DOE acknowledges the commentor's opinion.

through the process of time that has allowed the managers of these processes to determine that weight. We need to rethink this process, or add to this process that makes other opportunities or options available to us. And, of course, the one that is of specific interest to me is the one where the Waste Isolation Plant will be potential recipients of 6.1 metric tons of plutonium oxide waste of which we can handle very, very well. The engineering, the technologies, the transportation, the safety environment, the safety culture is certainly there, not only at the site but within the community in general. And I think that it would be wise to make that option for that alternative available and utilize the WIPP as its method for disposition. Thank you.

****

MR. HOLMES BROWN: Thank you. Our next speaker Rowdy Schenck. Betty Richards will be next.

ROWDY SCHENCK: My name is Rowdy Schenck, I live at 25 Walker Road, it's about 10 miles that direction. I probably live closer to the WIPP site than 99.999 percent of the rest population. That being said, I could possibly stand to lose more than most people. I've been out to the WIPP site when I

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first moved to Carlsbad 12 years ago and at that time I don't know if they still do, you could tour the facility, and it was great. You know you take one tour through there and you realize what a safe facility it is, what the engineering that's went into it, the research, upon research, upon research. I mean, these guys, the DOE they're going to research, which reminds me, we're almost on the anniversary date today, 20 days past exactly, the DOE -- I'm sure all you guys being members of it realize it was 35 years ago it was established. The sole reason to reduce our dependence on foreign oil, 35 years ago just almost to the day. Back then we had imported 35 percent of our oil, nine to 35 years of work. We're importing 55 percent of our oil. My point is they haven't done really well on that foreign dependency. I hope they can work a little faster and a little more efficient on getting this stuff to dispose of and the WIPP site is an excellent place to do it. It's 2000 feet below ground than sitting on top of the ground. Thank you.

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MR. HOLMES BROWN: Thank you. Betty Richards. Robert Defer will follow.

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804-1 **804-1** DOE acknowledges the commentor's opinion.

BETTY RICHARDS: Betty Richards. Oh dear WIPP what can the matter be, DOE causes such misery. Please don't expose us to nuclear jeopardy, please don't you do it again. The numbers were crunched to fit DOE's grand scheme, ignoring the data supported by our team. Water runs swiftly through -- at the WIPP scene. You're going to do it again. Oh dear it's such -- lessen the danger by switching the label, you will contaminate our water table, you're going to do it again.

You said that the WIPP site would -- isolate TRU waste, you promised the WIPP site would safely store TRU waste. High level TRU waste will travel like tooth paste, you're going to do it again. Oh dear, what can the matter be, EPA, rubber stamps DOE, please don't expose us to nuclear jeopardy, please don't you do it again.

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MR. HOLMES BROWN: Thank you very much.

Robert Defer and Russell Hardy will follow.

ROBERT DEFER: My name is Robert Defer, last name D-E-F-E-R, and I'm the executive director of the Chamber of Commerce here in Carlsbad. Thank you so much for the opportunity to discuss this

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805-1 As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

805-2 WIPP was authorized for operation by EPA in accordance with EPA's determination that operation of WIPP would protect groundwater resources. All waste sent to WIPP would be in accordance with the WIPP waste acceptance criteria, and groundwater resources in the WIPP vicinity would continue to be protected.

very, very on board issue that you've brought up this evening. Because of WIPP's safety record and expertise that they have in this field, the Chamber of Commerce agrees that public involvement is a very important component in this process. The Chamber of Commerce is in support and agreement with a DOE preferred alternative for disposition of the surplus plutonium that is not suitable for MOX fuel to be disposed at the Waste Isolation Pilot Plant here in New Mexico.

Thank you.

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MR. HOLMES BROWN: Russell Hardy, and John Gratton will be after you.

RUSSELL HARDY: Hello, my name is Russell Hardy and I am the director of Carlsbad Environmental Monitoring & Research Center. I'm sorry, I didn't prepare a song for you day. The Carlsbad Environmental & Research Center is funded through a financial assistance grant through the Department of Energy. We are an independent monitoring firm of the WIPP site.

We look for environmental impact of the WIPP site on our environment in Eddy and Lea Counties. We monitor air, water (both drinking

806-1

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water and surface water), soil, sediment, and people. We look for a number of things including heavy metals but also radionuclides. Unfortunately, in response to Ms. Richards' remarks, the data do not bear out the claim that the water table is affected by the WIPP activity. We have found absolutely no impact of the WIPP site on any of the water we've tested. And we began our testing of water, air, soil, and sediment several years before waste was emplaced in the WIPP, so we have a good baseline to compare to.

We have found, on four different occasions, instances of plutonium in the air filter of the air coming through the exhaust shaft of the WIPP repository. Our radio chemist have done the analysis comparing the ratio of the plutonium 239 and 240 to the plutonium 238 and have determined that the plutonium we found on four composite samples out of over 150 tested was the result of dust that was brought into the WIPP facility that contained global fallout. It was not a result of waste that was placed inside the WIPP site.

We have also seen, again through air sampling of the WIPP site, instances of fallout from the Fukushima Nuclear Power Plant that happened a

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little over a year ago in Japan. Even though that was more than 10,000 miles away, we were able to pick up traces of iodine and americium that blew across the ocean and settled here in Carlsbad.

In all of those cases, including plutonium, the iodine and the americium, they were very small levels, they were minute. We're talking on the order of ten-to-the ninth power below what the EPA or NMED would require as actionable levels. So the result is that any release of the WIPP site or even globally is going to be picked up by our scientific staff and for that reason I can stand here today and tell you that the WIPP site is a safe entity for the long-term disposal of transuranic waste. So, speaking both professionally and personally, as a lifelong resident of southeast New Mexico, I support the preferred alternative proposed by DOE, those are any plutonium that can be converted to MOX fuel, I support that. Any plutonium or surplus plutonium that cannot be converted to MOX fuel should be placed in the WIPP site for permanent disposal.

Lastly, I support the DOE preferred alternative for disassembling pits and conversion of surplus plutonium to occur at existing sites

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including the PF-4 site at LANL and the SRS sites (K-area, H-Canyon/HB-Lin, and MFFF) rather than constructing a new stand-alone facility.

Thank you.

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MR. HOLMES BROWN: John Gratton followed by John Waters.

JOHN GRATTON: Hi, I'm John Gratton, I serve as President of NMSU Carlsbad, my comments today are not brought to you as representative of the University, my comments today are brought as a member of the Board of the Carlsbad Chamber of Commerce and a member of the Board of the Carlsbad Department of Development. I cannot speak for all the employees at the university at this time. Personally, I'm in complete favor of this proposal for WIPP. I had the privilege of touring WIPP in March and I was taken on, I guess, a complete as possible tour of that facility. The safety record and the manner of how that facility deals with any waste are truly remarkable. You can't help but be impressed in terms of how that group, the transportation, the drivers, the precautions they take to make sure the waste is handled properly, and the different ways of dealing with more potent waste

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right now to ensure that there is no improper mixing of levels of radioactive waste. It's a truly remarkable process with continuous oversight to ensure correct and appropriate procedures. I'm here as a citizen of Carlsbad to lend my support to WIPP and to urge the Department of Energy to give full consideration to WIPP as a possible alternative for the deposit of surplus plutonium. Thank you guys very much.

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MR. HOLMES BROWN: John Waters. H.R. Heath after John Waters.

JOHN WATERS: Thank you very much. I again want to welcome you to Carlsbad and thank you again for giving our community the opportunity to give our input on this proposed project.

My name is John Waters, I'm the executive director for the Carlsbad Department of Development. Economic development is something that I am very interested in, the jobs of our community, the future of our community is very important to me. I'm a little unusual, as I also have a science background as well. So I am very interested anytime science can help further the economic development of our community, and WIPP has certainly proven to be a

808-1 **808-1** DOE acknowledges the commentor's opinion.

809-1 **809-1** DOE acknowledges the commentor's opinion.

scientific economic booming for our community and the future of the WIPP site.

I want to specifically address an argument that's being made by Don Hancock regarding WIPP's capacity and the Remote Handled Program.

Mr. Hancock claims that WIPP's capacity might be exceeded with six additional metric tons of waste is based on his assumption that some of the disposal panels are not 100 percent full of CH waste and thus, WIPP is behind on its RH disposal commitment.

In reality, WIPP panels 1-5 were completed at about 82 percent capacity. This was partially due to the delays through the WIPP opening later than originally expected. This unused space, however, does not count toward or against WIPP's volume limit.

WIPP, in fact, has a procedure in State of New Mexico for adding additional disposable space in the underground, if needed. This procedure would not change WIPP's volume limit.

It is also true that remote handled waste, which goes in boreholes, is difficult to package and is not always sent to WIPP at a rate that allows it to keep up with the emplacement of CH waste on the

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floor.

In fact, the New Mexico Environment Department is currently considering a permit modification to WIPP to use shielded containers for RH waste, a safe and practical way to offset this concern, in my opinion.

That, of course, is also being opposed by Mr. Hancock.

Once again, there are procedures in place to add additional disposal space in the underground, if it's needed.

In my opinion, Don Hancock has used the RH waste issue as diversion for a number of different arguments recently, but I fail to see how it's applicable to this discussion. The momentary RH shortfall is an understandable and easily resolved issue that has nothing to do with WIPP taking on some additional CH volume.

Thank you very much.

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H.R. HEATH: Thank you guys for taking your time to come to our town of Carlsbad. My name H.R. Heath, I certainly wasn't planning on saying anything. I saw a place to sign up to speak, I'm going to do it.

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Fourteen years ago I started working as a private subcontractor for the WIPP site as a paint contractor which is what do. It's amazing as everyone has said the safety record of the WIPP site. The safeness of sodium encapsulating radiation is quite miraculous. I really have nothing to say that hasn't been said. I do want to go on record as a citizen contractor in this town to say that WIPP is the absolute safest place for this type of stuff. Why do anything else?

Thank you.

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MR. HOLMES BROWN: Joe Epstein. Jerry McTaggart will be after Joe Epstein.

JOE EPSTEIN: My name is Joe Epstein. I'm a citizen of Carlsbad, retiree, and prior to that I was working on the WIPP project. Again, thanks for being here Department of Energy and holding this hearing. I would like to comment on the piece of the SEIS concerning the six metric tons of plutonium disposal at WIPP. The only concern that I have seen, and this is kind of similar to what John Waters brought up, but a little different, was that the space for this six metric tons would take up available space and not allow the original planned

810-1 **810-1** DOE acknowledges the commentor's opinion.

811-1 **811-1** DOE acknowledges the commentor's opinion.

disposal to be completed. But the WIPP's volume limit under the Land Withdrawal act is 6.2 million cubic feet of our 176,000 cubic meters. The planned disposal at WIPP is 144,000 cubic meters, some of that difference or that difference is the result of some of the waste originally planned being low level waste. So we're left with 32,000 cubic meters, and as pointed out in the SEIS, this six metric tons is 17,000 of those 32,000 cubic meters available. So this six metric tons does not take up any of the planned disposal capacity, rather it falls within it. No regulatory changes are necessary for this CH waste, and similar waste Rocky Flats, Hanford Site, and Los Alamos have already been received. The site has the operational capability, and mentioned by others, the transportation par excellence capability. So I support this tremendously. Thank you very much.

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MR. HOLMES BROWN: Jerri McTaggart, W.T. Tom Martin to follow.

JERRI MCTAGGART: Good evening and thank you for having this meeting. My name is Jerri McTaggart, I work for Los Alamos National Lab. I talk to you tonight as a private citizen. I approve

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the surplus plutonium to be disposed of at WIPP. This material is not suitable for fabrication of mixed oxides. This waste is similar to what was packaged and shipped to WIPP from Rocky Flats, LANL and Hanford. I was a supervisor at Rocky Flats and packaged over 95 percent of this similar material that came to WIPP from Rocky Flats, so I know how safe it is. As a supervisor, this was a waste dream. From all the waste dreams I've ever packaged and handled through my entire 28-year career, it's the safest. It's the most consistent. It's the easiest to characterize and it's the easiest to package. It's a very simple process, and it's easily handled. And as my crew, worrying about my crew, it was probably one of the safest processes we've ever dealt with.

So I encourage you to think about WIPP as a disposal facility option.

Transportation is already in place, so we know that's not a problem, and encourage the Department of Energy to accept the WIPP site as a disposal plant to the surplus plutonium.

Thank you for your time.

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MR. HOLMES BROWN: Tom Martin?

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812-1 In response to comments on the *Draft SPD Supplemental EIS*, DOE expanded the WIPP Alternative to include disposal at WIPP of all 13.1 metric tons (14.4 tons) of surplus plutonium for which a disposition path is not assigned. As described in Chapter 2, Section 2.3.3, DOE estimates that 2 metric tons (2.2 tons) of surplus plutonium could not meet the criteria for MOX fuel. Therefore, the MOX Fuel Alternative analyzes the fabrication of 11.1 metric tons (12.2 tons) of surplus plutonium into MOX fuel and potential disposal of 2 metric tons (2.2 tons) at WIPP.

As discussed in Chapter 4, Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD. All CH-TRU waste sent to WIPP would be in accordance with the WIPP waste acceptance criteria. For further discussion, refer to Section 2.2, Topic B, of this CRD.

812-2 DOE acknowledges the commentor's opinion.

Next person is someone who doesn't need any warnings, John Heaton.

JOHN HEATON: My name is John Heaton, I'm presently chairman of the Mayor's Nuclear Opportunities Task Force here in Carlsbad, and I'd like to devote my time to commenting on the erroneous arguments that would irresponsibly leave nuclear waste where it is to seep into our water supplies, to be subject to the ever increasing number of tumultuous weather events and be a target for weapons proliferation. But, most of all deferring the legacy problem to our children when we know that WIPP and salt are the solution.

The first question I will go over, and that is the capacity of WIPP. There's clearly 32,000 cubic meters of extra capacity and a 17,000 cubic meters that this would represent in the plutonium, clearly there's adequate space for it. There has been questions about stardust and whether it should be described in detail or not, in terms of mixing with the plutonium to render it unusable. And, the stardust concept involves adding off-the-shelf chemical additives to by-products from plutonium operations to reduce the recoverability of plutonium and allow increased options for storage

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and disposition. Candidate stardust constituents are classified but the use of stardust in rendering plutonium unusable is not classified in terms of designating it unusable. There have been implications that existing law would have to be changed because requirements prohibiting funds for disposal at WIPP of plutonium in excess of 20 percent by weight, this was a requirement annually included in the appropriations act by Senator Dominici, to protect our plutonium stores of the United States, but now that we have recognized that we need to dispose of some of these stores, it is no longer included in the appropriations act, which is a year to year kind of legal proposition, if you will. And so it is no longer being included and hasn't been for the last number of years. And, frankly, there are no changes to existing laws that need to be made.

What additional NEPA analysis is necessary to support a decision to bring additional plutonium waste to WIPP?

The direct disposal of 50 metric tons of surplus plutonium was eliminated from further analysis in the Storage and Disposition PEIS because it would exceed the capacity of WIPP when added to

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the DOE's inventory of TRU waste. Inventories that were anticipated at the disposal at WIPP of up to the six metric tons of non-pit plutonium would not exceed WIPP's capacity and therefore was considered to be a reasonable alternative in this SPD Supplemental EIS. It does not need to be changed or redone. The NEPA process has worked. Changes to the SEIS have been made as the process is suppose to do. That's what the EIS process and the NEPA process is all about.

Another question as to what are the impacts of the surplus plutonium on WIPP performance assessment. And there, frankly, is none. This new, or this waste stream fits the WIPP waste acceptance criteria, and so there should be no impact on performance assessment.

And then there's been a question about what about international inspections of WIPP. Frankly, the IAEA has the will authority to inspect this waste and if they chose to do so. And I think that the folks at WIPP would welcome them to come and do an inspection, if that's what they wanted to do.

Another comment about the waste coming to WIPP meeting the Spent Fuel Standards. I have

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already spoken about stardust and its ability to render the plutonium to this standard. And furthermore, DOE, as do I, believes as the WIPP alternative provides the best possible protection from theft, diversion, or future reuse in nuclear weapons.

In closing, burying this waste at WIPP safely isolates it from the environment forever, and ensures it will never be available for proliferation.

Thank you for your time, and I strongly support the alternative for the six metric tons of plutonium going to WIPP. Thank you.

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MR. HOLMES BROWN: Next speaker Abraham Van Luik and Jay Jenkins to follow.

ABRAHAM VAN LUIK: Good evening. I should have said something earlier. Good evening, my name is Abraham Van Luik, I work for the US Department of Energy, I'm also a human being and a citizen and I'm here in those latter two capacities. I would like to speak to you about two home comings. One really that's already happened, and one that I hope will happen.

The first one is 33 years ago I finished a

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813-1 DOE believes all the action alternatives addressed in this *SPD Supplemental EIS* would be resistant to proliferation. MOX fuel use, immobilization, and vitrification with HLW are all alternatives that would place the plutonium within a highly radioactive matrix. Because of this, and because used fuel assemblies and HLW canisters are heavy, the plutonium under all of these alternatives would be impossible to handle without highly specialized equipment. Under the MOX Fuel Alternative, all but 2 metric tons (2.2 tons) of this surplus plutonium would be fabricated into MOX fuel. The 2 metric tons (2.2 tons) of surplus non-pit plutonium would be disposed of as CH-TRU waste at WIPP. Using surplus plutonium in one or more commercial nuclear reactors, DOE would generate electricity and render the plutonium into a heavy, highly radioactive used form that would be impossible to handle without highly specialized equipment. Furthermore, the residual plutonium within the used nuclear fuel would contain a higher percentage of non-fissile plutonium-240 than weapons-grade plutonium, making it less attractive for use in nuclear weapons.

Ph.D. on the physical chemistry of evaporites. You know what evaporites are? When you evaporite sea water you get salt, that's evaporites. Here just a couple of years ago I joined WIPP. I go down into the repository, I put my hand on the walls, those are evaporites. I finally come home. The beauty of these evaporites are, analysis have been done not by myself, I haven't looked at them, you put your hand here, you put your hand there, there is water, very small amounts of water in the salt here and there. There this water just a few feet away has never been in contact with or seen that water. And it has been there for 250 million years from the time before dinosaurs that water has not moved more than an inch, if that much. Surely this term is capable of isolating plutonium, that's what it does.

Now, bringing in a little bit more doesn't change a thing. Let me talk about another home coming. Thirty-one years ago I worked at Hanford, literally within the shadow of the plant which is the plutonium finishing plant, the plutonium from that plant was shipped somewhere else to make into weapons. And I thought, gee, am I really part of this process? Well, some people didn't think so, because I was there as the environmental sampler to

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make sure nobody was losing anything. How wonderful would it be now that I'm at WIPP to see that material come back and be disposed of permanently in an unusable form. It would just be a wonderful thing for me, personally, if that would happen. So, for scientific reasons that this is a perfect place for permanent isolation, and for personal reasons, for this material that I was part of creating, for me to be part of now disposing of it, this is perfect for me. And I wish that you would implement your preferred alternative and bring as much of it as you can into WIPP.

Thank you.

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MR. HOLMES BROWN: Jay Jenkins and Bob Forest to follow.

JAY JENKINS: My name is Jay Jenkins, I'm a resident of the Carlsbad area, and some may say it takes a village to raise a child, some may also say it takes a village to raise a Waste Isolation Pilot Plant. Carlsbad has a proven track record of a long safe career of welcoming and disposing of nuclear waste. It makes sense to have a surplus plutonium disposal at WIPP. Thank you.

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814-1

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815-1 DOE acknowledges the commentor's opinion.

MR. HOLMES BROWN: Bob Forest, then Jack Volpato.

BOB FOREST: Thank you. My name is Bob Forest, and I guess John Heaton and I have been around longer than anybody, other than this gentleman right here. It just amazes me where we started 35 years ago in a beat down town in Carlsbad, talked about the WIPP project, and we talked about maybe 250 employees, about 100 million dollar budget, and we never dreamed it would turn into the holding facility of this kind in the world that gets opened. And to go up and see all those sirens that were in the window 30 years ago, and all the antis. I never will forget the meeting in Sweeney Hall, people screaming, hollering, threw rocks at our bus, it was all over the transportation issue. I came home, told my wife, I don't know that we'll ever get this thing opened, with the kind of opposition we have. But we stuck with it, and having people like this gentleman, I learned something just a minute ago, I didn't know water 2 feet from here was different than the water 2 feet from there. But that's what made it successful. If I had to, one thing, our biggest asset there just isn't one thing, there's about three things. One is

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called salt, one called community, and the other is the workforce, the contractors. The DOE has been a great part of this, and the future is bright ahead of us, and we're moving ahead. We're probably the only community in the United States out there pushing right today, John Heaton taking a lead, this interim storage for high level waste. We're looking to the future. We get people calling us all the time about why can't WIPP's capacity be the next -- mountain to have this plutonium show up fits the guidelines of WIPP. And the land, it's a perfect fit for Carlsbad. But you know I watched the news last night and a big issue at the republican convention is, I want a job and I'd like to have a house that doesn't lose its value. Since 1984 we got involved with WIPP, everybody's house in Carlsbad has gone up from double to triple in price. Jobs, I can't tell you what it's been, the best. Bench mark, we have is our success in 35 years ago there was only one community in the whole United States that wanted WIPP, and that was Carlsbad. Six and a half years ago enrichment facility in Louisiana was looking for a home, two towns stepped up six and a half years ago, wanting that LES facility. Two years ago a -- comes on the

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scene, 200 communities are looking after that facility, so, maybe we've done such a good job that we're kind of hurting ourselves. But I tell you what, being mayor and working on this project has been a joy and to work with the nice people we know. We've come a long way but still have a long way to go. If you've ever been to Denver, drive by what used to be Rocky Flats, what a great story that is. 21 sites that we have cleaned up, and we've saved DOE so much money on acceleration. We've been good stewards, we've been good partners. It's you the stakeholders that have made this work. I encourage the DOE and plutonium to go ahead with that project.

Thank you.

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MR. HOLMES BROWN: Thank you very much. Next speaker is Jack Volpato with Eddy County, and Ron Griggs will follow.

JACK VOLPATO: Thank you for coming to Carlsbad, we appreciate the opportunity to speak on behalf of the plutonium surplus storage. Jack Volpato with Eddy County. I'm an Eddy county commissioner representing District 4. I also am on the board of the Chambers of Commerce and on the board of the Department of Development, and I also

816-1 **816-1** DOE acknowledges the commentor's opinion.

serve on the mayor's nuclear task force.

WIPP when it was first proposed, I was -- I'm a lifelong resident, and when it was first proposed I was 17. I'm thinking, gosh, do I really want this crap in my backyard? Do I really want it here? I was pretty iffy about it. As it went along and you learn more about it and got educated, you start thinking this might work, this might be a good for the community, this might be a good thing for the U.S. to dispose of a problem that's sitting on the ground all across the nation.

So you think about this, and then it opens after a long lengthy process. We got our first shipment, things starts rolling, people start moving in. The economy just kicks into high gear around here. We turn from a little cow town to a very good city with lots of good jobs, high paying jobs, building new houses, increasing infrastructure, and now we're looking at crossroads at WIPP. We're starting to get to a point where we need to start to think about evolving WIPP and evolving into other waste extremes and other missions. We have such a great success rate, people have talked on and on about what has been accomplished and how it's been accomplished, the safety records as far as

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transportation and handling disposition, characterization. Now, it's time to take the next step and look at other waste streams. Six metric tons of non-moxable plutonium, it's an ideal fit. We have infrastructure, we have brain power, we have engineers, we have the facility here. We have the public support. The Blue Ribbon Commission says you shouldn't build anything nuclear without local support. I'm here to tell you this is just a drop in the bucket of local support that we have in this room. We have an entire community. If you poll the community I would say 95 percent is in favor of what DOE and what WIPP does here. We have an excellent turn to move the ball forward without any kind of regulation. Other missions will require legislation and changes in regulations. This however does not, and we should move forward and do this. Your supplement sheet is like, if you look at it as a play guide, DOE must dispose US surplus, grade usable, safe secure the environmentally sound checkmark for WIPP. The next item, proliferation resistance form that can never be used again, variants, salt couple thousand feet down, checkmark. If you go down this and you look at these things in the summary, it has WIPP written all over it and I

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817-1 DOE acknowledges the commentor's opinion.

can not see why we would not want to do this and why there would be opposition to this, it's just the logical reasonable and rational thing to do. Thank you very much?

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MR. HOLMES BROWN: Thank you. Ron Griggs, and Judy Waters to follow.

RON GRIGGS: Good evening. My name is Ron Griggs. In my most recent past life I was mayor of the City of Alamogordo. I currently am the candidate for the New Mexico State Senate. I came over here tonight to support or offer to support the Mayor, the City Council, the Eddy County Commission and Senator Leavell and all the members of the Carlsbad community who support the preferred alternative contained in the SPD supplemental EIS. I think when you look at the research that's been presented tonight, you can tell that the researchers and the drafters who were charged with determining the best options for the reuse or disposal of this waste have done so. And I definitely support the conclusions contained in this document.

Thank you.

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MR. HOLMES BROWN: Thank you. Judi

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818-1 DOE acknowledges the commentor's opinion.

Waters.

JUDI WATERS: Actually, Jack stole all my thunder. The thought about all these wonderful points, I have done some research on all this information, and whatever, and I come to some wonderful conclusions. But you know what everybody has said everything that needs to be said. My name is Judi Waters and I am City Councilman here in town. I am chairman of the board of the Chamber of Commerce, and I could name some others but we'll leave it at that. I've talked to many, many people here in town and I have yet to find one person who is against all of this. I think we all support it 100 percent. To tell you the truth we'll look at it this way, I've lived here 40 years, I'm a mother and a grandmother of many children, grandchildren, and if I didn't really believe in the safety of all of this and the good for Carlsbad, simply I wouldn't be here. So I support this greatly and thank you for the opportunity to speak.

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MR. HOLMES BROWN: Thank you very much.

That concludes the list of folks who had signed up to speak. We're scheduled to stay in session until 8:00, so if there's anyone in the

819-1 **819-1** DOE acknowledges the commentor's opinion.

audience who hasn't spoken yet and would like to add. I have one person. Yes, please step up. If you can provide your name for the court reporter.

ROXANNE LARA: Roxanne Lara, L-A-R-A. I apologize I wasn't on your list. I got in a bit late. Good evening. I serve as the chairman for the Eddy County Commission and when I became a commissioner I took an oath, and that oath was all of our decisions that we made as a commission would be for the health, safety and welfare of the citizens of Eddy County and that is, I guess, the glass as we look through every time we look at decisions. And you've already heard from one of our commissioners this evening, Commissioner Volpato, and he has spoken about his support for this project. And I'm here to express my support as well.

As Eddy County Commissioner, when we go to meetings and we talk about what's happening with the WIPP site and we talk about how this city and this community is looking for other ways, extremes, I often get asked questions on the safety issues. And what I often tell people is that I was born and raised here. My family lives here. My husband's family lives here, for generations and generations.

38

820-1 **820-1** DOE acknowledges the commentor's opinion.

And I absolutely would not support something that isn't proven to be safe to me, because when it gets down to it at the end of the day, we live here. We live here, work here, play here, we don't want something here that's not going to be safe just because it bring jobs or more dollars to the community. All of our decisions, I think, should be based on science, on logic and on common sense, not on philosophy and not on politics. I think that's part of what's wrong with the world today, and I hope that the decision that's based on science and logic and common sense will be to bring the plutonium here to the WIPP site. Thank you.

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MR. HOLMES BROWN: Again, we have a few minutes left before we adjourn. Is there anyone else who would like to have your comments?

Well, does anybody have a watch that reads 8:00. Well, I think we can go ahead and adjourn. Let me again thank everybody for taking the time to come out and add your comments, and it's always a pleasure to be here. So with that we will officially adjourn.

Thank you very much.

(Hearing concluded at 8:00 p.m.)

820-1 cont'd

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REPORTER'S CERTIFICATE

STATE OF NEW MEXICO)
)
COUNTY OF EDDY)

I, Belen A. Soto, CSR, RPR, NM CSR, RPR, in and for the State of New Mexico, do hereby certify:

That I took down in Stenotype all of the proceedings had in the before-entitled matter at the time and place indicated, and that thereafter said Stenotype notes were transcribed into typewriting at and under my direction and supervision, and the foregoing transcript constitutes a true and accurate record of the proceedings had.

I further certify that I have no interest in the event of the action.

WITNESS my hand and seal this 13th day of September, 2012.

Belen A. Soto
NM CSR No. 106, RPR

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U.S. DEPARTMENT OF ENERGY

DRAFT SURPLUS PLUTONIUM DISPOSITION
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

PUBLIC HEARING

SEPTEMBER 4, 2012
5:30 P.M.

NORTH AUGUST MUNICIPAL CENTER
100 GEORGIA AVENUE
NORTH AUGUSTA, SOUTH CAROLINA 29841

Holmes Brown, Facilitator

Panel Member:
Sachiko McAlhany, U.S. Department of Energy, National Nuclear Security Administration

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U.S. DEPARTMENT OF ENERGY

SURPLUS PLUTONIUM DISPOSITION
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

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THEREUPON THE FOLLOWING PROCEEDING WAS HELD:

MR. BROWN: Thank you all for coming. If you will take your seats we'll get started for this evening's hearing.

Good evening. Welcome to this hearing of the Department of Energy Surplus Plutonium Disposition Draft Supplemental EIS. I hope you've had an opportunity to browse the displays in the hallway and an opportunity to talk to project staff. My name is Holmes Brown. I'm the facilitator for this evening's meeting. I'm not an employee of the Department of Energy nor an advocate for any party or position. My role this evening is to ensure that the meeting runs on schedule and that everybody has an opportunity to speak. At the registration table you should have received a copy of the slide presentation that's about to be presented. It contains information on the surplus plutonium disposition program and the supplemental EIS. If you didn't receive a copy please raise your hand so staff can give you a copy. We've got one person in the second row here, then two over here.

There are a few parts of this hearing.

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The information segment and the formal comment segment. Both the information segment and the formal comment segment are being webcast to a wider audience. The webcast URL will be available for viewing online through September 25th. Because this hearing is being webcast to a wide audience, I'll ask that you observe acceptable community standards in your choice of language. That may be an unnecessary request of such a gentile audience but we have had occasions where that wasn't observed. Those who wish to submit comments but prefer not to appear on the webcast can do so in a number of ways listed on the back page of the handout you just received.

The information segment began with the just concluded hour-long open house and continues with welcoming remarks by the local site representative followed by a 20 minute supplementation by Sachiko McAlhany, who is the supplemental EIS document manager for the Department of Energy. Ms. McAlhany will discuss the surplus disposition plutonium disposition program and contents of the supplemental EIS, the national environmental policy act or NEPA that governs the process and the schedule for

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completion of the supplemental EIS.

The formal comments segment will follow the slide presentation. During this segment members of the public will provide comments to the Department of Energy Draft Supplement. The court reporter will transcribe your comments verbatim and a DOE official will be present to hear your comments but will not be responding to questions or comments. If you wish to make a comment tonight and have not yet signed up to do so please add your name to the list at that registration desk. I will call on speakers based on the order in which they signed up. A speaker will not be allowed to yield time to another speaker.

We will now resume the information segment. I would like to introduce Doug Dearolph, the NNSA manager of the Savannah River Site office. He will offer welcoming remarks and introduce Sachiko McAlhany, the EIS document manager.

MR. DEAROLPH: Thank you, Holmes. Good evening and welcome. I am Doug Dearolph, the National Nuclear Security Administration Savannah River Site office manager. The Department of

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Energy NNSA have announced the availability of the Draft Surplus Plutonium Disposition Supplemental Environmental Impact Statement, which you may hear called the draft SPD supplemental EIS. The supplemental EIS includes dispositional alternatives for 13.1 metric toms of plutonium that has been declared surplus to the nation's defense needs and alternatives for the pit disassembly and conversion capability that include the use of existing or expanded capabilities in the Department of Energy facilities. Several of those existing or expanded capabilities involve facilities at the Savanna River Site. They are the mixed oxide fuel fabrication, or MOX facility, the H-Canyon HB-line chemical separation facility, the K-area complex and the defense waste processing facility. In addition to the Savannah River Site facilities the TA-55 facility at the Los Alamos national laboratory in New Mexico is also being considered.

As cooperating agencies for the Draft Supplemental EIS, DOE and the Tennessee Valley Authority or TVA also evaluates the impact of using mixed oxide fuel in the TVA reactors should

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TVA decide to do so. This mission is the cornerstone of meeting the nation's international commitments to nuclear non-proliferation and to safely dispose of surplus plutonium. The Savannah River Site plays an important role in this long-term national security and clean-up mission. The most important element of this meeting tonight is receiving your comments on the Draft Supplemental EIS. Your interest and input is greatly appreciated. And now it my pleasure to introduce to you Sachiko McAlhany, the NEPA Document Manager for the Draft SPD Supplemental EIS.

Thank you.

(Thereupon the slide presentation was given.)

MR. BROWN: Thank you, Ms. McAlhany. That concludes the information segment. We'll take a five minute break while we review the sign-up sheet and when we resume we will begin the comment section.

(Brief recess was held.)

MR. BROWN: We will now begin the comment section. Before we begin the comment section a final reminder that if anybody finds the center steps difficult to negotiate there are

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hand rails on the two sides of the stairwells if you want to use those to come down to the microphone.

With that by way of introduction we will now get started with our public comments. Mel Jenkins will lead off and he will be followed by Donald Bridges.

MR. JENKINS: Thank you. My name is Mel Jenkins, I live in Columbia, South Carolina. I am an officer with Environmentalists, Incorporated.

As a premise, you should note there are those -- not me -- but as you know who promised the controls of the experimental MOX fuels concerns since the 1970s. First we are in strong agreement with the neutralized weapons-grade proposal of plutonium course. Second of all, others participating today and elsewhere may be addressing the specifics of this proposal such as past unwillingness of nuclear power operators to use experimental MOX fuels. Our concern, speaking for myself as a South Carolina resident and officer of Environmentalists Incorporated and founder of Environmentalists Incorporated, that including all those matters are extremely

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900-1

900-1 The commentor may be referring to transmutation processes such as the proposed Roy process for treatment of radioactive isotopes (see comment 65-1). Examining the possible use of transmutation processes to treat surplus plutonium is not within the scope of this *SPD Supplemental EIS*.

important. Our concerns are more basic. We're concerned with the actual process. Although the DOE recognizes and the agency requires to comply with NEPA in the 2005 regulations needless spells out what needs to be done to actually implement these guidelines. This includes a number of directives, and these as we reviewed reports they're considering are not fully carried out. As an example the report is not clear and decisive to the point. Also the report is not clear or concise or to the point. Also the report is not supported by evidence which shows the DOE has to the fullest extent possible considered all the impacts on the environment of the communities. The DOE has not complied also to directives regarding the environmental report concerns being circulated as providing basic qualifications of those primarily for burial. We have attempted to gather assistance and find information related to the report. As an example we did not find a section on human error, yet this is a long-term major concern where plutonium and other radioactive materials are involved. Though the absolute containment of plutonium is absolutely necessary how is it to be accomplished

9

900-2 **900-2** This *SPD Supplemental EIS* was prepared in accordance with applicable CEQ and DOE NEPA regulations. Appendix D and Appendix J evaluate the human health effects of accidents at DOE nuclear facilities and NRC-licensed nuclear reactors, respectively. As described in these appendices, both DOE and NRC consider human error in determining things that might go wrong and lead to an accident and evaluating the probabilities of the accident occurring. Appendix E describes transportation between facilities, such as the mode of transport and packaging to be used, as well as the related radiological and nonradiological impacts. As described in Appendix E, Section E.6.2, DOE and its predecessor agencies have a successful 50-year history of transporting radioactive materials with no fatalities related to transportation of hazardous or radioactive cargo.

with the complicated operations of transport between facilities is not adequately explained. Repeated incidents over the years prove this.

We suggest the process to this point is flawed and therefore in addition to seconding the specific issues which, others will bring forward and have brought forward, we have planned to request the extension of comment time. We do appreciate the process done proactively to extend comment time and we still will ask for direct association for discovering missing or non-located data. This is of course not the intent of the system to avoid answers, rather we look to assist in reviewing and updating the system so that information and communication is essential. Thank you very much.

MR. BROWN: Thank you. Next is Donald Bridges and Terry Floyd will follow.

MR. BRIDGES: I'm Donald Bridges. I am a member of the SRS Citizens Advisory Board and I'm speaking as a private citizen from North Augusta.

I support the DOE program of processing and using the high quality plutonium in a constructive manner. I firmly encourage the use

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900-2 cont'd

900-3

900-3 In response to requests for extension of the public comment period, DOE extended the end of the comment period from September 25, 2012, to October 10, 2012. DOE believes that sufficient time was provided for review of the *Draft SPD Supplemental EIS* and, therefore, did not further extend the comment period.

DOE responded to a number of questions during the public comment period but could not participate in an extensive dialogue with each commentor. During the public comment period, the public was encouraged to submit comments on the *Draft SPD Supplemental EIS*. All scoping comments and comments on the draft that DOE received were considered in preparing this *Final SPD Supplemental EIS*. Responses to all comments are provided by DOE in this CRD, which is part of the *Final SPD Supplemental EIS*.

The *Draft SPD Supplemental EIS* and the cited references (on DVDs) were available in the reading rooms and libraries listed in the Summary, Section S.13, of the *Draft SPD Supplemental EIS* for the duration of the public comment period.

901-1

901-1 DOE acknowledges the commentor's opinion.

of H-Canyon and HB-line to support this pit disassembly at the SRP for the MOX facility. The H-Canyon complex is an existing capable facility that represents a cost effective option for the DOE. I encourage the use of that facility to the extent of its thorough capability. It is important in my view that DOE is able to demonstrate that they can carry out such a program as this in an efficient and effective manner. I encourage DOE to work diligently to meet all the MOX construction and operating schedules, realizing that a budgetary squeeze is a likely prospect. In any event I encourage DOE to make a decision and move out. This program is now 16 years old. It will soon be old enough to go to college.

Thank you.

MR. BROWN: Thank you. Terry Floyd is next and Tom Coleman will follow.

MR. FLOYD: Good evening. I'm Terry Floyd and I am from Georgia. I'm a private citizen. I have a history of evaluating the way nuclear waste has been non-treated and put in a time lapse. And I am here to offer all parties an alternative that will environmentally be much

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901-1 cont'd

902-1

902-1 Since there are currently no domestic commercial nuclear power reactors using the technology described by the commentor and none are currently under construction, this technology is not a reasonable alternative within the time period necessary to implement the Surplus Plutonium Disposition Program objectives.

superior to what is being proposed here and that is the liquid fluoride thorium reactor technology. And if you go back into the DNA of the liquid fluoride thorium technology history you have two of the leading scientist creators of nuclear science, namely Enrico Firmi and Eugene Wigner in Chicago. And they -- under Firmi's direction in the Manhattan Project in 1942, December 1942, they had the actual first chain reaction in downtown Chicago which was totally controlled. And later on the 1944 Enrico Firmi stated that he thought that nuclear energy would not be acceptable to the public because of pending dangers. And Eugene Wigner, I believe he was the first director at Oak Ridge, he started an initiation to pursuing thorium as a nuclear fuel.

Now, let's just have this little breakdown, all right? We've got one reactor of liquid water, the light water reactor that is standard across the world, there's over 400 of them that uses uranium plutonium fuels. Compare uranium to thorium. Well, thorium is four times more abundant than uranium. Also thorium is not water soluble; that's one reason there's so much

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902-1 cont'd

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of it. And that's another thing that makes uranium and handling uranium so dangerous; because it is water soluble, it can get in the ground water.

Number two is if you have of the liquid light water reactor it burns five to six percent of the fuel. That's the reason why you have to consider something -- this makes Yucca Mountain seems like a feasible remedy for nuclear waste.

MR. BROWN: You're going over.

MR. FLOYD: Thank you.

The liquid chloride thorium reactor burns 95 percent of the waste including the waste of light water reactors from nuclear weapons and it is scalable to the point where you can design and configure liquid chloride thorium reactor in a 40 foot container located on-site at every LWR and every nuclear weapons storage facility and do the processing on-site and produce electricity, a C02 greenhouse gas, no emissions, no mining at all and produce electricity. And there's another concept of the --

MR. BROWN: You have to wrap it up.

MR. FLOYD: Yeah, I got you.

-- it's called a WAMSR and its a waste

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annihilating mode self-reactor and it can use the existing nuclear waste including the weapons that we have across the world right now, enough to produce all the electricity that the world can use for 72 years.

Thank you.

MR. BROWN: Thank you. Tom Coleman and Tom Clements will follow.

MR. COLEMAN: Good evening. My name is Tom Coleman. I am a resident of Aiken, South Carolina. I'm an employee of AREVA, vice president of the company.

On behalf of AREVA, MOX fuel is safe. MOX fuel is not a new technology; electrical utilities have used MOX fuel for decades. Some 40 reactors worldwide in five different countries use MOX fuel today. The first reactor began using MOX in 1972. That means the technology has been tested and proved continuously for nearly 40 years and international safeguards have ensured no proliferation occurred during those four decades. MOX has been vigorously tested by independent safety authorities in seven countries that assessed the use of MOX fuel in reactors to determine it achieves the same safety standards

903-1 **903-1** DOE and TVA acknowledge the commentor's opinion.

as traditional fuel.

Some uranium-based waste nuclear fuel -- some critics point to the higher plutonium concentration in MOX fuel as a reason for concern. In fact, uranium based nuclear fuel produces plutonium which contributes to the fission process in the reactor.

Thank you very much.

MR. BROWN: Thank you. Tom Clements is next and he'll be followed by Susan Corbett.

MR. CLEMENTS: Good evening. My name is Tom Clements and I am the Nonproliferation Policy Director for the Alliance for Nuclear Accountability and I live in Columbia, South Carolina. I have been following this program for all these 16 years so I am quite familiar with it. And as we heard no reactors have been identified or secured by DOE to use this experimental plutonium fuel. While the document indicates that Browns Ferry and Sequoyah are interested in using MOX the document states that TVA does not have preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used.

15

904-1

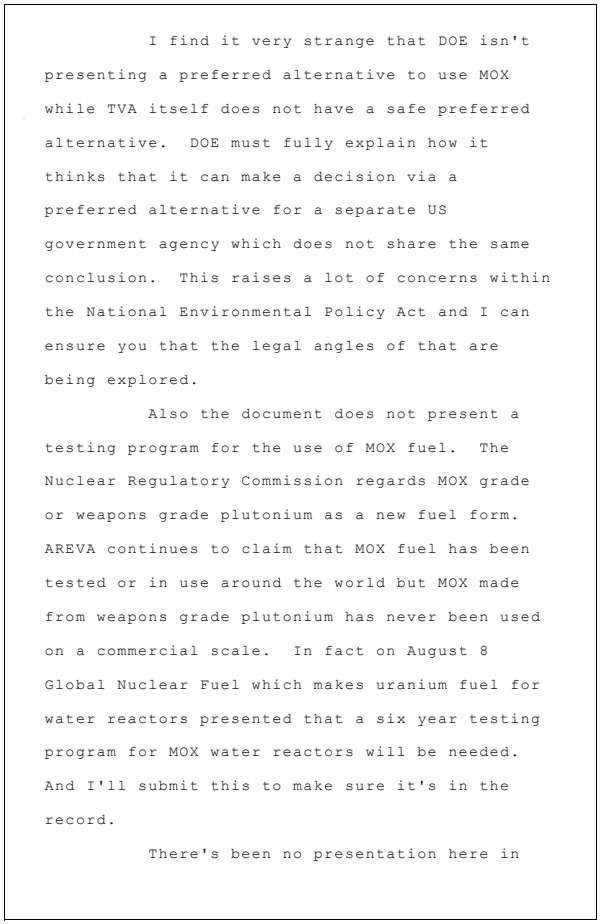
904-1 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In the *Draft SPD Supplemental EIS*, the MOX Fuel Alternative was DOE's Preferred Alternative for surplus plutonium disposition. DOE's preferred option for disposition of surplus non-pit plutonium that is not suitable for MOX fuel fabrication was disposal at WIPP. DOE's preferred option for pit disassembly and conversion of surplus plutonium metal, regardless of its origins, was to use some combination of facilities at TA-55 at LANL and K-Area, H-Canyon/HB-Line, and MFFF at SRS, rather than to construct a new stand-alone facility.

In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose.

The disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts as required by NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors, including, but not limited to five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants. These reactors are explicitly considered because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Section I.1). However, the MOX Alternative also analyzes irradiation in generic commercial nuclear reactors including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2), and is not dependent on TVA participation.

TVA, as a cooperating agency, may adopt this *Final SPD Supplemental EIS* after independently reviewing the EIS and determining its comments and suggestions have been satisfied (40 CFR 1506.3(c)).



I find it very strange that DOE isn't presenting a preferred alternative to use MOX while TVA itself does not have a safe preferred alternative. DOE must fully explain how it thinks that it can make a decision via a preferred alternative for a separate US government agency which does not share the same conclusion. This raises a lot of concerns within the National Environmental Policy Act and I can ensure you that the legal angles of that are being explored.

Also the document does not present a testing program for the use of MOX fuel. The Nuclear Regulatory Commission regards MOX grade or weapons grade plutonium as a new fuel form. AREVA continues to claim that MOX fuel has been tested or in use around the world but MOX made from weapons grade plutonium has never been used on a commercial scale. In fact on August 8 Global Nuclear Fuel which makes uranium fuel for water reactors presented that a six year testing program for MOX water reactors will be needed. And I'll submit this to make sure it's in the record.

There's been no presentation here in

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904-1 cont'd

904-2

904-3

904-2 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. Post-irradiation examination results confirmed that MOX fuel containing weapons-grade plutonium generally performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant and established the relevance of the European MOX fuel experience using reactor-grade plutonium. Before any MOX fuel is used in the United States, however, NRC would perform a comprehensive safety review, which would include information prepared by TVA or other reactor operators, as part of the 10 CFR Part 50 license amendment process. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. There is currently no schedule for fabrication and testing of LTAs. For further discussion, refer to Section 2.4, Topic A, of this CRD.

The information presented by GNF was based on use of a GNF-designed fuel and did not address the potential use of AREVA-designed MOX fuel. AREVA has extensive data on the performance of reactor-grade MOX fuel in both BWRs and PWRs. As discussed above, additional information is available from the prior irradiation of MOX LTAs at the Duke Energy Catawba Nuclear Station.

904-3 The commentor is correct that the reactor that would use the first fuel assemblies from MFFF has not yet been identified. The reactor that would use these assemblies would be determined as fuel sales agreements and contracts are put into place and NRC approval of their use is granted. No production-scale MOX fuel would be produced in MFFF until a contract for its use is in place.

the document of the production schedule for the MOX plant. It has been presented by DOE that eight fuel assemblies would be produced in 2018 but it is unknown for what type of fuel this would be or for what reactors it would be for. My guess is they will need to use lead use assemblies which are going to have to be tested at Browns Ferry between 2019 and 2025 which throws a real scare into this program.

In the document DOE also claims that the so called spent fuel standard which has provided a radiation barrier for the plutonium is essentially dead. DOE says they believe that the alternative analyzed in this document including the WIPP alternative provides protection from theft diversion in future reuse in nuclear weapons akin to that afforded by the spent fuel standard.

This is essentially an admission that MOX isn't the only option and underscores the need for a new in-depth analysis for the ultimate disposal of plutonium as waste. So we are in support of plan B which analyzes all of the disposal options of waste.

Now, finally let me mention that the

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904-4

904-4 This *SPD Supplemental EIS* does not abandon the Spent Fuel Standard for surplus plutonium disposition. As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) considered numerous alternatives for disposition of surplus plutonium, including immobilization and direct disposal of the entire surplus plutonium inventory as waste. As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS.* This *SPD Supplemental EIS* evaluates alternatives for 13.1 metric tons (14.4 tons) of surplus plutonium material for which DOE does not have a disposition path assigned. The approximately 2 metric tons (2.2 tons) of surplus plutonium that would be disposed of at WIPP under the MOX Fuel Alternative is impure plutonium that could not be readily used in a nuclear weapon. This impure plutonium would be blended with large quantities of inert material that would make recovery, purification, and reuse in a nuclear weapon even more challenging, and the material would be disposed of 2,000 feet (610 meters) underground. Separate from the MOX Fuel Alternative, 13.1 metric tons (14.4 tons) of surplus plutonium could be disposed of at WIPP under the WIPP Alternative (see Section 2.3.5). As with the MOX Fuel Alternative, this surplus plutonium would be blended with large quantities of inert material, making it challenging to recover, purify, and reuse. For further discussion, refer to Section 2.2, Topic B, of this CRD.

MOX cost has spiraled out of control. My estimates are that 17.5 billion dollars are about to be spent on the program. This is versus approximately four billion dollars needed for the disposal of waste. I'd like to know how many of you out there are concerned about the budget and the debt and the government maximizing costs of this program. Are people concerned about that. If we were to choose the lowest possible alternative it would not be MOX. The Department of Energy needs to reveal what the life-cycle costs of this programs are and how much is about to be spent on the program, but they refuse to do that.

And finally because of the problems with this document and because TVA will not commit to MOX use, a record decision cannot be issued for the document that's been produced. If it is this raises a host of legal problems and I encourage the DOE to think long and hard before issuing any more on this document.

Thank you very much. I have a number of things to present.

MR. BROWN: Thanks, Tom. Next is Susan Corbett and Tom Jenkins will be after Susan.

904-5 **904-5** Cost information on DOE programs is made publicly available as part of the President's annual budget submission to Congress. CEQ and DOE NEPA regulations do not require that costs be included in an EIS. Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

904-6 **904-6** See the response to comment 904-1 regarding TVA's interagency agreement with DOE. Based on this *SPD Supplemental EIS* and consistent with the requirements of NEPA, DOE may make a decision in a ROD to be issued no sooner than 30 days after its announcement of a Preferred Alternative in the *Federal Register*. TVA has a number of options for fulfilling its NEPA obligations and publishing a ROD. TVA would not make a decision until after DOE issues a ROD regarding this *Final SPD Supplemental EIS*.

Comments from the North Augusta, South Carolina Public Hearing (September 4, 2012)

MS. CORBETT: Good evening, I am Susan Corbett and I am the chair of the South Carolina Sierra Club. Like Tom I have been following this issue for a long, long time. I was trying to think the last time I was here in this room was for a previous MOX hearing. And the Sierra Club has maintained very early on, in fact I believe we have a resolution that we passed and I should have brought it with me -- opposing the use of plutonium as a fuel, in fact a national Sierra Club has long been involved going way back to the '70s opposing plutonium as a fuel. And it has all along felt plutonium should be immobilized and we still feel that today. It would be cheaper, faster and safer on all fronts to just immobilize it. We always felt it should be considered waste and not a resource and now we have spent all these millions of dollars. Today we hear the federal debt is 16 trillion dollars now and we just have to be more prudent with the way we spend our money.

I was looking at this and it says that the purpose of this was to -- disposition of surplus plutonium in an environmentally sound manner, and I'm wondering how that squares with

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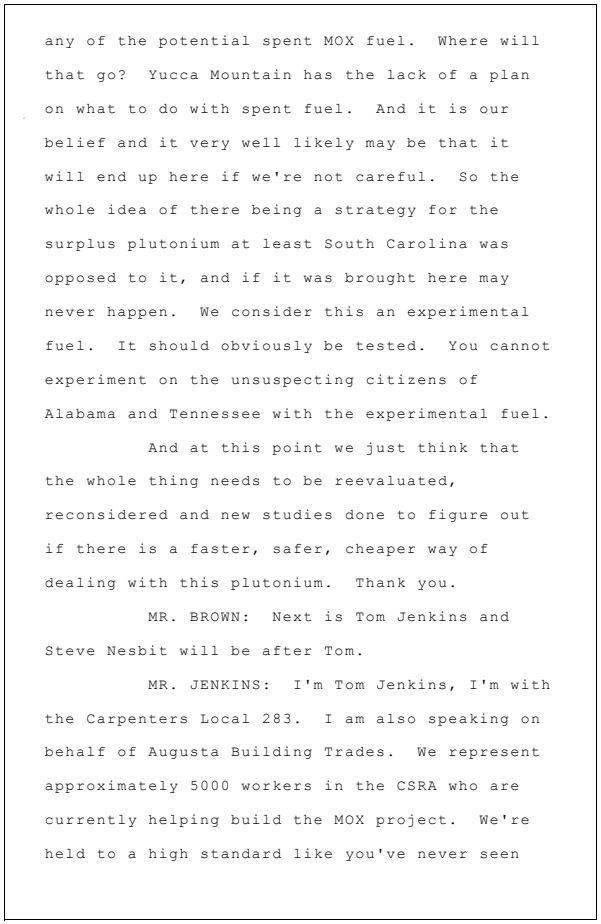
905-1 DOE acknowledges the commentor's support of immobilization of surplus plutonium.

As discussed in Section 2.1, Topic A, of this CRD, the *Storage and Disposition PEIS* (DOE 1996) and the *SPD EIS* (DOE 1999) evaluated numerous alternatives for disposition of surplus plutonium, including immobilization. DOE selected an approach for disposition of some of the plutonium declared surplus (68 FR 20134). As discussed in Section 2.2, Topic A, of this CRD, DOE's prior disposition decisions are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. One of the alternatives involves immobilization of this surplus plutonium with subsequent safe storage.

905-2 Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

905-3 As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel. In addition, as discussed in Appendix B, Section B.1.4, of this *SPD Supplemental EIS*, DWPF canisters containing vitrified plutonium with HLW would be stored in S-Area at SRS; these DWPF canisters would be managed in the same manner as other DWPF canisters containing HLW. DOE has terminated the program for a geologic repository for used nuclear fuel and HLW at Yucca Mountain, Nevada. Notwithstanding the decision to terminate the Yucca Mountain program, DOE remains committed to meeting its obligations to manage and ultimately dispose of used nuclear fuel and HLW. For further discussion, refer to Section 2.7, Topic A, of this CRD.

As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. MOX fuel LTAs were tested in Duke Energy's Catawba Nuclear Station, and post-irradiation examination results confirmed that MOX fuel containing weapons-grade plutonium generally performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the



any of the potential spent MOX fuel. Where will that go? Yucca Mountain has the lack of a plan on what to do with spent fuel. And it is our belief and it very well likely may be that it will end up here if we're not careful. So the whole idea of there being a strategy for the surplus plutonium at least South Carolina was opposed to it, and if it was brought here may never happen. We consider this an experimental fuel. It should obviously be tested. You cannot experiment on the unsuspecting citizens of Alabama and Tennessee with the experimental fuel.

And at this point we just think that the whole thing needs to be reevaluated, reconsidered and new studies done to figure out if there is a faster, safer, cheaper way of dealing with this plutonium. Thank you.

MR. BROWN: Next is Tom Jenkins and Steve Nesbit will be after Tom.

MR. JENKINS: I'm Tom Jenkins, I'm with the Carpenters Local 283. I am also speaking on behalf of Augusta Building Trades. We represent approximately 5000 workers in the CSRA who are currently helping build the MOX project. We're held to a high standard like you've never seen

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fuel qualification and licensing process. While there are differences in MOX fuel compared to LEU fuel, these differences are understood and can be addressed using measures such as modifications to reactivity control systems and core fuel management procedures. As addressed in Chapter 4 and Appendix I of this *SPD Supplemental EIS*, under normal operating as well as postulated accident conditions, the impacts of operating these reactors using a partial MOX fuel core are not expected to change meaningfully from those associated with use of full LEU fuel cores. For further discussion, refer to Section 2.4, Topic A, and Section 2.5, Topic B, of this CRD.

905-4 In this *SPD Supplemental EIS*, DOE evaluated the potential environmental impacts of a range of reasonable alternatives for the disposition of 13.1 metric tons (14.4 tons) of surplus plutonium, in accordance with the requirements of NEPA. As described in Chapter 2, Section 2.4, this *SPD Supplemental EIS* supplements the *SPD EIS* (DOE 1999), which tiers from the *Storage and Disposition PEIS* (DOE 1996). These parent documents considered additional alternatives. The *Storage and Disposition PEIS*, *SPD EIS*, supporting supplement analyses, and the decisions announced in the related RODs remain valid and, in accordance with CEQ and DOE NEPA regulations, do not need to be updated before this *Final SPD Supplemental EIS* can be issued. For further discussion, refer to Section 2.1, Topic A, of this CRD.

before on the MOX project, which we should. I'm a third generation Savannah River Site. I have worked out there personally and now represent guys out there in the building construction trades and support the PDCF coming to this area. We'd like for you guys to make a decision soon and bring it to Augusta. We're ready for it and we have the trained crafts. That's all I want to say that we support this project. Thank you.

MR. BROWN: Steve Nesbit and Kevin Dewitt will be next.

MR. NESBIT: Good evening. I am Steve Nesbit from Duke Energy Corporation. I'm the director of nuclear policy and support there. Thank you for the opportunity to provide these comments.

In general I think the supplemental EIS does a good job of assessing the environmental consequences of the alternatives that are presumed. Speaking from personal experience, MOX fuel is a safe, effective and proven means of disposing of surplus plutonium. Tom Coleman alluded to the European experience of safely using MOX fuel for decades. In addition Duke Energy conducted MOX fuel disassembly program at

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906-1 DOE acknowledges the commentor's opinion.

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907-1 DOE and TVA acknowledge the commentor's opinion.

the Catawba Nuclear Station and further demonstrated that weapons-grade mixed oxide fuel performs essentially the same as reactor-grade mixed oxide fuel.

Duke Energy, the company I represent, has no technical concerns with the use of mixed oxide fuel. People that alluded to concerns on the part of Duke Energy with respect to mixed oxide fuel, we have none. The fuel performed adequately in the Catawba reactors.

I am also confident that the fuel can perform safely at TVA reactors or other reactors licensed by the Nuclear Regulatory Commission in the United States. NRC licensed reactors are held in very exacting safety standards. Furthermore, reactors have to meet the standards of the Institute of Power Operations, a voluntary industry self-policing organization. Before any mixed oxide fuel is used in any reactors in the U.S. it has to be reviewed and approved by the Nuclear Regulatory Commission.

I want to address briefly the non-proliferations aspects and some of the alternatives. In the 1990s DOE performed a non-proliferation assessment of the various

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907-2 In 2011, DOE re-examined the 1997 *Nonproliferation and Arms Control Assessment of Weapons-Usable Fissile Material Storage and Excess Plutonium Disposition Alternatives* (DOE 1997a) and determined it was still valid. The 1997 assessment includes evaluation of can-in-canister immobilization and deep borehole disposal, which is similar to disposal at WIPP. Therefore, a revised nonproliferation assessment is not needed.

alternatives for presenting disposition and found that the use of MOX fuel did meet spent fuel standards and also immobilization, homogeneous immobilization deficit in fuel standard and did not find the can to canister spent fuel standard at that time. Furthermore, to my knowledge direct disposal hasn't been evaluated for non-proliferation therefore I think those two alternatives deserve additional non-proliferation evaluation, not as part of the Environmental Impact Statement but in a separate action on the part of the DOE.

So in summary I just want to say that mixed oxide fuel is a safe, proven and effective means of disposing of plutonium, and I think it's important that this country get on with this mission. Thank you.

MR. BROWN: Kevin DeWitt. Is Kevin here? Ernst Chaput is next.

MR. CHAPUT: Several people have alluded to the fact that we've done this before. It reminds me of the movie Groundhog Day. Hopefully this is the last day.

My name is Ernie Chaput. I'm a resident of Aiken, South Carolina and I'm

907-2 cont'd

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representing the Economic Development Partnership for Aiken and Edgefield Counties. The EDP has long supported the DOE's Surplus Plutonium Disposition Program whose objective is to render a significant part of the U.S. and Russian Federation stockpiles of weapons capable plutonium into a form which is not readily useable in nuclear weapons. To date you have all heard the declarations that 80 or 90 tons of materials have been declared surplus subject to disposition, enough plutonium to make several tens of thousands of nuclear weapons. We believe this is a great victory of great importance of the planet Earth and should be loudly applauded and vigorously supported.

We remain committed to the use of MOX fuel as the only viable way of destroying large quanties of weapons-usable plutonium. Using MOX in reactors has been proven to be safe and effective world-wide; both for pressurized and boiling water reactor types because the burning of MOX fuel results in an isotopic shift of the plutonium, that plutonium is changed forever; not readily used for weapons. Any other plutonium disposition methods considered by DOE such as

908-1 **908-1** DOE acknowledges the commentor's opinion.

immobilization or direct burial are reversible -- the plutonium, if recovered, remains weapons-usable.

The Draft Supplemental EIS is an important step in allowing the US to more quickly reduce its inventory of weapons-usable plutonium while saving significant taxpayer dollars. DOE supports a preferred alternative as outlined by the EIS.

We offer two additional comments: One, DOE needs to complete the NEPA actions as quickly as possible and aggressively budget for and execute the implementing actions. The sooner MOX fuel prepared with surplus weapons plutonium is being used in nuclear reactors the sooner the world will realize a reduction in the amount of weapons-usable plutonium.

Secondly we note that DOE has not established the annual quantity or total quantity of MOX feed to be produced by each of the three facilities proposed for that purpose. NEPA impacts were prepared using a bounding analysis.

As DOE establishes the design output for each of these alternate pathways, we recommend that the technical maturity of

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908-2 Consistent with the requirements of NEPA, DOE may issue a ROD no sooner than 30 days after its announcement of a Preferred Alternative in the *Federal Register*. As shown in Appendix B, Table B–2, MFFF is estimated to operate for 21 to 24 years, depending on the amount of surplus plutonium to be fabricated into MOX fuel. Decisions regarding funding for specific Federal programs and projects are outside the scope of this *SPD Supplemental EIS*.

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908-3 Appendix B, Table B–3, of this *SPD Supplemental EIS* lists the maximum annual throughput for each of the facilities/capabilities analyses in this *SPD Supplemental EIS*. The analyses in this *SPD Supplemental EIS* are based on this maximum throughput.

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908-4 The technical maturities of the proposed processes and facilities will be considered in reaching a decision on the Surplus Plutonium Disposition Program.

processes and facilities be considered. Selected alternatives should favor processes with established relevant track records at proposed production rates. We recommend that implementation and operations cost be considered. We recommend that sufficient redundancy be included in production rates to safeguard against feed material disruption at one facility such that it might limit the MOX operations.

We specifically recommend the DOE consider increasing the annual output from the H-Canyon/HB-line complex to more than one metric ton per year.

Thank you very much.

MR. BROWN: Glenn Carroll is next and then David Matos will be after him.

MS. CARROLL: Hello, my name is Glenn Carroll. I'm the coordinator of Nuclear watch South. We have been intervening with the Nuclear Regulatory Commission for 12 years and I'm going to make the observation that I think MOX is the biggest disconnect of the entire nuclear revolution. It is truly as the Union of Concerned Scientists called it a factory to nowhere.

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908-5 Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

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908-6 As stated in Chapter 2, Section 2.5 of this *Final SPD Supplemental EIS*, DOE is not prepared to make a decision in the near term regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). DOE would prepare additional NEPA analyses, as appropriate, if it were to consider an increase in the evaluated maximum annual throughput through H-Canyon/HB-Line of 1 metric ton (1.1 tons) of plutonium per year.

I must push back against the pro-commentor from Duke. Duke irradiated MOX fuel for two of three cycles. It found that the cladding in which the fuel pellets had in fact grown by a half inch and started to get into the fuel assemblies. They could not continue the test, they blocked their contract. They made their money.

So one of the things that we have got in our legal introduction are findings of deep security issues with the plutonium fuel factory they are security related and I cannot speak of them, but it goes to the factory process. It is undecided. This is on the ropes you all.

Let's look at this. We brought a whole bunch of junk plutonium to South Carolina. The good stuff, the pits, are still in Amarillo, Texas. We do not even have uniform feed for this 60 percent finished factory with no customers, but we do have something around 13, 16 tons of junk plutonium, little piles of powder, a little of this, a little of that. Good candidate for immobilization. Well, guess what. We got off the glass, we laid waste to reprocessing and we said we'd put it in concrete. Now we're taking

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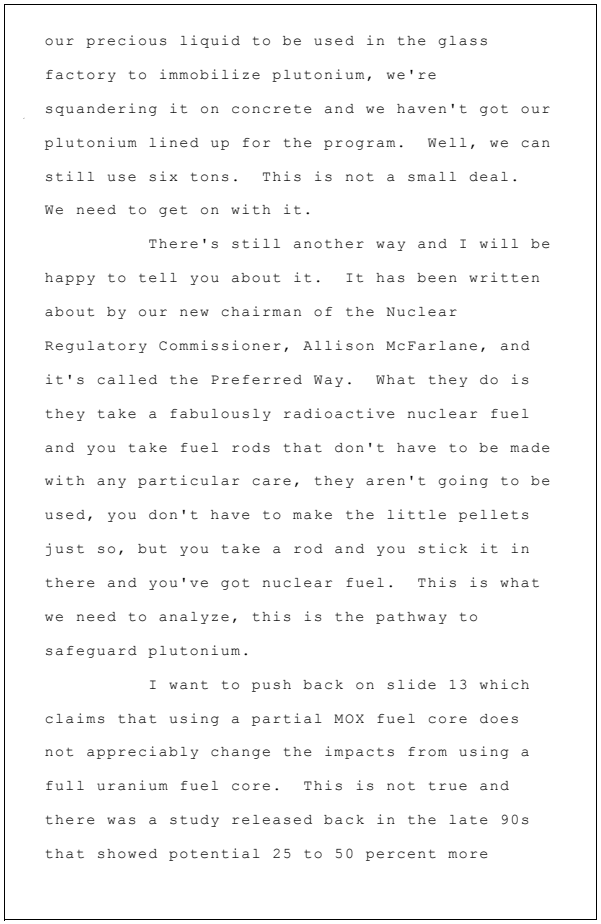
909-1 Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.



our precious liquid to be used in the glass factory to immobilize plutonium, we're squandering it on concrete and we haven't got our plutonium lined up for the program. Well, we can still use six tons. This is not a small deal. We need to get on with it.

There's still another way and I will be happy to tell you about it. It has been written about by our new chairman of the Nuclear Regulatory Commissioner, Allison McFarlane, and it's called the Preferred Way. What they do is they take a fabulously radioactive nuclear fuel and you take fuel rods that don't have to be made with any particular care, they aren't going to be used, you don't have to make the little pellets just so, but you take a rod and you stick it in there and you've got nuclear fuel. This is what we need to analyze, this is the pathway to safeguard plutonium.

I want to push back on slide 13 which claims that using a partial MOX fuel core does not appreciably change the impacts from using a full uranium fuel core. This is not true and there was a study released back in the late 90s that showed potential 25 to 50 percent more

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909-2 DOE notes the commentor's statement advocating immobilization of 6 metric tons (6.6 tons) of surplus plutonium. In this *SPD Supplemental EIS*, three of the four disposition options include disposal of some or all of the 13.1 metric tons (14.4 tons) of surplus plutonium as waste. Two of those options, immobilization (see Chapter 2, Section 2.2.1) and vitrification with HLW (see Section 2.2.3), would use liquid processed through the Defense Waste Processing Facility to create the final waste form for eventual disposal.

909-3 Disposal of surplus plutonium as unirradiated MOX fuel interspersed with used LEU fuel in a deep geologic repository is not considered in this *SPD Supplemental EIS*. This *SPD Supplemental EIS* analyzes alternatives that would result in disposal of surplus plutonium in used (irradiated) MOX fuel under the MOX Fuel Alternative and potential disposal of surplus plutonium in a deep geologic repository under the WIPP Alternative. The analyzed alternatives bracket the alternative suggested by the commentor. Disposal of surplus plutonium as unirradiated MOX fuel interspersed with used LEU fuel would consume resources necessary to produce MOX fuel, with all its attendant impacts, without the benefits of generating electrical energy from the surplus plutonium. The WIPP Alternative presents a more direct approach for deep geologic repository disposal of surplus plutonium without using the resources and producing the impacts associated with fabricating plutonium into MOX fuel. Because of this inefficiency, disposal of surplus plutonium as unirradiated MOX fuel interspersed with used LEU fuel in a deep geologic repository is not analyzed in this *SPD Supplemental EIS*.

Examining the long-term storage of used fuel is not within the scope of this *Final SPD Supplemental EIS*. For further discussion, refer to Section 2.7, Topic A, of this CRD.

909-4 The reactor accident analyses presented in this *SPD Supplemental EIS* are based on current state-of-the-art calculations of realistic MOX and LEU fuel radioisotope source terms, as well as accident releases. As discussed in Appendix J, Section J.3, the analysis in this *SPD Supplemental EIS* compares the accident results for partial MOX fuel and full LEU fuel cores to determine whether the use of MOX fuel in these TVA reactors would make any substantive difference in the potential risks associated with the accidents analyzed. The results show that the consequences of such an accident, should it occur, would be comparable, regardless of whether the reactor was using a partial MOX fuel core or a full LEU core. For further discussion, refer to Section 2.5, Topics B, of this CRD.

cancer fatalities from a meltdown. We have to do so much and we've got to have so much of this MOX fuel. And right now we're looking for reactors that are like minimally interested. And they are 40 years old and yet we're waiting 10 years before we even put this stuff in and, hello, Browns Ferry is exactly the same as Fukushima and has the distinction of being the only reactor that ever got the Nuclear Regulatory Commission's attention enough to actually get a bad finding. So it really stands out as not a reactor issue --

MR. BROWN: Please make one more point.

MS. CARROLL: So we need to regroup and we need to study for real how we're going to safeguard the plutonium. MOX is not looking up; let's look at the preferred way before it's all used up.

MR. BROWN: David Matos and Betsy Rivard will be after him.

MR. MATOS: My name is David Matos, and I am local to the Aiken area. In the past I have testified in favor of immobilization as the best means for dealing with surplus plutonium and I have to say when you look at the financial cost of these things, immobilization does look a lot

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The Browns Ferry Nuclear Plant is designed and maintained to meet stringent NRC safety requirements for nuclear power reactors. Safety-related equipment is regularly inspected, maintained, and replaced well before the end of its scheduled operating life. As discussed in Appendix J, Sections J.1 and J.2, of this *SPD Supplemental EIS*, continued assurance of the safe operation of these plants is the responsibility of the plant operator which operates under the independent regulatory oversight of NRC, including NRC regulations and license conditions. If the plant operator were to make a decision to use MOX fuel, it would be the joint responsibility of the plant operator and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely. For further discussion, refer to Section 2.5, Topics A and B, of this CRD.

910-1 Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. The disposition of this 13.1 metric tons (14.4 tons) of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts per NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors (see Appendix I, Section I.2).

better than MOX. MOX has proven to be a multi-billion dollar boondoggle, and it's a plant that's been built without a customer for its product. There is no one who's agreed to take MOX fuel and use it yet. So you should really consider what would happen if there are no customers for the MOX fuel. We actually produce this stuff and there's no customers at all for it.

I was very curious to hear the comments from the gentleman from Duke Energy because it was my understanding that the testing was not completed at the Catawba reactor and it was also my understanding that Duke Energy did withdraw from consideration of using MOX fuel after that point, so Duke Energy is now considering using MOX fuel again. So if no one wants to use this, we're in a situation of uncertainty. What do you with a situation where you are uncertain, where you have to go back to the drawing board. And back to the drawing board is immobilization. I think it definitely provides a better alternative for non-proliferation. The concerns that Ernie brought up, there are non-proliferation concerns moving around the MOX fuel. That is a

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910-2 The use of MOX fuel is consistent with U.S. nonproliferation policy and international nonproliferation agreements. Use of MOX fuel in commercial nuclear power reactors would render surplus plutonium into a used fuel form that is not readily usable for nuclear weapons. For further discussion, refer to Section 2.4, Topic A, of this CRD.

Details regarding the security measures in place for transporting plutonium and at facilities in which plutonium is stored or processed are classified. However, these facilities are located in highly secure areas within controlled-access, secure DOE sites. Transportation of surplus plutonium, including transportation of unirradiated MOX fuel assemblies to reactors, would be conducted using vehicles and procedures from NNSA's Office of Secure Transportation, Secure Transportation Asset. Appendix E describes transportation between facilities, such as the mode of transport and packaging to be used, and the related radiological and nonradiological impacts. Although most of the details of transportation by the Secure Transportation Asset are classified, key characteristics are described in Appendix E, Section E.2.4, of this *SPD Supplemental EIS*. As described in Section E.7.2, DOE and its predecessor agencies have a successful 50-year history of transporting radioactive materials with no fatalities related to transportation of hazardous or radioactive cargo. Substantial security exists at commercial nuclear power reactors in accordance with NRC requirements, although details of these security measures are also not releasable to the public. In addition, MOX fuel is not an attractive target for terrorist attack because it is not readily usable for a nuclear device or a dirty bomb. The plutonium in MOX fuel is blended with approximately 20 times as much depleted uranium and is formed into ceramic pellets that are encased in metal cladding. Moreover, the MOX fuel is contained in large, heavy fuel assembly structures that would make theft extremely challenging. Without substantial physical dismantling and chemical separation, the plutonium in the MOX fuel cannot be used in a nuclear bomb.

proliferation risk; any time you move plutonium it is a proliferation risk. Keeping it under wraps at one location is superior to non-proliferation. Immobilization does need to continue with nuclear weapons-grade material.

Finally, especially as a local, we don't want to wind up being the waste dump for all this material that is coming here. Something that's missing in all this discussion is that there is no closed group. We do have a lot of waste. We will have a warehouse full of waste from the MOX facility and there is no final disposition passed for that. We are spending all this money, and I definitely want to make sure that we are spending it in an environmentally sound way that deals with this material as waste because we will come to a point where the money will run out. So I'm definitely in favor immobilization. Thank you.

MR. BROWN: Next is Betsy Rivard and Chuck Goergen will be after Betsy.

MS. RIVARD: Hi, I'm Betsy Rivard. I'm with the Nuclear Watch South. I don't know that I have any new points to make; there have been a lot of really good points made. I do believe

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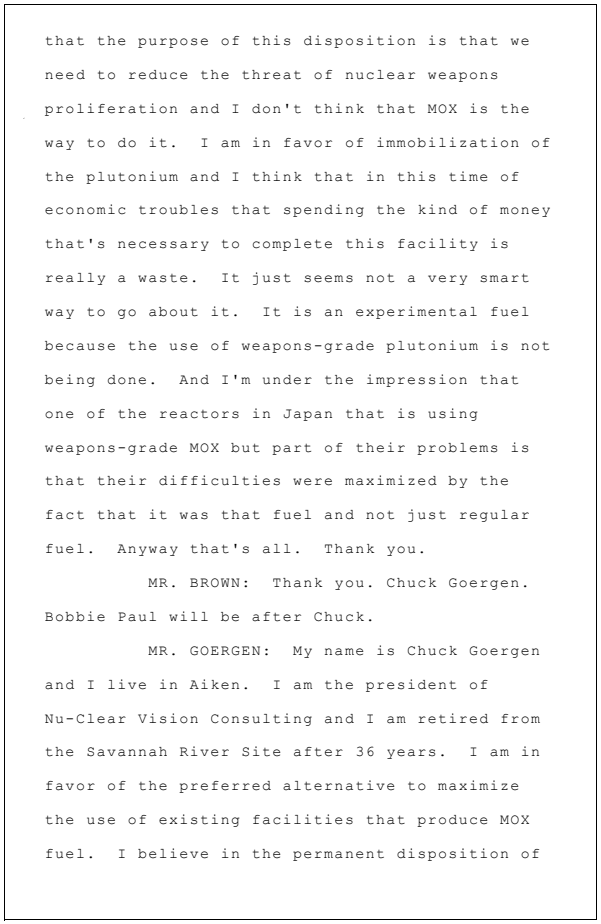
910-3 For further discussion regarding cost, see the response to comment 910-1.

For any of the alternatives evaluated in this *SPD Supplemental EIS*, DOE expects that adequate waste disposal capacity would be available for all waste projected to be generated from pit disassembly and conversion and MOX fuel fabrication. After use in a commercial nuclear reactor, used MOX fuel would be managed in the same manner as used LEU fuel—by storing it in the reactor's fuel pool or placing it into dry storage. The nuclear reactor operator, with oversight by NRC, is responsible for used fuel storage at the reactor. For further discussion, see the response to comment 910-1.



that the purpose of this disposition is that we need to reduce the threat of nuclear weapons proliferation and I don't think that MOX is the way to do it. I am in favor of immobilization of the plutonium and I think that in this time of economic troubles that spending the kind of money that's necessary to complete this facility is really a waste. It just seems not a very smart way to go about it. It is an experimental fuel because the use of weapons-grade plutonium is not being done. And I'm under the impression that one of the reactors in Japan that is using weapons-grade MOX but part of their problems is that their difficulties were maximized by the fact that it was that fuel and not just regular fuel. Anyway that's all. Thank you.

MR. BROWN: Thank you. Chuck Goergen. Bobbie Paul will be after Chuck.

MR. GOERGEN: My name is Chuck Goergen and I live in Aiken. I am the president of Nu-Clear Vision Consulting and I am retired from the Savannah River Site after 36 years. I am in favor of the preferred alternative to maximize the use of existing facilities that produce MOX fuel. I believe in the permanent disposition of

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911-1 One of the alternatives evaluated in this *SPD Supplemental EIS* addresses immobilization of 13.1 metric tons (14.4 tons) of surplus plutonium at SRS, with subsequent storage pending further disposition. The use of MOX fuel is consistent with U.S. nonproliferation policy and international nonproliferation agreements. Use of MOX fuel in commercial nuclear power reactors would render surplus plutonium into a used fuel form that is not readily usable for nuclear weapons.

As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium.

911-2 Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

911-3 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

Appendix J, Section J.3.3.3, of this *SPD Supplemental EIS* describes the NRC recommendations developed in response to the March 11, 2011, accident at the Fukushima Dai-ichi Nuclear Power Station in Japan and the subsequent actions TVA has taken to further reduce the likelihood and severity of accidents at its nuclear plants. For further discussion, refer to Section 2.5, Topic C, of this CRD.

this material and the Russian material under treaty. I have been in their vaults and observed tons of plutonium that were produced after the shutdown -- or before the shutdown of their production reactors. I support maximized beneficial reuse or use to produce power for the U.S. as MOX fuel. The pollutant program that blended the enriched uranium program which was started in 2003 and still continues blended out approximately 500 nuclear weapon equivalents and provided fuel for three TVA reactors. I urge DOE to continue this course of action to find a preferred alternative and I also request considering the ability to handle future surplus declarations as the nuclear stockpile increases not limited to just the materials that are there now. Thank you.

MR. BROWN: Thank you. Bobbie Paul.

MS. PAUL: My name is Bobbie Paul and I am affiliated with Women's Action for Nuclear Disarmament. I actually wasn't going to speak tonight because I feel like I am in the middle of a Fractured Fairytale here. It was about 15 years ago I remember getting involved with and hearing about MOX and I'm very glad that a lot of

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912-1 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

The incremental impacts of processing additional surplus plutonium are evaluated in Chapter 4, Section 4.2, of this *SPD Supplemental EIS*. DOE expects that processing additional surplus plutonium would not change the maximum annual impacts of plutonium facility operation, but would extend the impacts described in this *SPD Supplemental EIS* for affected facilities further out in time.

you are looking into it, and I wish more people from the community who understood straight talk were here, because frankly some of this stuff is pretty difficult to understand.

I feel like we're putting the cart before the horse once again for many of the issues that have occurred at the Savannah River Site. Here we are with no license from the NRC, we have no production schedule, we have no customers lining up. The costs are pretty amazing to me; 17.5 billion compared to four billion for waste using plutonium MOX -- I mean not doing MOX, doing it as waste. It seems like a no-brainer to me. I don't really get it. Although I do remember back to one of the meetings with a gentleman and we were talking and I said why do you keep doing it. And he looked at me and he said, are you kidding, do you know much money we spent making that plutonium? And I thought, oh I get it, this is an investment and we're protecting our investment.

I was looking at the cast to transport. I asked how much a cast would cost. Seven million dollars for one. I am concerned about the money. I am a taxpayer and I feel like I've

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913-1 cont'd

913-1 Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

There have been no major safety or environmental issues in the construction of MFFF and, in the Final Safety Evaluation Report published in December 2010, NRC staff concluded that the design and operation of the MOX facility would not pose an undue risk to worker and public health and safety (NRC 2010). For further discussion, refer to Section 2.2, Topic A, and Section 2.4, Topic A, of this CRD.

been a stakeholder in the Savannah River Site mission and a lot our members live in this community. And I think we all should be worried about the money. It's my understanding that weapons-grade MOX is not proven safe inside reactors, that it changes the reactor operation and it's harder to burn, it's hotter than uranium fuel and it can result in more cancer deaths.

So as a doctor's daughter, mother and grandmother I just say, please let's err on the side precaution and go to the immobilization of this and not creating more waste MOX.

MR. BROWN: Thank you. The next speaker is Rick McLeod and he will be followed by Peter Evans.

MR. MCLEOD: I am Rick McLeod, Executive Director of the SRS Community Reuse Organization and I'm a resident of Aiken County. Our organization the SRS CRO is the US Department of Energy's designated community reuse organization for the Savannah River Site. It is governed by a 22 member board of directors composed of business, government and academic leaders of Georgia and South Carolina. The SRS CRO reports on new issues to ensure the site

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913-1 cont'd

913-2

913-3

913-2 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. As addressed in Section J.2, there are differences in nuclear reactor core physics between MOX and LEU fuel cores, but these differences are understood and can be addressed using measures such as modifications to reactivity control systems and core fuel management procedures. Presently available information and analysis indicate that, with minor modifications, commercial nuclear power reactors in the United States have the capability to safely utilize MOX fuel. For further discussion, refer to Section 2.4, Topic A, and Section 2.5, Topic B, of this CRD.

As summarized in Chapter 4, Section 4.1.2, under normal operating as well as postulated accident conditions, the impacts of operating reactors using partial MOX fuel cores would not change meaningfully from those associated with use of full LEU fuel cores. For further discussion, refer to Section 2.4, Topic A, and Section 2.5, Topic B, of this CRD.

913-3 Immobilization of 13.1 metric tons (14.4 tons) of surplus plutonium is one of the alternatives evaluated in this *SPD Supplemental EIS*. For further discussion, refer to Section 2.2, Topic A, of this CRD.

maintains its goal as part of this nation's national security structure. Our position has not changed since the March 2012 scoping meeting for the Draft Supplemental EIS. We agree with DOE's preferred alternative for surplus plutonium disposition by using the mixed oxide fuel alternative. It is the right thing to do, not only for this nation but as a significant contribution for local non-proliferation.

Second we also agree with DOE's preferred alternative for pit disassembly and the conversion of surplus plutonium metal to heat the MOX fuel fabrication facility and also DOE's preferred alternative for disposition of surplus plutonium that is not suitable for MOX, and fuel fabrication disposal at the waste isolation plant in New Mexico.

We understand the initial plan was to construct a free-standing pit disassembly pit conversion facility adjacent to the MOX complex. In 2009 the NSA report estimated that it did approach over three and a half billion dollars. The construction would be operational by 2021.

Even though such a facility would have added significant economic benefits to the local

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914-1

914-1 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

community due to the creation of jobs, it is far more important that all the defense plutonium materials to be removed in a safely and secure and in a timely manner from SRS all while being mindful of taxpayer dollars. The real reason is the current MOX fuel approach is a more effective and appropriate means for the disposal of surplus weapons plutonium. However, I believe the most valid reason is the non-proliferation objective of the program. Simply stated, we are disposing of plutonium by fabricating it into fuel because we want Russia to do the same. In addition to the benefits of disposing of the surplus plutonium proceeding with the current plutonium disposition strategy is important for many other reasons; it reduces safeguards for security and storage costs in the U.S. facilities.

The current plutonium disposition strategy also provides a pathway out of the Savannah River Site. This will facilitate DOE's ability to meet commitments to South Carolina as set forth in existing law. It also demonstrates to the international community that the U.S. is committed to meeting this international non-proliferation commitment. DOE has been

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wrestling with the surplus plutonium disposition issue for close to 20 years. In a timely manner is our main commitment relevant to the Draft Supplemental EIS. The DOE needs to expedite the process and move ahead with the rapid disposition of surplus plutonium for the reasons I have stated. Thank you again.

MR. BROWN: Thank you, Rick. Next is Peter Evans. Charles Utley will be after Peter.

MR. EVANS: I am Peter Evans and a resident of Aiken. We need to keep in mind that we have over one million people who depend on the Savannah River for their drinking water. This includes Savannah, Beaufort, Hilton Head as well as many other areas. An area that should have much more DOE attention is the affect that the SRS could have on the Savannah River and the people who live in this area. Helpfully you're holding info sessions like this in Savannah since that's an area where so many people could be affected, and that's two and a half to three hours away from here. I think it would really be in their best interest and it wouldn't be hard for you to do that.

It makes no sense to be accepting

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915-1

915-1 Chapter 3, Section 3.1.3, of this *SPD Supplemental EIS*, describes surface water and groundwater resources at or near SRS. As evaluated in Chapter 4, Section 4.1.7.3, DOE expects that implementing any of the alternatives addressed in this *SPD Supplemental EIS* would have minimal or no impact on the water quality of the Savannah River downstream of SRS or its tributaries.

915-2

915-2 DOE held a public hearing at North Augusta, South Carolina, in the area most likely to be affected by the proposed activities at SRS. Public hearings were also held in Alabama, New Mexico (4), South Carolina, and Tennessee.

nuclear materials from other countries. However, that seems to be beside the point. Certainly though, as much reprocessing as possible should be done in other locations than the SRS since this is a growing major metropolitan area and this is extremely deadly material that you're working with here. I do hope that you're going to be holding public meetings regarding additional nuclear waste sites in addition to the SRS for storage. This is something that many of the residents of Aiken are extremely worried about. We don't want to be a nuclear dump. So please keep us in mind for any of those meetings. And with that thank you for holding these public meetings.

MR. BROWN: Thank you. Charles Utley is next and Clint Wolfe will follow him.

MR. UTLEY: Good evening. On behalf of the Blue Ridge Environmental Defense League, I stand to say that we oppose the expansion of the irradiation of the radioactive production at the Savannah River Site. I have given a layout and I am not going to insult your intelligence by reading it all but I'll submit in at the very end. But there are some things I want to mention

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915-3 As stated in Chapter 1, Section 1.5.2, of this *SPD Supplemental EIS*, future sources of additional surplus plutonium could include additional plutonium quantities recovered from foreign locations through DOE's Global Threat Reduction Initiative or future quantities of plutonium declared excess to U.S. defense needs. It is in the United States' national security interest to reduce and protect vulnerable nuclear and radiological materials located at civilian sites worldwide; recovery of nuclear materials reduces the threat of theft and sabotage.

The activities evaluated in this *SPD Supplemental EIS* do not involve reprocessing of used nuclear fuel. Although fabrication of surplus plutonium into MOX fuel would be performed at SRS, the alternatives evaluated in this *SPD Supplemental EIS* address the potential for pit disassembly and conversion at both SRS and LANL. As described in Chapter 4 and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, risks to the public are expected to be minor from both normal operations and potential accidents under any proposed alternative.

915-4 See the response to comment 915-2 regarding public meetings.

916-1

916-1 DOE acknowledges the commentor's opinion.

it in. It talks about an additional 14.4 tons of surplus plutonium from dismantled nuclear weapons. Also the draft includes the potential use of plutonium fuel in commercial nuclear reactors. But what has not changed is the 37.5 tons of plutonium, the fuel the Savannah River Site has on hand already. I also want to bring your attention to -- I notice your slides had the potential things that catastrophically for those who may be injured or those who may lose their lives and I am very concerned with that. I know you said it was only for a demonstration. I realize that but I also realize that demonstrations are based on a white male and not a baby, so I am concerned about it even if you have one. And it talks about the health impact of on this area of the Savannah River Site and Augusta and Richland County and Aiken as well because in early February Joe Mangano put out a new statement which had an impact that used the same data to create and to give us an idea that it is important that we know what's going on it. And it has been an increase. So we don't want to be fooled that is no increase because time and time elapsed will show that it does have an

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916-2

916-2 This *SPD Supplemental EIS* presents analyses of the potential radiological impacts on the public near SRS from normal operations and postulated accidents associated with a range of alternatives for the disposition of surplus plutonium. The details of the analysis of human health impacts from normal operations and accidents are presented in Appendices C and D, respectively. The results, summarized in Chapter 2, Section 2.6, Table 2–3, show that there would be little impact on the public. The risks presented in this *SPD Supplemental EIS* were calculated using a risk factor of 0.0006 LCFs per person-rem (for a population) or rem (for an individual). Additional information has been added to Appendix C that discusses the derivation of this risk factor and clarifies that it is not based only on health impacts on an adult male.

As described in Chapter 3, Section 3.1.6.3, of this *SPD Supplemental EIS*, in early 2012, the Radiation and Public Health Project prepared the report *Assessing Changes in Environmental Radioactivity and Health Near the Savannah River Site – A Prototype to be Used at DOE Facilities* and submitted it to DOE as an independent assessment of the radiation environment surrounding SRS. A review of the report (DOE 2012b) concluded that (1) the report's conclusions regarding excess health risk among persons living near SRS does not conform to typical methodology because it uses the United States population as a comparison group rather than a more appropriate local or regional population; (2) the report's conclusion is contrary to the results from a study conducted by Medical University of South Carolina researchers that shows cancer rates in the population living near the SRS were "lower than expected"; and (3) contrary to the assertion that, "…there is a relative paucity of articles on the health of SRS workers...or those living in proximity to SRS...," in fact, there are at least two dozen publications that include data directly related to SRS or include SRS in multi-site studies. Such studies include those conducted by the Centers for Disease Control and Prevention and the Agency for Toxic Substances and Disease Registry.

increase on those who live in and around these facilities.

Commercial nuclear reactors bring in nuclear plants. That's a disaster waiting to happen. I don't know about you but I live in a community where it's close to it and work in communities that are adjacent to it, and they are at ground zero and they have a different perspective of what's going on.

In conclusion the Blue Ridge Environmental Defense League takes the position that its opposed to plutonium and nuclear power fuel facilities because one thing it is not supporting the risks to the public. And overall we oppose it and I in particular I oppose it because of its negative impact on the human health and the environment. I oppose it because simply where it's located at and the environmental impact on those who live near it. Those are the African Americans and the Native American communities that they have a direct impact on. And I'm asking that you consider all these things and let's think about the things that you're using, billions of dollars that could be used to do some other things to create

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916-2 cont'd

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916-5

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916-3 DOE and TVA acknowledge the commentor's opinion.

916-4 As described in Chapter 4 and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, no LCFs are expected, and there would be little offsite impact on the public from normal operations of surplus plutonium disposition facilities at SRS.

916-5 Chapter 3, Sections 3.1.11 and 3.2.11, of this *SPD Supplemental EIS* describe minority and low-income populations near SRS and LANL, respectively. The analysis presented in Chapter 4, Section 4.1.2.1, shows the risks to the general population due to radiological air emissions from normal operations of the proposed surplus plutonium disposition facilities would contribute little to the cumulative health effects among the offsite population. The same is true for the minority and low-income populations in the potentially affected area. Section 4.1.6 analyzes the environmental justice impacts of the disposition alternatives and the options for pit disassembly and conversion at SRS and concludes that (1) minority populations living near SRS would not be exposed to elevated risks compared to nonminority populations living in the same area from the proposed activities, and (2) the risks associated with these activities are small. The analysis has shown that risks to the public are expected to be minor from the proposed actions at SRS. No LCFs are expected for the offsite population, including minority and low-income populations, as a result of the normal operations of the proposed surplus plutonium disposition facilities.

Chapter 4, Section 4.1.6, of this *SPD Supplemental EIS* also analyzes the environmental justice impacts of the options for pit disassembly and conversion at LANL and concludes that (1) minority populations living near LANL would not be exposed to elevated risks from the proposed activities compared to nonminority populations living in the same area, and (2) the risks associated with these activities are small. No LCFs are expected for the offsite population, including minority and low-income populations, as a result of the normal operations of the proposed surplus plutonium disposition facilities. For further discussion, refer to Section 2.6, Topic A, of this CRD.

916-6 Cost and worker and public safety are among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

something that's not going to be detrimental to not the white male -- I am not against any of you brothers, but I want you to realize it's not about you, it's about the unborn baby. It's about the unborn baby that the mother carries thinking she's going to have a healthy child simply because we are put in a position to say that it's only one in so many thousands. This is not geared towards you, but it's for those who cannot speak for themselves, that's why I am saying I am peaking on behalf of them, the silent ones. And I hope you will consider what we have to say.

MR. BROWN: Thank you. Clint Wolfe.

MR. WOLFE: I'm Clint Wolfe, I am the Executive Director of Citizens for Nuclear Technology Awareness. I live in Aiken and actually I had intended to just hand you a copy of an editorial I wrote that was published in the Aiken Standard last week, and I will submit it under comments at the close.

After hearing some of the comments I feel compelled to make a couple other observations, one of which is that it was my privilege to serve as the chairman of the

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916-6 cont'd

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Technical Advisory Panel in the Plutonium Focus Area back in the late '90s, and we can talk about what we would like to do with the plutonium all night, the point is we have to treat it with nuclear power. As to how we're each going to treat the plutonium that we have as surplus and that methodology is MOX. We don't have an option to unilaterally change how we're going to do that disposition. And by the way disposition is perhaps a weaker word the commission uses, we should talking about eliminating plutonium because disposition could mean you bury it, and as a Russian scientist with whom I worked some years ago said to me: If you bury it, you can go back and get it. If you immobilize it, you can go back and get it if you want to.

The trust and the verification of that treaty is built around MOX and as far as I'm concerned that treaty is one of the greatest things that has happened in terms of international diplomacy. When we step back from blowing each other off the map, we make agreements to do something that's rational and that supports mankind. So I'm going to put this in but I would like to read the last four lines.

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917-1

917-1 Regarding the use of disposal at WIPP as a disposition option for surplus plutonium, the approximately 2 metric tons (2.2 tons) of surplus plutonium that would be disposed of at WIPP under the MOX Fuel Alternative is impure plutonium that could not be readily used in a nuclear weapon. In addition, this impure plutonium would be blended with large quantities of inert material that would make recovery, purification, and reuse in a nuclear weapon even more challenging, and the material would be disposed of 2,000 feet (610 meters) underground. Although not part of the MOX Fuel Alternative, 13.1 metric tons (14.4 tons) of surplus plutonium could be disposed at WIPP under the WIPP Alternative (see Chapter 2, Section 2.3.5). As with the MOX Fuel Alternative, this surplus plutonium would be blended with large quantities of inert material and would be challenging to recover, purify, and reuse. For further discussion, refer to Section 2.2, Topic B, of this CRD.

It has become a national pastime to complain about the government, but it deserves our support on this issue as it strives to meet treaty obligations that are arguably the most important commitments in the history of mankind while preserving national assets that may be crucial to our future energy security. The best interests of the CSRA and the nation are served by supporting DOE's preferred alternative.

Thank you.

MR. BROWN: Thank you. Karen Patterson is next.

MS. PATTERSON: I am Karen Patterson. I am chair of the South Carolina Governor's Nuclear Advisory Council.

The preferred alternative for the surplus plutonium is the MOX fuel. This option maximizes the plutonium converted to MOX fuel, generates the least amount of transuranic waste, generates very little waste that must be processed through the Defense Waste Processing Facility and stored at SRS until such time as a geologic repository is available. The transuranic waste would be shipped to the Waste Isolation Pilot Plant in New Mexico.

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917-2

917-2 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

The GNAC supports the selection of the MOX fuel alternative as the preferred alternative. First, we believe it is the alternative that gets the plutonium processed most quickly, and maximize the conversion of weapons plutonium into commercial power reactive fuel. Second it generates the least amount of waste of the alternative considered. And finally as stated in our scoping comments, our overarching consideration is that activities necessary for plutonium disposition should not delay or forestall the liquid radioactive waste disposition program at SRS. Mox fuel meets these criteria. Other alternatives analyzed do not.

DOE has identified four options for the pit disassembly and conversion process in this SEIS but has not identified the preferred option. GNAC's first option is the pit disassembly at LANL and K area with the conversion to oxide done in H canyon and HB-line for the following reasons: The construction of the PDC facility either in F or K is estimated to take 13 years. Our experience with DOE's construction estimates is that they are overly optimistic; we believe it unlikely the project would be completed in 13

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918-1 **918-1** As shown in Appendix B, Table B–2, MFFF is estimated to operate between 21 to 24 years, depending on the amount of plutonium to be processed. As shown in Chapter 4, Table 4–20, of this *SPD Supplemental EIS*, the smallest quantity of CH-TRU waste would be generated at SRS and LANL under the No Action Alternative, and the second smallest at SRS under the H-Canyon/HB-Line to DWPF Alternative. The Immobilization to DWPF and MOX Fuel Alternatives would generate larger, but similar, quantities of CH-TRU waste while the WIPP Alternative would generate the largest quantity of CH-TRU waste. DOE agrees that implementation of the MOX Fuel Alternative should neither delay nor forestall the liquid waste disposition program at SRS.

918-2 **918-2** As indicated in Chapter 2, Section 2.5, of this *Final SPD Supplemental EIS*, DOE is not prepared to make a decision in the near term regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability).

years. More importantly the country does not have the funds for another large construction project.

Pit disassembly at LANL and in the K area requires no new facility construction, only modifications to existing facility making the timeline shorter and the costs more reasonable. GNAC is aware that a completed EIS and its Record of Decision do not guarantee the initiation of a project. DOE has created and abandoned and re-created several plans for plutonium disposition. South Carolina has been patient as DOE has struggled to establish its SPD plans. We hope DOE will issue a decision by 2013 but there are no more NEPA analyses to be done, and that DOE is strongly committed to this plan and will immediately develop a schedule, secure funding and begin dispositioning plutonium.

Thank you.

MR. BROWN: Taylor Morris and Gary Shartzer will be after you.

MR. MORRIS: I'm Taylor Morris. It's my understanding that the MOX production facility consumes a great deal of water from the Savannah River which is very heavily burdened not only by

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918-2 cont'd

918-3

918-3 DOE acknowledges the commentor's opinion.

919-1

919-1 Chapter 3, Section 3.1.3.1, of this *SPD Supplemental EIS* describes the surface waters at or near SRS. Process water for SRS operations is supplied through separate deep groundwater wells or river intake systems (refer to Section 3.1.9), and is mostly returned to SRS streams at permitted discharge outfalls. Surface and groundwater resources are regularly sampled and analyzed through sitewide monitoring programs to demonstrate compliance with applicable regulations and standards. As stated in Chapter 4, Section 4.1.7.3.1.1, surface water sources would not be used to supply water for operations; therefore, no decrease in surface water levels or flows is expected.

the existing nuclear power plant reactor but by the two nuclear reactors that are being built. I am just wondering what kind of research will be done for the water. Thank you.

MR. BROWN: Thanks. Gary Shartzer.

MR. SHARTZER: My name is Gary Shartzer. I am a resident of Aiken, South Carolina. I used to work in the nuclear business and I have worked at the Savannah River Site. I have two observations on the MOX facility. I agree with the concept of converting plutonium in the nuclear reactor but the final product converted in the reactor is spent fuel and we are right now still not knowing what to do with the spent fuel. I think that should be also included in the EIS, the final resting place for the spent fuel from the MOX facility and also take into account the localized storage either in air vaults at the facilities or the nuclear out facilities for the spent fuel. Also in the economic aspect the spent fuel -- we're all paying right now with that spent fuel disposed of with every kilowatt hour. I haven't seen EIS address that additional funding and impact of the funding for the disposal of the extra fuel that

919-1 cont'd

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920-1 As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel—by storing it in the reactor's used fuel storage pool or placing it in dry storage. The use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would displace LEU fuel that otherwise would have been used to power the nuclear power reactor. Use of MOX fuel could increase used nuclear fuel generation by 8 to 10 percent for TVA's Browns Ferry and Sequoyah Nuclear Plants, and from 2 to 16 percent for generic reactors during the period MOX fuel could be used at a reactor. DOE expects that increases of this magnitude would be managed within the reactor's normal planning for storage of its used fuel.

920-2 As stated in the response to comment 920-1, use of MOX fuel in commercial nuclear power reactors would not generate large quantities of additional used (spent) fuel. Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

will be produced from the plutonium. Other than that, those are my two comments.

MR. BROWN: Thanks very much. That includes the number of folks that had signed up to speak tonight and it also brings us to the end of the time scheduled for this meeting.

I want to thank everybody who took the time to come and make comments tonight and also those who are watching the webcast. So again thank you for your interest and attention.

We are adjourned.

(Thereupon the proceedings were concluded at 8:47 p.m.)

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920-2 cont'd

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CERTIFICATE OF REPORTER

I, Mary K. McCormick, Court Reporter and Notary Public for the State of South Carolina, do hereby certify:

That the foregoing proceeding was taken before me at the date and time and location as stated on page 1 of this transcript; that the witness was duly sworn to testify to the truth, the whole truth and nothing but the truth; that the testimony of the witness and all objections made at the time of the examination were recorded stenographically by me and were thereafter transcribed; that the foregoing proceeding as typed is a true, accurate and complete record of the testimony of the witness and all of the objections made at the time of the proceeding to the best of my ability.

I further certify that I am not of counsel or kin to any of the parties to this cause of action, nor am I interested in any manner of its outcome.

IN WITNESS WHEREOF I have hereunto set my hand and seal this 11th day of September, 2012.

Mary K. McCormick (Katy McCormick)
Notary Public
State of South Carolina at Large
My Commission Expires:
June 30, 2015

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U.S. DEPARTMENT OF ENERGY

DRAFT SURPLUS PLUTONIUM DISPOSITION
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

PUBLIC HEARING

SEPTEMBER 11, 2012

6:30 p.m.

CHATTANOOGA CONVENTION CENTER
1150 CARTER STREET
CHATTANOOGA, TENNESSEE 37402

Holmes Brown, Facilitator

PANEL MEMBER:
Sachiko McAlhany, U.S. Department of Energy, National Nuclear Security Administration

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U.S. DEPARTMENT OF ENERGY

SURPLUS PLUTONIUM DISPOSITION
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

E X H I B I T S

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MR. BROWN: Today is the anniversary of September 11th and so before we begin let's take a minute to reflect in silence and remember the many individuals who lost their lives on September 11th.

(Whereupon, a moment of silence was observed.)

MR. BROWN: Thank you. Good evening. Welcome to this hearing on the Department of Energy's Surplus Plutonium Disposition Draft Supplemental Environmental Impact Statement or Draft Supplemental EIS. I hope you had an opportunity to browse the displays next door and talk with project staff of the just completed open house.

My name is Holmes Brown. I will serve as facilitator for this evening's meeting. I'm not an employee of the Department of Energy nor an advocate for any party or position. My role this evening is to ensure that the hearing runs on schedule and that everybody has an opportunity to speak.

I will now explain the ground rules to ensure time and participation. At the registration table you should have received a copy of the slide presentation that you're just about to hear. If you didn't get a copy, please raise your hand so staff can deliver one to you. There are two parts to this hearing, the information segment and the formal

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comment segment. The information segment that was just completed at our open house now continues with welcoming remarks by a representative of the Tennessee Valley Authority. He will introduce Sachiko McAlhany who will present a 25-minute slide show.

Ms. McAlhany is the Supplemental EIS Document Manager for the Department of Energy. Ms. McAlhany will discuss the surplus plutonium disposition program and the contents of the Draft Supplemental EIS, the National Environmental Policy Act, or NEPA, that governs the EIS process, and the schedule for completion of the Supplemental EIS.

The formal comment segment will follow the slide presentation. During this segment members of the public will provide comments on the Draft Supplemental EIS. A court reporter will transcribe your comments to be made part of the permanent record. The DOE official and a representative of TVA will be present to hear your comments, but will not be responding to questions or comments.

If you wish to make your comment this evening and have not yet signed up to do so, please add your name to the list at the registration desk. Based on the number of people signing up, each

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speaker will be provided with a specified amount of time. Speakers will not be able to defer or yield their assigned minutes to other speakers.

We now resume the information segment. I would like to introduce Mick Mastilovic who will offer welcoming remarks and introduce Sachiko McAlhany.

MR. MASTILOVIC: Hello. I'm Mick Mastilovic. I'm the manager of nuclear fuel supply at TVA. It's my group's responsibility to essentially fuel the TVA reactors. And we're also the group that's responsible for (inaudible) at Sequoyah and Browns Ferry.

Now, with safety being a priority at TVA, I just want to take a moment and point out the exit sign right here and the exit sign down there. So if an alarm was to sound, you know, please, in an orderly fashion go outside to an area of safety and wait until one of the emergency personnel tell you it's all clear to be able to come back either in or direct you to another place.

With that, I'll tell you it's my privilege to welcome everyone to the Department of Energy's public meeting for the Surplus Plutonium Disposition Supplemental Environmental Impact Statement, or the

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SPD SEIS. Quite a mouthful. In lay terms what it means is it's essentially the evaluation of the impact on TVA's reactors and the surrounding area of a potential use of MOX fuel. A couple of things you should be aware of; first of all, in the actual draft that has been put out, TVA has not selected a preferred alternative at this point. It doesn't mean we won't. It just that we want to take a deliberative approach and make sure that the evaluation process has been carefully worked out.

It's also important to know for several years now TVA has successfully used former weapons-grade highly enriched uranium as fuel at our Browns Ferry and Sequoyah reactors. So we have experience participating with the Department of Energy in former weapons to nuclear fuel programs. That said, we will thoroughly investigate the use of MOX before deciding on how to proceed.

Next, the potential implementation of MOX in TVA's reactors cannot be expected until 2018 at the earliest. It's a long-term process so there'll be many opportunities for people to provide their input and their thoughts.

TVA will use three criteria to evaluate the potential use of mixed oxide fuel. One, it must

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be environmentally and operationally safe. Next, it must be economic compared to other fuel for TVA. And it must be licensed by the Nuclear Regulatory Commission for use. So more public hearings and evaluations will proceed if we decide to proceed with this fuel. I encourage you to ask questions and make comments and participate in this public meeting by following the directions which will be provided shortly. Thank you.

And with that, I will introduce Sachiko McAlhany who will give you those directions.

MS. MCALHANY: Good evening and welcome. My name is Sachiko McAlhany and I am the document manager for the Surplus Plutonium Disposition Supplemental Environmental Impact Statement.

(Whereupon a slide presentation was presented by Sachiko McAlhany, Document Manager, U.S. Department of Energy.)

MR. BROWN: Thank you, Ms. McAlhany. This concludes the information segment. We'll take a five-minute break in which we'll review the sign-up sheet to determine the order, if there are any elected officials, and also the amount of time each speaker will have. So we will return very soon and get on with the comment segment. Thanks.

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MR. MORGAN: Mr. Moderator, are participants allowed to present to the court reporter written comments and references directly to her?

MR. BROWN: Yeah. Once we start the public comment, I'll explain the ground rules, but that is true, that if you have copies of your comments, you can turn them over to the court reporter. In addition, if you have other items that you'd like to have made part of the public record but are not going to be reading, you can submit them to the court reporter as well and those will be made part of the public record. Again, I'll go through in more detail the conditions and provisions for speaking when we resume. Thanks.

(Short recess.)

MR. BROWN: It's now time to begin the formal comment segment. The is your opportunity to provide DOE with your comments on the contents of the Draft Supplemental EIS. Our court reporter for tonight is Deadra Ragsdale, who will be transcribing all of your statements.

Let me review a few ground rules for formal comments. Please step up to the microphone over there when your name is called, introduce

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yourself, providing an organization affiliation where appropriate. If you have a written copy of your statement, please hand it to the court reporter after you've completed your comments. Additionally, if you have any other materials that you would like to make part of the public record, you can provide them to her at that time.

I will call two names at a time, the first of the speaker and the second of the person to follow. In view of the number of people who have indicated an interest in speaking tonight, please confine your public statement to four minutes. I will let you know when you have a minute left by pulling out this sign. I've been told that some people want to talk exclusively to the audience, so you may get a verbal cue as well if you're not looking this direction.

Again, if your statement is longer than four minutes, if you could summarize the key points. The reason I emphasize that is that if we run more than four minutes we end up loosing some of the folks who signed up last. And folks that made the effort to come and sign up with a willingness to speak, it's just out of consideration for them try and confine your statements to the four minutes.

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Again a reminder that all comments count equally whether they're verbal or presented in any of the forms that were referenced on the last page of the slide show. Sachiko McAlhany from DOE and Mick Mastilovic of TVA will be serving as hearing officers during the comment period, but they will not be responding to comments or questions at this time. So with that by way of introduction let's get started on our speakers.

Our first speaker is Alex Woods, and Laura Scheele will follow Alex.

MR. WOODS: First I just wanted to say thank you for the opportunity that we could be a part of the hearing and that we could all come. My name is Alex Woods and I am associated with Chattanooga State Community College. We have sort of an infant nuclear program. It's in about its third year at the university. This semester this year will be the first time that our club is -- the Reactor Nuclear Society has been just a club function and now it is a recognized of the National Society. We are completely excited about that.

As far as a statement on the behalf of the use of MOX fuel in the TVA reactors, personally I feel and I think it would be the same of my fellow

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students the worst option is doing nothing. You know, in looking at the material and studying the report that the National Academy of Science has released I think in the early 90s, around '94, this was a lot of very intelligent people that researched this topic for a long period of time, at least a decade. I felt like that report, you know, a lot of the positions and statements of the American Nuclear Society and other entities like the NNSA have reflected a lot of that work and that the options are very clear. I felt like that that was just the most thorough and objective thing I think I've just about ever read.

And, you know, on that note I would just like to, you know, say that we certainly back the intentions of the American Nuclear Society and the intentions of the NNSA and this environmental statement, and they have our full support. And we're just as honored as we can be to be here and be a part of this so I thank you very much for letting us be here today.

MR. BROWN: All right. Thanks very much.

MR. WOODS: Thank you.

MR. BROWN: Laura Scheele is next,

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1000-1 **1000-1** DOE acknowledges the commentor's opinion.

and Jack Bell will follow Laura.

MS. SCHEELE: Good evening. I'm Laura Scheele. I'm the communications and policy manager for the American Nuclear Society. Thank you for providing me with this opportunity to comment on this important issue.

The American Nuclear Society is an organization of nearly 12,000 nuclear scientists and engineers who are dedicated to advancing our knowledge and understanding of a wide range of nuclear science and technology applications. The American Nuclear Society has a position statement that strongly endorses the rapid application of MOX fuel technology to accomplish the timely disposition of surplus weapons-grade plutonium.

And in fact, the American Nuclear Society also believes it's the obligation of a professional membership society to engage in public forums to explain the importance of this issue, and I am most thankful that so many members from the ANS global sections and from the student sections are here to comment on this issue.

MOX fuel has been produced in five countries. It's widely used in reactors all over the world. Many nations view MOX as an essential

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part of their energy and fuel cycle management policies. The safety and performance record of MOX fuel is comparable to that of low-enriched uranium fuel. Converting excess plutonium that constitutes a national security risk to MOX fuel technology that can be safely and easily used to generate electricity for U.S. residents stands as the ultimate fulfillment as the converting swords into plowshares concept.

So I would ask on behalf of the American Nuclear Society that any decision on the application of MOX fuel technologies for disposition of excess weapons-grade plutonium be based on the technical merits and on sober assessment of how this process can further U.S. national security and not proliferation goals. Thank you.

MR. BROWN: Thank you. Jack Bell will be followed by Howard Hall.

MR. BELL: My name is Jack Bell. I go to Georgia Tech. Senior in nuclear engineering. Member in the ANS down there. Didn't bring any of my cohorts with me because it's kind of a drive. But I thought I'd get into a little bit of physics behind why MOX fuel is acceptable for use in reactors and why it doesn't present anymore of a

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risk than standard uranium.

So MOX fuel has been done before, France, Germany, U.S. in the past. Now, what a lot of people don't know is at the end of an operating cycle, eighteen months after you put the uranium in the reactor, you're actually producing more power, more fission energy from the plutonium in the reactor than in uranium because you don't think of a standard reactor and you're putting plutonium in there, well, you're not. You're only putting uranium in there. And plutonium goes in a reactor and you end up producing more power from plutonium 239 than from uranium.

So the idea of taking plutonium -- which we know that's what we use in weapons, right, make a chain reaction and blow things up, the idea of sticking that in a power reactor is not as dangerous as it might seem if you're just, you know, looking at it from the outside because really our existing reactors operate on plutonium just about the same way a MOX reactor would.

And it's not like a bomb. A bomb's a chain reaction which is -- an assembly like that, we would never license something like that in the U.S. NRC doesn't permit things like that. So the physics

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1002-1 DOE and TVA acknowledge the commentor's opinion.

of what's going on in the reactor core are no more unstable than in a standard light water reactor. So that would be my concern if I was in a TVA service region and you're talking about bringing plutonium MOX fuel and putting it in the reactors. Is the risk of an accident going to be higher, and the answer to that is no. So that's basically what I have to say.

MR. BROWN: Samuel Snyder will follow Howard Hall.

MR. HALL: Mr. Moderator, Chair, People, thank you very much for the opportunity to speak to you. My name is Howard Hall. I'm Governor's Chair Professor of Security at the University of Tennessee. I spent much of my career at Lawrence Livermore National Laboratory. I have a long history of interactions with the U.S. nuclear weapons program.

I am pleased to urge that both NNSA and TVA move forward on the disposition of excess weapons-grade plutonium through the MOX fuel process, and I draw that conclusion from my own experience as a nuclear radiochemist. The one thing I cannot do as a nuclear radiochemist to do fission plutonium 239, is I cannot easily put it back

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1003-1 DOE and TVA acknowledge the commentor's opinion.

together. And so it is ultimately the only effective demilitarization strategy for weapons-grade plutonium.

We also will gain the benefit of producing electric power from it as was previously mentioned, the swords to plowshares motif is I think an excellent one there. The risk of using MOX fuel, as also previously spoken to, is comparable to the risk of dealing with low-enriched uranium fuel. In other words, a technology that is matured. A technology that has been safely operating in the United States for quite some time. And frankly living here in the Tennessee region where we were part of the very early part of the nuclear weapons program, the origins of the Manhattan Project just a few miles from where I now work, we are very pleased to be at the point of closing that cycle through the use of mixed oxide in terms of closing the cycle of nuclear materials.

So with that I'd like to thank you for the opportunity to speak here tonight. I'd also note that I'm here at the invitation of the American Nuclear Society and I also concur with the American Nuclear Society position. And as a professor you might be astonished that I actually spoke for less

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than 50 minutes.

MR. BROWN: Okay. David Trayer will follow Samuel.

MR. SNYDER: Good evening to you all. My name is Samuel Snyder and I am the chair of the local American Nuclear Society section. As others have said, I'd like to thank you all for giving me the opportunity to come here and voice my public comments concerning the EIS.

I'm speaking today to voice my support for the rapid application of mixed uranium plutonium oxide fuel technology to dispose of the excess plutonium that we have in our stockpiles here in the United States. Of all the choices available I feel that this disposition method provides the most beneficial use of the surplus plutonium which we have agreed internationally to reduce to a form that is not regularly used for nuclear weapons. The processing of surplus plutonium into a form that can be used to provide power for our country is, as I said, I believe the most important use of the stockpiles.

Bearing it, okay, we can do that, but what benefit does that provide to us. Many people will talk to you about the turning of swords into

1004-1 **1004-1** DOE acknowledges the commentor's opinion.

plowshares, but if you really view it from the position of being useful, taking something that we have used in instances in the past to destroy others, to destroy cities and being able to provide power to power our universities, power our schools, to continue development with our country is, I believe, the most beneficial use we can take and use that plutonium. So I would just like to give my support to the DOE's finding.

I would like to also like to say as a member of ANS we do fully back the use of plutonium to produce MOX fuel and do hope to see that happening in the very near future. Thank you.

MR. BROWN: Thank you. The next speaker it's either David Trayer or Trager. I can't quite read that one letter. And Lane Carasik will follow David. Please go ahead.

MR. TRAYER: I'm delighted to be here this evening especially to see the young students from Chattanooga State because I taught there for a few years and I was in the protections -- radiation protection. I want to start by saying that I am pro nuclear. I am pro nuclear technology. When I was 14 years old we got the first news of the bombing of Hiroshima and Nagasaki and we saw it on the news

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reels. A little later we were told about the Trinity test and we saw that also on the news reels.

And I began to read because it was a fascinating technology to me so I began to read about it. And I eventually I had a career in the field with a Master's degree in applied physics, Bachelorette degree in chemistry. I have a little background, worked in Oak Ridge for a few years on the atomic energy program there, went with TVA and worked in the TVA environmental programs including industrial and radiologic hygiene programs for some 30 years, retired, and then went to Chattanooga State and established a program there in industrial and radiological hygiene. Radiation protection it's called now. I'm fully retired now.

But with all that being said I think that all professionals have a ethical and moral obligation to be honest. And with all of my enthusiasm for nuclear technology and nuclear physics, I have a fear of using plutonium in reactors. I've given my comments to Ms. McAlhany and I'll summarize them quickly for you.

Plutonium has well been known to be the most biological hazardous substance. Plutonium 239 will be around some 2400 years. Its half life is

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1005-1 The dangers of plutonium have been recognized since its first large-scale production in 1945. The awareness and knowledge of plutonium toxicity have resulted in DOE's use of special designs, operations, and procedural measures to protect workers, the public, and the environment.

As summarized in Chapter 4, Section 4.1.2, and described in detail in Appendices I and J of this *SPD Supplemental EIS*, the risks associated with both normal operations and accidents for a partial MOX fuel core and full LEU fuel core are expected to be comparable. The risks associated with postulated accidents would be small. For further discussion, refer to Section 2.5, Topic B, of this CRD.

Comments from the Chattanooga, Tennessee Public Hearing (September 11, 2012)

2400 years. It will be here a long time. It's very dangerous, especially inhaled.

The number of persons potentially at risk at Browns Ferry and Sequoyah approaches a million people. Now, that's good if it's stable operations everything will be fine. But the Browns Ferry and the Sequoyah reactors are 38 or and 31 years old. They're unit ones. They're very old reactors.

MR. BROWN: You've got a minute left.

MR. TRAYER: I'm sorry?

MR. BROWN: A minute left.

MR. TRAYER: Thank you. The community infrastructure near Sequoyah and Browns Ferry is really not set up for a major nuclear release. It's just simply not set up for it. And the increase use of plutonium at the sites will, of course, make it a better target for terrorists. My concern is a catastrophic release of material from those reactors.

And on that basis I would recommend that TVA abandon this initiative to burn it in their reactors. Thank you.

MR. BROWN: Thanks very much. Lane Carasik, and Steve Skutnik will follow you.

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1005-2 Before any MOX fuel is used in the United States, NRC would perform a comprehensive safety review, which would include information prepared by TVA or other reactor operators, as part of the 10 CFR Part 50 license amendment process. TVA and local emergency responders are trained in emergency protocols for reactor emergencies. In the event of an emergency, information would be communicated to the public via emergency sirens, first responders, and radio and television broadcasts. Information on site-specific emergency response for the Browns Ferry Nuclear Plant can be found at www.tva.com/power/nuclear/pdf/bfn_2012_emergencyinfo.pdf, and from the Sequoyah Nuclear Plant at www.tva.com/power/nuclear/pdf/sqn_2012_emergencyinfo.pdf. For further discussion, refer to Section 2.5, Topic A, of this CRD.

1005-3 As indicated in footnote 3 in Chapter 2 of this *SPD Supplemental EIS*, plutonium-239 may make up only 4 percent of a MOX fuel assembly. The MOX fuel is composed of a mixture of plutonium and uranium oxides that has been sintered into a ceramic form and sealed in pressurized zirconium alloy tubes. There are some minor differences between MOX fuel and LEU fuel, such as the amount of actinides in used MOX fuel rods would be higher than in used LEU fuel rods. These differences, however, are not expected to affect reactor safety or meaningfully increase the environmental consequences or risks associated with the use of a partial MOX fuel core. As summarized in Chapter 4, and described in detail in Appendices I and J, of this *SPD Supplemental EIS*, the impacts associated with using a partial MOX fuel core versus a full LEU fuel core in commercial nuclear power reactors are expected to be similar. The risks associated with postulated accidents would be small. For further discussion, refer to Section 2.5, Topic B, of this CRD.

The purpose of the Surplus Plutonium Disposition Program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally sound manner to ensure that it can never again be readily used in nuclear weapons. Current nuclear power reactor security provides protection from terrorists and groups seeking access to nuclear material, including nuclear fuel, in accordance with NRC regulations. Central to the purpose of the Surplus Plutonium Disposition Program is protecting plutonium from terrorists, so appropriate safeguards and security measures are taken at facilities and during transportation to protect against unauthorized access to materials. As shown in Appendix J, Section J.3, the risks associated with postulated accidents are extremely low. Therefore, a nuclear reactor using MOX fuel does not present a more attractive target for a terrorist attack.

MR. CARASIK: Good evening, everybody. My name is Lane Carasik. I'm a senior in nuclear engineering at the University of Tennessee, Knoxville and I'm also on the student section committee for the American Nuclear Society. Myself and my fellow ANS members are from technical backgrounds that are advancing nuclear science and technology into the modern age. We advance this technology not for our own benefit but for the benefit of the public. One part of this technology is MOX fuel.

MOX fuel being a mixture of both uranium and plutonium oxides. This fuel has been proposed as a means to dispose of weapons-grade plutonium from both American and Russian stockpiles. This reduction in weapons-grade plutonium is an obligation from the American-Russian agreement to dispose of 34 metric tons of weapons-grade plutonium.

The MOX fuel is an extremely beneficial and practical option to dispose of this plutonium. This will turn materials meant for harm into clean energy powering both American homes and businesses. Based on the agreement obligation and benefit from using this option, I believe that TVA should go

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1006-1 DOE and TVA acknowledge the commentor's opinion.

forward with using MOX fuel in their reactors. Thank you.

MR. BROWN: Thank you. Steve Skutnik, and Tom Clements will be after you.

MR. SKUTNIK: Hello. I'd like to thank the moderators for hosting this forum. My name is Dr. Stephen Skutnik. I am currently an assistant professor of nuclear engineering at University of Tennessee. My areas of expertise include reactor physics as well as nuclear security, which was the focus of my graduate work.

I am here speaking in support of the proposed initiative to dispose of the surplus weapons-grade plutonium material in MOX fuel. My reasons for this are severalfold. I don't think I need to touch on every point that I think has been made and will continue to be made at this meeting, but there's a few key points I want to stress however.

As Professor Hall already brought up, the fact is is that the fissioning of plutonium 239 ensures it permanent destruction and disposal and its further inaccessibility for weapons. I would further add to Dr. Hall's comments that basically through the introduction of MOX fuel into a reactor

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1007-1 DOE acknowledges the commentor's opinion.

the remaining plutonium, which is not fissioned, is in such a state -- it is contaminated in such a state with the plutonium which is naturally bred in in every reactor, including uranium fuel reactors -- the remaining plutonium is put in such a state where it's no longer practical for weapons use, thus the introduction of weapons-grade plutonium as MOX fuel renders it permanently impractical and inaccessible for weapons. Further it is also safeguarded then by the radiological barrier introduced by containing it within that nuclear field.

Now, I understand that many people in this audience, or at least several, may oppose the use of this alternate -- this is just an alternative. I understand their objections. Many of them are technical, although I do dispute their reasons. Some of them are going to be economic. The one thing I invite all participants to focus on however is I believe that we have a shared goal in, mind that being the permanent isolation and destruction of materials formally destined for weapons of mass destruction. That these materials represent what was formally a blight upon society, a curse that hung over our heads of nuclear destruction now being put to rest.

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I believe the swords to plowshares concept is basically the fulfillment of this promise, this material. That turning what was once a weapons of mass destruction into a use for peaceful energy. However, regardless of basically your agreement or disagreement, I hope that we can maintain the focus of the fact that both sides here believe in the peaceful disposition of materials and believe in reducing as much as possible this material, which represents a pressing national security concern.

Therefore, I express my strong support of TVA's initiative in a way to expeditiously render this material unusable and unretrievable for further weapons use. Thank you.

MR. BROWN: Thank you. Nick Luciano will follow Tom Clements.

MR. CLEMENTS: Good evening, everyone. My name is Tom Clements. I'm with the Alliance for Nuclear Accountability, which is a nationwide network that works on Department of Energy nuclear weapons and DOE clean up issues. And I'm based in Columbia, South Carolina, which is near the Department of Energy's Savannah River Site and I've been tracking this program since before its inception and before the National Academy wrote a

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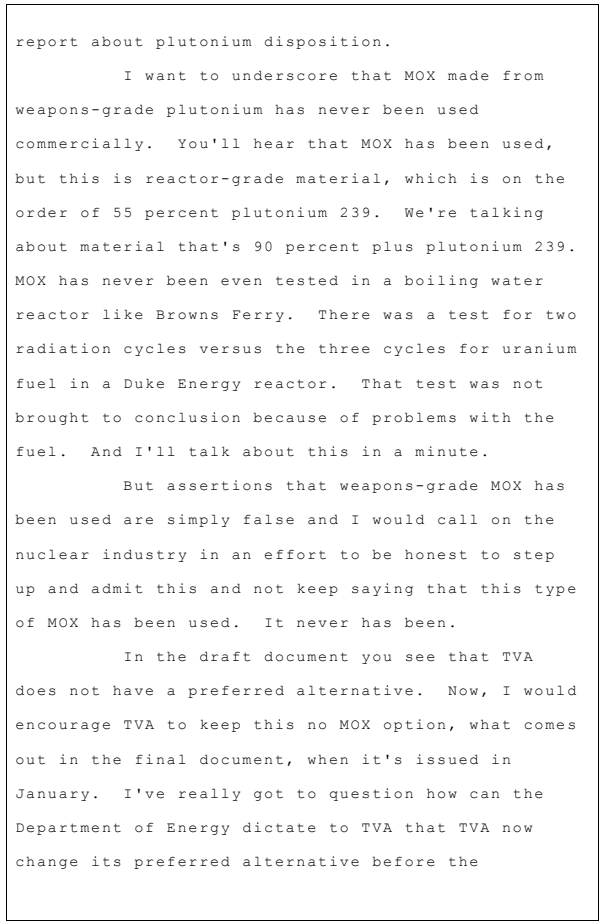

report about plutonium disposition.

I want to underscore that MOX made from weapons-grade plutonium has never been used commercially. You'll hear that MOX has been used, but this is reactor-grade material, which is on the order of 55 percent plutonium 239. We're talking about material that's 90 percent plus plutonium 239. MOX has never been even tested in a boiling water reactor like Browns Ferry. There was a test for two radiation cycles versus the three cycles for uranium fuel in a Duke Energy reactor. That test was not brought to conclusion because of problems with the fuel. And I'll talk about this in a minute.

But assertions that weapons-grade MOX has been used are simply false and I would call on the nuclear industry in an effort to be honest to step up and admit this and not keep saying that this type of MOX has been used. It never has been.

In the draft document you see that TVA does not have a preferred alternative. Now, I would encourage TVA to keep this no MOX option, what comes out in the final document, when it's issued in January. I've really got to question how can the Department of Energy dictate to TVA that TVA now change its preferred alternative before the

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1008-1 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

It is important to note that whether using reactor- or weapons-grade plutonium, the total quantity of fissile plutonium within a fuel element is adjusted so that it represents only a small fraction of the material within the fuel rod (currently planned to be approximately 4 to 5 percent fissile plutonium within each MOX fuel rod).

1008-2 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In the *Draft SPD Supplemental EIS*, the MOX Fuel Alternative was DOE's Preferred Alternative for surplus plutonium disposition. DOE's preferred option for disposition of surplus non-pit plutonium that is not suitable for MOX fuel fabrication was disposal at WIPP. DOE's preferred option for pit disassembly and conversion of surplus plutonium metal, regardless of its origins, was to use some combination of facilities at TA-55 at LANL and K-Area, H-Canyon/HB-Line, and MFFF at SRS, rather than to construct a new stand-alone facility.

In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

environmental impact statement is issued in January. TVA needs to conduct its own environmental impact statement and that's not going to happen before January. The Department of Energy can't force TVA to come to a conclusion without the thorough investigation that we heard mentioned.

I would like to point out, getting back to the first point, the Nuclear Regulatory Commission, Global Nuclear Fuel, which supplies LEU fuel to Browns Ferry said that a test of MOX would be needed from 2019 to 2025. I asked on this call if the Nuclear Regulatory Commission considered this a new fuel form and they affirmed, "yes, this is a new fuel form that will need testing". But DOE and some of the supporters of the MOX program are trying to get around the need to test the performance of MOX fuel. And I don't think anybody in this room should support the use of this new fuel form without testing. The Nuclear Regulatory Commission is not going to do that.

I would also like to point out one particular problem with MOX fuel. In a presentation to the Nuclear Waste Technical Review Board in September of last year the presenter said used MOX would need to be kept in dry cask storage an

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TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose. TVA, as a cooperating agency, may adopt this *Final SPD Supplemental EIS* after independently reviewing the EIS and determining its comments and suggestions have been satisfied (40 CFR 1506.3(c)).

1008-3 The commentor appears to be referring to a TVA presentation titled, *TVA's Consideration of the Use of MOX to Fuel its Nuclear Reactors* (Stout 2011). As stated in the presentation, "heat management is very geology/repository specific." The heat emitted by used MOX and LEU nuclear fuel would be one of the site-specific factors considered in the design and operation of a future repository. As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel. In addition, as discussed in Appendix B, Section B.1.4, of this *SPD Supplemental EIS*, DWPF canisters containing vitrified plutonium with HLW would be stored in S-Area at SRS; these DWPF canisters would be managed in the same manner as other DWPF canisters containing HLW. DOE has terminated the program for a geologic repository for used nuclear fuel and HLW at Yucca Mountain, Nevada. Notwithstanding the decision to terminate the Yucca Mountain program, DOE remains committed to meeting its obligations to manage and ultimately dispose of used nuclear fuel and HLW. For further discussion, refer to Section 2.7, Topic A, of this CRD.

additional 56 years longer than uranium oxides that have the same thermal impact on repository at the time of the placement. MOX is hotter in the reactor and hotter outside the reactor and it's going to have a very negative effect on a geological repository. This has not been considered accurately in the document.

Two more points before I conclude. And I submitted documents and comments in South Carolina and I'll submit these for the record. Is TVA really going to be paid to use the MOX fuel? If we look at an inspector general report by TVA for production of weapons tritium from 2011, the TVA inspector general said, we were unable to determine if production cost were accurately identified and invoiced or if any negative impact on plant operation from tritium production were reimbursed by the Department of Energy. I fear that DOE is trying to make a patsy out of TVA to do this program that nobody else wants because there are no other utilities interested.

And my final point: Why would we choose the most expensive option, which is MOX? At a time of growing budgetary pressure on the Federal government, my calculation from this point forward is that the MOX program would cost about seventeen

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1008-4 TVA is a cooperating agency for this *SPD Supplemental EIS* and, as such, is not required to declare a preferred alternative. TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose. TVA, as a cooperating agency, may adopt this *Final SPD Supplemental EIS* after independently reviewing the EIS and determining that its comments and suggestions have been satisfied (40 CFR 1506.3(c)). Examining issues related to cost reimbursement for the MOX fuel program or the cost of tritium production is not within the scope of this *SPD Supplemental EIS*.

See the response to comment 1008-2 regarding the roles of DOE and TVA as cooperating agencies for this *SPD Supplemental EIS*.

The disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts as required by NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors, including, but not limited to five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants. These reactors are explicitly considered because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Section I.1). However, the MOX Alternative also analyzes irradiation in generic commercial nuclear reactors including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2), and is not dependent on TVA participation.

1008-5 Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

and a half billion dollars. Using DOE figures I calculate that disposing of plutonium as waste, which was always the goal with the program, get it into a waste form is less than four billion dollars. And being from South Carolina really what the driver of this program is it's an inefficient job producer at the Savannah River Site.

So I would call on TVA to step away from the MOX boondoggle and not to be a party to a rip off of the taxpayer. And I would certainly be glad to give you any of the documents that I have and will submit for the record so you can get more educated about the problems with this program as well. Thank you very much.

MR. BROWN: All right. Thanks. Nick Luciano, and Andrew Giminaro will follow.

MR. LUCIANO: Good evening, everyone. My name is Nick Luciano and I'm a Ph.D student at the University of Tennessee. I'm here tonight with the American Nuclear Society and I'd like to say thank you for this opportunity to speak publically on this matter.

So I'd just like to make three brief points and, you know, some other people have made these points too, but I'd like to call your

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attention to page 13 of the presentation. The second point says using a partial MOX fuel core does not appreciably change the impact from using a full uranium fuel core. As a Ph.D. student I had a unique task over the last few years. It was my job to look at MOX fuel use in a reactor. And it was not related to Savannah River and it was not related to TVA. I was paid by the university. But we did computer model studies of this, and this second point really is commensurate with everything I've seen. We would build models. Some of them were hybrid MOX core models and some of them were uranium core models and sometimes we'd have to go back and check and make sure like we knew which model we were looking at because the numbers were so similar they behaved very similarly.

So I would say that, you know, the point that was made previously that we have not used weapons-grade fuel that we've only used reactor-grade fuel, that's true, but my personal experience, not something I've read on the Internet, something that I've studied over the last couple of years says that MOX fuel and uranium fuel are very similar.

The second point I'd like to make is that

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plutonium exists. I mean, that 34 metric tons, like, it's real. It exists somewhere under safeguards. So the question is what do we do about it. And the way I see it we can basically do nothing, we can turn it into glass, or we can turn it into power. And of those three options I think the power option makes the most sense. You know, that power could be used to power places like this room, like our university, hospitals, schools, businesses. So that's a great use of something that was formally weapons material.

The third point I'd like to make is that -- and other people have made this point -- MOX fuel, although it would be new in the U.S. it's not new globally. There is experience with it. And as we said the weapons-grade, that's a different thing, but in some of the studies that I've looked at we actually tried to tell the difference, if we could detect the difference of a weapons-grade assembly versus a reactor-grade assembly. And it's a very difficult thing to do. So again, based on what I've looked at, I would say that use of weapons-grade MOX is very similar to reactor-grade MOX, which is mostly very similar to uranium fuel used today.

So, yeah, in summary I'd just like to say

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1009-1 DOE acknowledges the commentor's opinion.

that, you know, my personal experience is it's similar. The plutonium exists so we need to do something about it and there's quite a history in other countries of using this type of fuel. So thanks for allowing me the time tonight to speak and thank you.

MR. BROWN: Joshua Molgaard will follow Andrew.

MR. GIMINARO: Good evening. My name is Andrew Giminaro and I'm a graduate student of the Department of Nuclear Engineering at the University of Tennessee as well as a member of the American Nuclear Society student chapter at UT.

MOX fuel has been proven to be a safe and reliable fuel source over many reactor years of operation. And in fact, the safety and performance record of MOX fuel is comparable to that of low-enriched uranium fuels. MOX fuel has been produced in five countries and is widely used in many reactors word wide. Many nations view MOX as an essential part of their energy and (inaudible) cycle management policies.

Based on this I would recommend that the DOE, TVA, and NNSA would move forward with the ultimate final goal of uranium MOX fuel in their

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1010-1 DOE and TVA acknowledge the commentor's opinion.

reactors in order to dispose of excess plutonium. Thank you.

MR. BROWN: Okay. Seth Langford will follow Joshua.

MR. MOLGAARD: Good evening. Thank you for the opportunity to comment. My name is Josh Molgaard. I am a student at the University of Tennessee in Knoxville. I'm currently pursuing a Master's degree in engineering. A little background. I did grow up near the (inaudible) power plant in southeast New Mexico about 30 miles from there in Carlsbad. So I was exposed to this topic at an early age. My father worked security there and I actually had a chance to intern there for a summer and also at Lawrence Livermore National Laboratory. So I've been interested in this for a while. I just recently actually took it up in an academic setting.

I will say that I think if we focus on the national security aspect of this, there's some points to be brought up that already have, but I'll just reiterate a couple and expound on those.

First and foremost, using MOX fuel, as been pointed out, takes the plutonium that we currently have and re-purposes it and makes it less

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1011-1 DOE acknowledges the commentor's opinion.

useful as a nuclear weapon material. So therefore it decreases the risk of proliferation. It decreases our vulnerability currently, as been pointed out by recent speakers. We have this stuff sitting above ground stored somewhere. It's obviously more vulnerable in that setting than it would be if we did something about it.

There are other options, but I'd point out that the options of viable disposal while as been pointed out maybe they're cheaper -- I'm not really sure. I haven't done any personal cost benefit analysis -- however, I can say what you loose then is the opportunity to produce a domestic supply of energy. So those may be viable options, however if you can take something that's a problem, re-purpose it and make it something useful, now you have a domestic form of energy.

So not only is your proliferation risk lower, but now you've produced energy for yourself. American energy makes us more secure. I think we can all agree that if we have less dependence on foreign supply for energy, we'll be more secure as a country.

Lastly I'd like to point out that I think the U.S. needs to be a leader in this field. As has

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been pointed out before, other countries have done this and I think it's important for the U.S. to get on board and also to become a leader and encourage international cooperation in this area so we can use responsible ways of re-purposing weapons-grade plutonium and turning it into something useful. And if we do that, I think we decrease the risk of proliferation globally, increase security around the world and that, I would say, makes us all safer. If the world's safer, then so are we.

So I would focus on the national security aspects of this problem. And again, thanks for the opportunity to speak.

MR. BROWN: Thank you. And Seth Langford is advancing on the podium, and Remy DeVoe will follow you.

MR. LANGFORD: Good evening. I'm a junior in nuclear engineering at the University of Tennessee. My name is Seth Langford. I'm also a member of the American Nuclear Society student section. I'm here today as an ANS member and I'd like to say a few words about the usage of MOX fuel.

We have an agreement with Russia that dictates that we must dispose of 34 metric tons of excess weapons-grade plutonium. The best way that

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1012-1 DOE acknowledges the commentor's opinion.

we can fulfill our agreement with Russia is by turning our weapons-grade plutonium into MOX fuel. Once MOX fuel has been used inside a reactor it becomes extremely unattractive for weapons use. Thus by using MOX fuel we can fulfill our agreement with Russia and produce clean peaceful energy.

Thank you for your time and have good evening.

MR. BROWN: Thank you. Garry Morgan will follow Remy.

MR. DEVOE: Thank you, Chairperson and Chair People for having us. My name is Remy DeVoe. I'm a senior at the University of Tennessee in Knoxville. I'm majoring in nuclear engineering and I'm a member of the American Nuclear Society. I'm here today to speak on this issue of surplus plutonium disposition and provide evidence in support of the MOX fuel use in nuclear reactors.

So this hearing it to determine what we should do with surplus plutonium and there are 34 tons in the United States that we need to dispose of as has been said for the agreement we have with Russia. We should not dispose of this weapons-grade plutonium by vitrification. That would definitely make it unusable. This stockpile should be viewed

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1013-1 DOE acknowledges the commentor's opinion.

as a resource that we can use to provide energy. If instead we just use the plutonium in MOX fuel, we can generate electricity for homes and businesses and make our county more energy independent and dispose of this potentially dangerous material. So once this fuel has been in a reactor, the plutonium is very difficult and impractical for weapons use. So this highly radioactive stuff that comes out of the reactor is protecting the plutonium and is also of a composition that is not of a good quality for weapons use. This makes MOX fuel the safest way to dispose of the plutonium and that's a big important issue that we're trying to come out of this meeting here, is what to do to make unusable forever for the future.

And so nuclear energy has not always been accepted in this country by everybody. And this is primarily due to its association with nuclear weapons. But in this case nuclear energy would be used to reduce the amount of nuclear weapons in the world -- or materials to make the weapon, which is a good thing. And this is why I believe that this is the most effective and economical way to dispense of the excess plutonium.

Thank you again for listening to me today

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and have a good evening.

(Marked Exhibit No. 1.)

MR. BROWN: Thank you. Garry Morgan and Chris Perfetti will be after you.

MR. MORGAN: Thank you, Mr. Moderator. I am Garry Morgan. I'm retired from the United States Army Medical Department. My experience and training with the United States Army included nuclear, biological, and chemical weapons protection. I was also involved in personal reliability programs related to nuclear security and military physical security. My experience and education includes risk management as it relates to healthcare and healthcare organizations. I received a Bachelor's of Science degree from Baylor University in 1979.

Now, normally I don't wear my uniform services I.D. outside on my civilian clothes, but today in honor of those brave American military fighting men that have died in the war on terror and the tens of thousands that have been injured, I wear this proudly. Actually my uniform is too small for me anymore, as I've been out of the military for several years.

Plutonium is one of the most dangerous

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1014-1 As summarized in Appendix J, Section J.2, of this *SPD Supplemental EIS*, use of MOX fuel within nuclear reactors could require some modifications to core design, reactivity control systems, fuel management procedures, and technical specifications. For example, concerns that the higher neutron flux in MOX fuel can lead to pressure vessel embrittlement can be addressed through fuel management procedures. The referenced tests at the French CABRI reactor are among a number of tests that have been performed in specialized test reactors in support of the definition of safety limits at high burnup. Other reactors performing similar tests include the NSRR test reactors in Japan and the IGR and BIGR reactors in the Russian Federation. A 2007 report providing a review and interpretation of reactivity-induced accident experiments addressed the subject of CABRI tests, as well as numerous others, and concluded that there is no evidence that MOX fuel behaves differently than LEU fuel in terms of failure propensity (Vitanza 2007). This *SPD Supplemental EIS* does, however, analyze the risks associated with the use of a partial MOX fuel core under various accident scenarios, including failures that could lead to a core meltdown, and concludes that the risks are comparable to those associated with the use of full LEU cores (see Chapter 4, Section 4.1.2.4, and Section J.3.2).

Notwithstanding this conclusion, as summarized in Chapter 5, Section 5.3.3, of this *SPD Supplemental EIS*, use of MOX fuel in TVA or other reactors would require an amendment to the reactor's operating license in accordance with 10 CFR Part 50 that must demonstrate that the proposed change did not involve an unreviewed environmental or safety question.

substances known to humankind as a critical element of nuclear weapons. There is one important message that needs to be conveyed concerning the utilization of weapons-grade plutonium fuel, MOX, in commercial nuclear reactors. The commercialization of nuclear weapons plutonium as a fuel for commercial and nuclear reactors is compounded insanity. Plutonium fuel weakens the reactor pressure vessel due to embrittlement of the metal in the primary containment as a result of high neutron flux. The use of plutonium as a commercial nuclear reactor fuel increased the risk of theft and diversion of nuclear materials and the threat of terrorism and nuclear weapons proliferation is greatly increased.

Plutonium reactor fuel can be utilized to fabricate a nuclear weapon. To say it cannot be used to fabricate a nuclear weapon is false. And I can prove it.

Utilization of plutonium as a commercial nuclear reactor fuel serves one purpose, the financial benefit of the commercial nuclear power industry. Tax payers are paying for the construction of the plutonium MOX fuel facilities to benefit the nuclear power industry. It's not to benefit you and I. It benefits the corporatocracy

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1014-2 The purpose of the Surplus Plutonium Disposition Program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally sound manner to ensure that it can never again be readily used in nuclear weapons. Central to the purpose of the Surplus Plutonium Disposition Program is protecting plutonium from terrorists, so appropriate safeguards and security measures are taken at facilities and during transportation to protect against unauthorized access to materials.

Although unirradiated (fresh) MOX fuel may not be sufficiently radioactive to be self-protecting, fresh MOX fuel is not an attractive target for terrorist attack because it is not readily usable for a nuclear device or dirty bomb. The plutonium in MOX fuel is blended with approximately 20 times as much depleted uranium as plutonium and is formed into ceramic pellets encased in metal cladding. Moreover, the MOX fuel is contained in large, heavy fuel assembly structures that would make theft extremely challenging. Without substantial physical dismantling and chemical separation, the plutonium in the MOX fuel cannot be used in a nuclear bomb. Once the fuel has been irradiated in a reactor, it would be highly radioactive, and recovering the residual plutonium would be impossible without highly specialized equipment. Furthermore, the isotopic distribution of the residual plutonium in irradiated MOX fuel would be changed, resulting in a much smaller percentage of fissile plutonium isotopes than that in weapons-grade plutonium.

DOE would transport plutonium between DOE sites and MOX fuel from SRS to domestic commercial nuclear power reactors using the NNSA Secure Transportation Asset Program, as described in Appendix E. Under this program, security measures specific to the materials being transported would be implemented to protect them from diversion.

1014-3 The United States remains committed to the PMDA (USA and Russia 2000) with the Russian Federation, under which both countries have agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. It is important that DOE begin plutonium disposition operations to demonstrate progress to the Russian government, meet U.S. legislative requirements, and reduce the quantity of surplus plutonium and the concomitant cost of secure storage. Use of MOX fuel in commercial nuclear power reactors would render surplus plutonium into a used fuel form not readily usable for nuclear weapons.

of the nuclear power industry.

The use of plutonium fuel at Browns Ferry, Alabama and Sequoyah, Tennessee compounds the insanity of utilizing this dangerous high risk nuclear fuel. Both reactors are old and in the case of Browns Ferry the reactors are the defective GE Mark 1 reactors, which are under increased scrutiny by the Nuclear Regulatory Commission. The nuclear reactors at Fukushima, which exploded and melted down are the GE 1 series of reactors.

Weapons-grade plutonium mixed oxide fuel is high risk and has failed in previous testing at civilian nuclear power reactors.

Solutions: There are solutions. There is a solution which is recommended for all plutonium waste materials, and I appreciate the professor's comment. We all are working toward a desired outcome and that is to take this material away from the world and ensure that it can no longer be utilized, and that is through the method which many of us recommend is glass vitrification of all plutonium weapons materials and wastes as indicated in Appendix G, page G-1 of the NNSA's Draft Supplemental Impact Statement.

The solution as national policy: Two

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Cost, schedule, technical viability, worker and public safety, environmental impacts, security, and the ability to carry out international agreements are among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

1014-4 If TVA were to make a decision to use MOX fuel, it would be the joint responsibility of TVA and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely.

Appendix J, Section J.3.3.3, of this *SPD Supplemental EIS* describes the NRC recommendations developed in response to the March 11, 2011, accident at the Fukushima Dai-ichi Nuclear Power Station in Japan and the subsequent actions that TVA has taken to further reduce the likelihood and severity of accidents at its nuclear plants. For further discussion, refer to Section 2.5, Topic A, of this CRD.

As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. There are differences in nuclear reactor core physics between MOX and LEU fuel cores, but these differences are understood and can be addressed using measures such as modifications to reactivity control systems and core fuel management procedures. Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

Since the publication of the report cited by the commentor, a number of additional technical studies and analyses related to reactor accidents and the use of MOX fuel have been released (NRC 2012a; ORNL 2013; SNL 2010, 2011). The results reported in this *Final SPD Supplemental EIS* are consistent with this more recent information and the application of later versions of the advanced computer codes used in the report cited by the commentor. The analysis included in this *Final SPD Supplemental EIS* uses updated nuclear cross sections and fuel and reactor design parameters for the Browns Ferry and Sequoyah Nuclear Plants (ORNL 2013). As

separate initiatives should be undertaken, one in Russia and one in the United States with the same end goal to vitrify and render useless plutonium weapons material and plutonium materials.

Summary: The experimentation of nuclear weapons plutonium MOX fuel in any civilian nuclear reactor is not a smart or safe alternative for the disposal of weapons-grade plutonium materials. Your job, ladies and gentleman of the NNSA, the NRC, the TVA is to protect and provide services to the citizens of our great nation. None of your jobs include providing for the financial enrichment of multinational nuclear power construction corporations and the various contractors. And we ask that TVA and the citizens to inform their political leadership that glass vitrification of plutonium and plutonium materials is the right choice. Thank you.

(Marked Exhibit No. 2.)

MR. BROWN: Thank you. Okay. Chris will be followed by Nancy McFadden.

MR. PERFETTI: Hey, guys. I'm Dr. Chris Perfetti. I work at Oak Ridge National Laboratory as a nuclear engineer. I work on (inaudible) safety, which is making sure that

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indicated in Appendix J, Section J.4, of this *SPD Supplemental EIS*, a 2011 study by Sandia National Laboratories found that the highest consequence accident scenarios release fractions from a partial MOX fuel core are similar to those of a full LEU fuel core. For further discussion, refer to Section 2.5, Topic B, of this CRD.

As addressed in Chapter 4 and Appendix I, normal operation of reactors using a partial MOX fuel core is not expected to change substantively from operations using a full LEU fuel core. Under both normal operating and postulated accident conditions, the impacts of operating reactors using a partial MOX fuel core are not expected to change appreciably from those associated with use of full LEU fuel cores. This assessment is consistent with the analysis performed for the *SPD EIS* (DOE 1999).

1014-5 DOE disagrees with the commentor's characterization of DOE/NNSA behavior with respect to the nuclear industry. As noted in the response to comment 1014-3, the United States remains committed to the agreements in the PMDA (USA and Russia 2000) with the Russian Federation.

There are some minor differences between MOX fuel and LEU fuel, such as the amount of actinides in used MOX fuel rods would be higher than in used LEU fuel rods. These differences, however, are not expected to affect reactor safety or meaningfully increase the environmental consequences or risks associated with the use of a partial MOX fuel core. As summarized in Chapter 4, and described in detail in Appendices I and J, of this *SPD Supplemental EIS*, the impacts associated with using a partial MOX fuel core versus a full LEU fuel core in commercial nuclear power reactors are expected to be similar. The risks associated with postulated accidents would be small. For further discussion, refer to Section 2.5, Topic B, of this CRD.

nuclear stuff stays in a safe configuration. And I guess the point what I'll address up here is the argument that plutonium is one of the most dangerous substances ever in the world. And I believe that is completely and utterly not true.

So this myth was popularized by Ralph Nader a couple of years ago. I think when he was running for president he stated that one pound of plutonium could kill eight billion people if dispersed in the atmosphere. And this is pretty obviously not true because we have vaporized hundreds if not thousands of pounds of plutonium in the atmosphere during the atmospheric weapons tests, which I think is not a good thing, but where are the eight billion people who should be dead or the trillions of people who should theoretically be dead if these claims are true.

And the logic for that is actually kind of funny. It's bad logic. It's very bad logic. It's arguing that plutonium is not dispersed. It's dispersed in a very selective manner. And the best analogy I have for that is that by that same logic you either argue that one man could impregnate all the women in American in a single day if all the sperm were dispersed in a very, very selective

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manner. And that is obviously not true.

So plutonium is very harmful. We have to take a lot of precautions with it when it's inhaled, but when you ingest it, it's really not that bad. It's actually less toxic than caffeine. So I mean, I am personally willing to take the Pepsi challenge and go pound for pound with plutonium ingested with someone who has ingested caffeine. And I would feel safe doing that. The truth is that there are many more harmful things that we do produce in the world. We produce enough chlorine gas -- we manufacture bleach and other products -- to kill 400 trillion people every year. And no one thinks of that when they wash their clothes. It's a risk that we completely accept.

I believe that the threat from using plutonium in reactors is very, very small and I believe that TVA can do it safely and cost effectively and generate some electricity while they're at it. Thank you.

MR. BROWN: Thank you. Okay. Nancy McFadden and Kathleen Ferris will be after you.

MS. MCFADDEN: Okay. Hi, I'm Nancy McFadden. I used to teach school. I've been home for quite some time. And my husband pays the bills

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1015-1 **1015-1** DOE and TVA acknowledge the commentor's opinion.

and I get to be an activist. And he likes it that I'm activist. He doesn't want to do it, but he's glad somebody is.

Okay. I'm going to start by talking about the Y12 plan. I look at news clippings for Don Safer (phonetic) every week who's the fearless leader of the TEC nuclear crowd. So I've been seeing all this stuff about Y12 and I followed it intensely. I read Frank Munger of Atomic City Underground voraciously. And what I discovered was that the stuff that went on at Y12 that shouldn't have gone on from somebody pounding on the wall and the guards don't get up to figure out why and the fence isn't put in and several other things and then some other things that I've noticed in the past with DOE, I don't think they're trustworthy. And I would suggest we work on a major clean up, which has something to do with this because this is supposed to be a DOE/TVA sort of thing and I'm not sure DOE can drive straight with their hands on the wheel.

But even more than that, I have been reading lately they've had stuff about coal mining and the ash and how TVA finally settled. They finally settled. Steven Smith is quoted as saying, they should have done it a lot earlier. I can't

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comprehend how TVA didn't get everything fixed as close as they could and they had to go to court and hold out until they were forced to do everything. And that makes them -- they are also not trustworthy, but on some of the stuff that's gone on down at Browns Ferry, I think they're pretty stupid.

And to ask us in this area to accept that both DOE and TVA are competent to handle such a dangerous process -- the record doesn't show it and I'll send these 50 pages. I've got it on my computer. It's just my printer ran out today. So what I'd like is I'd like you to -- my recommendation is TVA needs a major housekeeping. I mean, I'm not saying that there aren't nice people who work there personally, but they just don't have their act together at all. And DOE, you can see it from (inaudible) and from the stuff going on in Oak Ridge and several other places. I've heard so much I could cry.

So what I'd like is I'd like them cleaned up and I also agree with Tom Clements and Garry Morgan that you don't take something -- obviously we've got to get rid of the MOX and put it somewhere so that nobody creepy every uses it again. But to pay more money so that we get energy and we also

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1016-1 As described in Chapter 4 and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, risks to the public are expected to be minor from both normal operations and potential accidents under any proposed alternative. Use of MOX fuel in commercial nuclear power reactors would generate electricity while rendering the plutonium into a used fuel form that is not readily usable for nuclear weapons.

have higher risk is dumb. Thank you.

MR. BROWN: Okay. Kathleen Ferris is next and Gretel Johnston will be after Kathleen.

MS. FERRIS: I'm Kathleen Ferris from Murfreesboro, Tennessee, which is located northeast of Browns Ferry Nuclear Plant. And because we are -- I think that's probably the closest reactor to us, at least our direction wide that's been of my particular concern.

I think that it is pure folly to put plutonium fuel in the Browns Ferry reactors. I have studied the NRC records on the Browns Ferry reactors. And the record is pretty appalling. Browns Ferry is the oldest TVA nuclear plant. The first reactor began operation in 1973 and two years later there was a major fire because some workman used a candle to try to locate a leak. I think that's what he was looking for. It caused a major fire, which in turn caused the NRC to initiate regulations for fire safety.

And ironically now 37 years later Browns Ferry is still in violation of the NRC fire regulations. The history of this plant is just the story of one accident, one blunder, one violation after another. There have been repeated shutdowns,

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1017-1

1017-1 It is NRC's responsibility to regulate the operation of nuclear power reactors in the United States. However, as a courtesy to commentors, TVA provides the following discussion of safety issues at the Browns Ferry and Sequoyah Nuclear Plants.

The Browns Ferry Nuclear Plant is designed and maintained to meet stringent NRC safety requirements for nuclear power reactors. Safety-related equipment is regularly inspected, maintained, and monitored in accordance with procedures and vendor recommendations and replaced well before the end of its scheduled operating life. As discussed in Appendix J, Sections J.1 and J.2, of this *SPD Supplemental EIS*, continued assurance of the safe operation of these plants is the responsibility of the plant operator which operates under the independent regulatory oversight of NRC, including NRC regulations and license conditions. If the plant operator were to make a decision to use MOX fuel, it would be the joint responsibility of the plant operator and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely. For further discussion, refer to Section 2.5, Topics A and B, of this CRD.

The Browns Ferry Nuclear Plant upgraded its fire protection program in response to the NRC requirements defined in 10 CFR 50 Appendix R, issued in 1980. However, the fire protection program relied upon a substantial number of OMAs to assure safe shutdown of the reactors in the event of a design-basis fire. As industry experience with nuclear plant fire protection evolved, these previously allowable OMAs were disallowed, resulting in notice of violations to Browns Ferry for the fire protection program. To address these findings, TVA initiated actions to reduce the reliance upon OMAs and change the fire protection program to voluntarily comply with the 2001 NFPA Standard 805. A number of changes have already been completed to reduce the risk of damage due to a fire. When all of the NFPA Standard 805 changes are complete, the risk of core damage due to fire will be reduced to a level consistent with other design-basis accident risks (see TVA presentation to NRC from a public meeting on December 8, 2011, entitled *BFN Fire Risk Reduction and NFPA 805 Transition*, available at http://pbadupws.nrc.gov/docs/ML1135/ML11353A319.pdf).

As described in Appendix J, Section J.3, of this *SPD Supplemental EIS*, reactor accident analyses consider natural phenomena hazards such as tornados. For more information, see *Browns Ferry Nuclear Plant Updated Final Safety Analysis Report* (TVA 2009). Presently available information and analysis indicate that, with minor modifications, the Browns Ferry and Sequoyah Nuclear Plants have the capability to safely utilize MOX fuel. For further discussion, refer to Section 2.5, Topic A, of this CRD.

safety violations, tritium spills, deficient welds, a failed cooling valve, fire pump failure, a leaking steam pipe, defective control rods, valve failures, and operator/human errors. And maybe those are the ones that frighten me the most. The story of Browns Ferry is just one near miss after another, including an F5 tornado a couple of years ago.

It's already been pointed out that the reactors at Browns ferry are the GE Mark 1 boiling water reactors, the same type that exploded at Fukushima. These old reactors were not designed to burn MOX fuel. I think that to put plutonium fuel into an aged boiling water reactor with deteriorating structures and mechanisms is to invite disaster. MOX fuels burns hotter. It creates hot spots. It makes the reactors harder to control.

It also -- and I don't fully understand this because I'm not a scientist, but the MOX also makes key reactor components in some cases to age faster and it can cause the reactor pressure vessel to become embrittled and to fail during an accident.

MR. BROWN: About a minute left.

MS. FERRIS: Okay. A meltdown involving MOX fuel would be even more serious than if it were a uranium burning fuel because the levels

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1017-2

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1017-2 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. As addressed in Chapter 4 and Appendix I, reactor operations using a partial MOX fuel core are not expected to change substantively from operations using a full LEU fuel core. Although there are differences in MOX fuel compared to LEU fuel, these differences are not expected to affect reactor safety. As summarized in Section J.2, use of MOX fuel within nuclear reactors could require some modifications to core design, reactivity control systems, fuel management procedures, and technical specifications. For example, concerns that the higher neutron flux in MOX fuel can lead to pressure vessel embrittlement can be addressed through fuel management procedures. As summarized in Chapter 5, Section 5.3.3, of this *SPD Supplemental EIS*, use of MOX fuel in TVA or other reactors would require an amendment to the reactor's operating license in accordance with 10 CFR Part 50.

Appendix J, Section J.3.3.3, of this *SPD Supplemental EIS* describes the NRC recommendations developed in response to the March 11, 2011, accident at the Fukushima Dai-ichi Nuclear Power Station in Japan and the subsequent actions TVA has taken to further reduce the likelihood and severity of accidents at its nuclear plants. For further discussion, refer to Section 2.5, Topic C, of this CRD.

1017-3 See the response to comment 1017-2 regarding the safety of MOX fuel use in commercial nuclear power reactors. As summarized in Chapter 4, Section 4.1.2, under normal operating as well as postulated accident conditions, the impacts of operating reactors using partial MOX fuel cores would not change meaningfully from those associated with use of full LEU fuel cores. DOE expects that used MOX fuel would have no meaningful impacts on used fuel pool operation. For further discussion, refer to Section 2.5, Topic B, of this CRD.

of radiation inside the reactor are higher than current reactors. The fuel rods, as has been pointed out, are hotter and would take more time in cooling pools and more time before they could be put into casks.

I maintain that Browns Ferry already poses enough danger to the million or more people who live and would be affected in the event of a meltdown. And I also maintain that if this experiment, and it is an experiment, of using weapons-grade plutonium for fuel in a reactor, especially an old reactor, if this carried out, our government is making guinea pigs of the people who live in this vicinity. Thank you.

MR. BROWN: Thank you. Gretel. Steve Nesbit will be following.

MS. JOHNSTON: Hi, I'm Gretel Johnston. I'm with a group called Mothers Against Tennessee River Radiation, which is what our focus is on. Einstein once said that insanity is repeating the same behavior and expecting a different outcome. I kind of want to look at this situation with that framework in mind.

The nuclear power experiment, it's beginning to fail for the second time. This is our

1017-3 cont'd

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second round. And we still have not found a solution after 50 years for a hundred thousand year waste problem. And I'm just not comfortable leaving that to the future. It doesn't seem fair to the future. What if the kids can't afford to fix those, you know, disintegrating casks that are still causing cancer in children. This is happening now and I'm not comfortable with it.

So I cannot understand how we can keep making more waste when we don't know how to secure what we have, what we've already made that will go that far into the future. Okay. To me I think that Einstein would actually say that's a two-fold insanity to keep continuing to make it when we know. And this is, you know, repeated behavior, expecting someone else in the future to solve the problem. It's not fair to them. It's not fair to the future. It's not fair to the children of the future.

I find it really hard to believe that anyone in our government is considering an experiment with 40 year old reactors that have had repeated problems as Browns Ferry has had. You're proposing putting experimental plutonium fuel in them, fuel that they were not designed to use even when they were young some 40 years ago, much less

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1018-1

1018-1 The Browns Ferry and Sequoyah Nuclear Plants are designed and maintained to meet stringent NRC safety requirements for nuclear power reactors. Safety-related equipment is regularly inspected, maintained, and monitored in accordance with procedures and vendor recommendations and replaced well before the end of its scheduled operating life. As discussed in Appendix J, Sections J.1 and J.2, of this *SPD Supplemental EIS*, continued assurance of the safe operation of these plants is the responsibility of the plant operator which operates under the independent regulatory oversight of NRC, including NRC regulations and license conditions. If the plant operator were to make a decision to use MOX fuel, it would be the joint responsibility of the plant operator and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely. For further discussion, refer to Section 2.5, Topics A and B, of this CRD.

As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. There are differences in nuclear reactor core physics between MOX and LEU fuel cores, but these differences are understood and can be addressed using measures such as modifications to reactivity control systems and core fuel management procedures. Presently available information and analysis indicate that, with minor modifications, the Browns Ferry Nuclear Plant has the capability to safely utilize MOX fuel.

As at all nuclear power reactors, every automatic or manual reactor shutdown that occurs is documented in plant operating records. Shutdowns are monitored, tracked, and evaluated by both NRC and TVA to ensure there is no increase in safety risk (see the Reactor Oversight Process described at www.nrc.gov/reactors/operator-licensing/oversight-programs.html).

These shutdowns have not affected the ability of the containments or safety-related equipment to perform their safety functions. In 2006, NRC issued a license renewal safety evaluation report (NRC 2006a, 2006b) that documented an in-depth review of the Browns Ferry Nuclear Plant and concluded that TVA be granted a 20-year operating license renewal for Browns Ferry in accordance with 10 CFR Part 54. NRC approved the Browns Ferry license renewal request on May 4, 2006. For further discussion, refer to Section 2.4, Topic A, and Section 2.5, Topic A, of this CRD.

when they're old and overstressed and have had repeated SCRAMS which have affected the components and the containment structure itself.

This MOX plutonium fuel burns hotter and we're going to be putting repeated stress on reactors that are not designed for it. And we have found that all problems cannot be solved as Chernobyl and Fukushima and 911 have shown us. Unexpected things happen and we can't necessarily prepare for them. We want to. We try to. We do everything we can to, but we can't necessarily prepare for them.

Let's see. The weapons-grade plutonium. We'll be using aging reactors that have untold numbers of unplanned SCRAMS already that have weakened their parts and structure. I would say that qualifies as not being really sane. These aging reactors are not designed for the hotter fuels. And in Sequoyah's case over a million people are in a 50-mile radius, and Browns Ferry it's almost a million. So combined it's about 2 million people who are put at risk with this experiment that has never been done in other reactor except the Duke Energy that had to stop it two-thirds of the way through because the pellets were actually growing.

1018-1 cont'd

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1018-2 There are some minor differences between MOX fuel and LEU fuel, such as the amount of actinides in used MOX fuel rods would be higher than in used LEU fuel rods. These differences, however, are not expected to affect reactor safety or meaningfully increase the environmental consequences or risks associated with the use of a partial MOX fuel core. As summarized in Chapter 4, and described in detail in Appendices I and J, of this *Final SPD Supplemental EIS*, the impacts associated with using a partial MOX fuel core versus a full LEU fuel core in commercial nuclear power reactors are expected to be similar. The risks associated with postulated accidents would be small. For further discussion, refer to Section 2.5, Topic B, of this CRD.

1018-3 Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

The assemblies were growing. They were enlarged and warping.

MR. BROWN: A minute left.

MS. JOHNSTON: Okay. Another thing is that this actually creates more fuel. I would like to see us find a solution that turns swords into plowshares, and every scientist in the world would like to see that happen with nuclear. Everyone in the world would like to see that happen. But we have to be realistic about it and we have to look at hard evidence of things that have happened, things that have gone wrong.

So I would say that there are two -- there are four questions I have to ask.

MR. BROWN: Can you make it quickly?

MS. JOHNSTON: Can you truthfully justify risking 2 million U.S. citizens with this experiment in old commercial nuclear reactors? Can you justify producing even more plutonium waste? Can you justify spreading plutonium waste around to non-military commercial sites with inadequate security since this is supposed to be a way to secure and avoid proliferation? And can you do this in the name of Disposition of Dangerous Nuclear Weapons Material? Can you give me one good reason

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1018-4 Substantial security exists at commercial nuclear power reactors, although details of the security measures are withheld from the public to avoid assisting potential adversaries. In addition, MOX fuel is not an attractive target for terrorist attack because it is not readily usable for a nuclear device or a dirty bomb. The plutonium in MOX fuel is blended with approximately 20 times as much depleted uranium as plutonium and is formed into ceramic pellets encased in metal cladding. Moreover, the MOX fuel is contained in large, heavy fuel assembly structures that would make theft extremely challenging. Without substantial physical dismantling and chemical separation, the plutonium in the MOX fuel cannot be used in a nuclear bomb. Once the fuel has been irradiated in a reactor, it would be highly radioactive, and recovering the plutonium would be impossible without highly specialized equipment.

The use of MOX fuel is consistent with U.S. nonproliferation policy and international nonproliferation agreements. Use of MOX fuel in commercial nuclear power reactors would render surplus plutonium into a used fuel form that is not readily usable for nuclear weapons.

1018-5 As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS.* In addition to addressing options for pit disassembly and conversion, this *SPD Supplemental EIS* evaluates alternatives for the disposition of an additional 13.1 metric tons (14.4 tons) of surplus plutonium, including vitrification. The surplus plutonium in all of the action alternatives evaluated in this *SPD Supplemental EIS* would be rendered into a form or disposed in a manner that would make the surplus plutonium proliferation-resistant.

MOX fuel is not an attractive target for terrorist attack because it is not readily usable for a nuclear device or a dirty bomb. The plutonium in MOX fuel is blended with approximately 20 times as much depleted uranium as plutonium and is formed into ceramic pellets encased in metal cladding. Moreover, the MOX fuel is contained in large, heavy fuel assembly structures that would make theft extremely challenging. Without substantial physical dismantling and chemical separation, the plutonium in the MOX fuel cannot be used in a nuclear bomb. Once the fuel has been irradiated in a reactor, it would be highly radioactive, and recovering the plutonium would be impossible without highly specialized equipment. Use of MOX fuel in commercial nuclear power reactors would render surplus plutonium into a used fuel form that is not readily usable for nuclear weapons. For further discussion, refer to Section 2.2, Topic A, and Section 2.4, Topic A, of this CRD.

why weapons-grade material should not be, all of it, vitrified. Vitrified. Glass vitrification. So I certainly do say that we need to choose that first alternative for vitrification and that not doing that is doing something. It's endangering us. It is not doing nothing to do vitrification. It is taking action to secure for now and the future. Thank you very much.

(Marked Exhibit No. 3.)

MR. BROWN: Steve Nesbit. Sandra Kurtz will follow Steve.

MR. NESBIT: My name is Steve Nesbit. I work for Duke Energy Corporation, which operates 12 nuclear power reactors in North Carolina and South Carolina and Florida. Thanks for the opportunity to make these comments tonight.

As a way of background, I led Duke Energy's mixed oxide fuel program for about ten years including the use of four mixed oxide fuel assemblies in the Catawba nuclear power reactor. I'll speak a little more about that later.

My first comment is in general the Environmental Impact Statement Supplement, it appears to do a good job assessing the environmental impact of the potential program changes that have

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1019-1 DOE acknowledges the commentor's opinion.

been outlined here. Now, the centerpiece of the program is the conversion of weapons-grade plutonium in the mixed oxide fuel and the use of that fuel in nuclear power reactors.

MOX fuel use is proven to be safe and effective. Why do I say that? There are decades of successful mixed oxide fuel use experience in European reactors, Belgium, France, Germany, Switzerland. We have also MOX fuel experience in the United States and more recently direct experience using weapons-grade mixed oxide fuel in commercial nuclear power reactors.

A little earlier Mr. Clements threw down the gauntlet to the nuclear industry to respond to his concerns and I'm picking it up. And I will add that I'm a registered professional engineer in the states of North Carolina and South Carolina and I have a professional obligation to be truthful and factual in what I say.

So Duke Energy was under contract from 1999 to 2009 to use mixed oxide fuel. We have no technical concerns. The fuel performs well, very similarly to conventional uranium fuel. Our involvement in the program was terminated solely for reasons related to business. It had nothing to do

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with technical concerns.

We carried out a lead test assembly program at the Catawba nuclear power reactor. We used the fuel for two cycles. At the end of those two cycles of radiation we examined the fuel. We determined that some of the parameters associated with the fuel assembly performance, not the mixed oxide part of the fuel, but the fuel assembly hardware were different than we expected. We made the conservative decision not to carry out the third cycle of a radiation. By that time we had already gained enough data on the performance of the mixed oxide fuel to know that the program -- the lead test assembly program had carried out its intended goals.

So our experience showed that weapons-grade mixed oxide fuel derived from surplus weapons performs very much the same as reactor-grade mixed oxide fuel in Europe. And it performs safely and just as well as low-enriched uranium fuel.

I want to turn briefly to some non-proliferation aspects here. I will note that in the 1990s DOE performed an assessment of the non-proliferation aspects and various aspects for plutonium disposition. It determined that mixed oxide fuel use met the so-called spent fuel standard

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as did what was called homogenous mobilization. However, that assessment did not show that can-in-canister mobilization met the spent fuel standard. It also did not assess the direct disposal of waste isolation pilot plan. That's not an issue for the EIS, but outside of the EIS process I would encourage DOE to expand it's non-proliferation assessment to consider these aspects as well.

I want to address another point that was made other about spent fuel, spent MOX fuel. The point was made that the decay heat from spent MOX fuel is higher than that of uranium fuel. Well, yes and no. Immediately after shutting down the reactor, the decay heat from mixed oxide fuel is actually lower than low-enriched uranium fuel. So from the safety perspective based on that aspect, mixed oxide fuel is actually safer than uranium fuel. At a very long term, fifty, a hundred years, yes, the decay heat from mixed oxide fuel is higher. But it doesn't matter because by that time the decay heat has dropped off to a level that's so low it's irrelevant.

So in summary mixed oxide fuel is safe and proven. I think the DOE should move ahead with its

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program to dispose of surplus nuclear weapons material and encourage Russia to do the same. And I want to point out that I think it's very framing that this meeting is taking place 11 years after the terrorists attacks back in 2001. What would have happened if Osama bin Laden, (inaudible) Sheik Mohammed, Mohammed Ata (phonetic) had access to weapons-grade plutonium and a working design for a nuclear weapon? The tragedy was great 11 years ago. 4,000 innocent people lost their lives. What could have happened if that material had been available to those terrorists at that time?

The purpose of this program is to make sure that we dispose of this material that we don't need for nuclear weapons any more. Let's go forward and do it. Thank you.

MR. BROWN: Thank you. Ralph Hutchison will follow Sandra.

MS. KURTZ: Thank you. Good evening, I'm Sandra Kurtz, member of Bellefonte Efficiency and Sustainability Team chapter of the Blue Ridge Environmental Defense League. I am an environmental education consultant. I live in Chattanooga, 17 miles or so from Sequoyah Nuclear Plant and I have five grandchildren who also live here.

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TVA stated in their July 24th fact sheet that they were willing to consider using mixed oxide fuel if it met three criteria and we saw those earlier. They want it to be operationally and environmentally safe, economically beneficial to TVA customers and licensed by the NRC. So we would hope that NRC would never approve a license if the first two criteria weren't met. And in my opinion the first two cannot be satisfied.

So let's look at the first one. Is this fuel operationally and environmentally safe? An honest assessment will show that the use of radioactive plutonium, mixed oxide/MOX, is not safe for these reasons: In TVA's existing nuclear reactors the fuel rods, as these nuclear students must know, are made of -- they have a cladding on them of zirconium the thickness of tin foil in order for nuclear fission to occur in the controlled way that it does.

So the Duke Energy experiments -- I'm interested in Mr. Nesbit's statements about this. The Duke Energy experiments showed, as I understand, the warping of the rods with the use of this plutonium fuel. He says it was purely business that they discontinued those trials. And I'm glad to

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1020-1 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. As addressed in Chapter 4 and Appendix I, the impacts of reactor operations using a partial MOX fuel core are not expected to change substantively from operations using a full LEU fuel core. As summarized in Section J.2.1, tests performed by Duke Energy demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. As summarized in Chapter 5, Section 5.3.3, of this *SPD Supplemental EIS*, use of MOX fuel in TVA or other reactors would require an amendment to the reactor's operating license in accordance with 10 CFR Part 50. DOE is not pressuring TVA to use MOX fuel in its reactors. TVA would only use MOX fuel if it is safe and favorably priced relative to commercially available fuel. For further discussion, refer to Section 2.4, Topic A, and Section 2.5, Topic B, of this CRD.

hear that they thought it was too expensive to actually keep going with. They have withdrawn their consideration of using MOX and in their reactors. Indeed they must have found out however that radioactive plutonium fuel is not suitable for their reactors because they aren't using it.

Now, TVA is being asked, or is it pressured, by DOE to consider using this never before used even more radioactive uranium fuel in our aging Sequoyah ice-condenser reactors and the Brown Ferry GE Mark 1 reactors neither of which is designed for this fuel. An accident with broken/opened up fuel rods is unacceptable and unnecessary. At least, send this stuff to a research lab and learn from Fukushima as well before we subject it to TVA citizens.

The second criteria: Is the use of this fuel economically beneficial to TVA customers? Well, someone is making some money somewhere or this plan wouldn't even be considered, but it's certainly not beneficial to TVA customers. Our rates won't be going down because of the use of this plutonium blend. It won't be more reliable or environmentally friendlier. In fact, the cost of the fuel will be much more expensive than what's used now. The

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1020-2 TVA is a cooperating agency for this *SPD Supplemental EIS* and, as such, is not required to declare a preferred alternative. TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose. TVA, as a cooperating agency, may adopt this *Final SPD Supplemental EIS* after independently reviewing the EIS and determining that its comments and suggestions have been satisfied (40 CFR 1506.3(c)). Cost is among the factors that may be considered by TVA in reaching a decision on the Surplus Plutonium Disposition Program.

argument used by proponents is that with raising costs for nuclear fuel MOX will be priced competitive. However, with improved extraction methods the price for uranium has actually not changed since 1984.

The only reason I can think of that might satisfy this stated criteria is the national peace one. It's good to get rid of old Russian Cold War weapons, and we made a deal to take them. We can pull out the plutonium, mix it with uranium, use it in our nuclear reactors, reduce the amount of nuclear weapons, and bring peace to the world. That sounds really good. And they're all in favor of that.

Peace is certainly beneficial to TVA customers, but this won't get us to there. For the plutonium contained in the weapons to get to a high enough concentration for use in the nuclear reactors requires expensive processing with resulting radioactive waste. What do we do with that waste?

Further, plutonium does not go away even after it is used in the reactor. Meaning it remains radioactive waste that has to be stored. So now we have two piles of waste. Why not bypass the reactor step and just choose the vitrification method where

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1020-3 As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. The action alternatives evaluated for the 13.1 metric tons (14.4 tons) of surplus plutonium are the Immobilization to DWPF Alternative, MOX Fuel Alternative, H-Canyon/HB-Line to DWPF Alternative, and WIPP Alternative. All of the action alternatives evaluated in this *SPD Supplemental EIS* are considered to render surplus plutonium into a proliferation-resistant form. MOX fuel use, immobilization, and vitrification with HLW are alternatives that would all place the plutonium within a highly radioactive matrix. Because of this, and because used fuel assemblies and HLW canisters are heavy, the plutonium under all of these alternatives would be impossible to handle without highly specialized equipment. Using surplus plutonium as MOX fuel, however, would generate electricity, and the isotopic distribution of the residual plutonium in used MOX fuel would be changed so that it would be less suitable for use in nuclear weapons. Potential disposal of surplus plutonium at WIPP would be proliferation-resistant because the plutonium would be disposed of deep in the earth, mixed with inert material, and co-mingled with thousands of other containers of TRU waste. For further discussion, refer to Section 2.2, Topic A, of this CRD.

all is placed in permanent glass casing and put forever out of reach.

So time does not permit me to give all the other reasons about what we could do, but don't make us, Tennessee Valley inhabitants, victims for an untried, unproven, expensive radioactive fuel just so we can boil water to make electricity. Radioactive waste leaves a legacy both we and future generations shouldn't have to endure. Let's put our eggs in efficiency conservation and earth friendly energy baskets. Thank you.

(Marked Exhibit No. 4.)

MR. BROWN: Thank you. Ralph Hutchison, and William Reynolds will be after Ralph.

MR. HUTCHISON: We're on the home stretch, aren't we?

MR. BROWN: We are.

MR. HUTCHISON: Okay. My name is Ralph Hutchison. I'm the coordinator of the Oak Ridge Environmental Peace Alliance. I'm going to start with a brief story about a grateful king whose daughter, the princess, had been rescued by one of the common subjects of his kingdom. And he promised this subject anything you ask. The subject noticing the king's chessboard took a grain of rice from his

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pocket and places it on the corner square of the chessboard. I ask one grain of rice from the royal granary today, he said. Placing two grains on the second square, and two grains tomorrow. Places four grains on the third square. And four grains on the third day and eight grains on the fourth day until the board is full on the sixty fourth day. The king was delighted to grant this request. The simpleton could have had anything he wanted and he chose only a measly portion of rice. Of course, long before the chessboard was full the simpleton owned the kings granary and all the kingdom because the king could not satisfy his debt with all the rice in the world.

There are seven kinds of excess plutonium listed in this SEIS. Some from pit. Some from non-pit. Some is metal. Some is oxide. Some is used fuel. Some is scraps and residue. Some is contaminated with other materials. Some not so much. For each kind there is several disposition options available from storage, to MOX fuel, to vitrification, with some to be processed at the H Canyon HB line and shipped to the DWPF, some to be processed at the MFFF, some maybe at PF4 at Los Alamos, some will be burned in fuel at the Sequoyah

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reactor or the Browns Ferry exploding reactor, or a mythical reactor can be named later, some we don't even have yet specific proposals for. It says all of that on this chart.

The problem with this chaos is not that it taxes my little mind, because that happens often and I've grown used to it. The problem is that hazard increases with complexity. The more complicated the decision, the more risk is involved. The risk if you make a bad decision or overlook something important. The risk for corruption or fraud when there's big money involved. The risk of unintended and unforeseen consequences. And when we're dealing with something that's fraught with danger as plutonium, weapons-grade plutonium, there's no margin for error. Common sense dictates making this decision as clean as possible, which would be vitrification. Once the preferred option, but now being shoved aside for more lucrative options.

Compounding the problem is for me the slanted snazzy little logo on the front of the Draft SEIS, the one that says NNSA, National Nuclear Security Administration. Because if there's one thing NNSA cannot do it is manage complexity. Don't take my word for that. Look at the timeline and the

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1021-1 As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS,* but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium. The action alternatives evaluated for the 13.1 metric tons (14.4 tons) of surplus plutonium are the Immobilization to DWPF Alternative, MOX Fuel Alternative, H-Canyon/HB-Line to DWPF Alternative, and WIPP Alternative.

As described in Chapter 4 and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, risks to the public are expected to be minor from normal operations, potential accidents, and transportation under any proposed alternative. As described in Section 4.5.3.3, operation of surplus plutonium disposition facilities would contribute little to adverse cumulative health effects among the offsite population. As summarized in Section 4.1.2 and described in detail in Appendices I and J, the risks associated with both normal operations and accidents using a partial MOX fuel core and full LEU fuel core are expected to be comparable. For further discussion, refer to Section 2.5, Topic B, of this CRD.

cost estimates for MOX fuel fabrication facility.

And that's not an anomaly. It's the same thing at Livermore at the National Nuclear Facility. The same scenario's unfolding right now in real time at Oak Ridge with the uranium processing facility. The general accounting office has noticed this. They've testified in Congress about it and they've written reports. The Defense Nuclear Facility Safety Board has noticed. The inspector general's office has noticed. I have to say the incapacity of the NNSA to do even one thing right like simply securing a uranium storage facility nestled in an isolated valley from intruders has led some people to ask the existential question, could the NNSA even continue to exist.

You see the bizarre matrix of plutonium disposition options is just more evidence of the problem at its heart and it's never ending quest to provide contracts (inaudible). NNSA is giving up the central goal of plutonium disposition because fabricating MOX fuel and burning it in reactors does not get rid of plutonium and it's not the most proliferation resistant option we have.

In Russia they're doing that and then they plan to reprocess the spent MOX to extract

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1021-2 The plutonium disposition options considered in this *SPD Supplemental EIS* reflect DOE's need to explore a range of reasonable alternatives, as required by CEQ and DOE NEPA regulations.

1021-3 The United States remains committed to the PMDA (USA and Russia 2000) with the Russian Federation, under which both countries have agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. Use of MOX fuel in commercial nuclear power reactors would render surplus plutonium into a used fuel form that is not readily usable for nuclear weapons. The use of MOX fuel in nuclear power reactors would reduce the quantity of weapons-usable plutonium and support accomplishing DOE's nonproliferation goals. Footnote 3 in Chapter 2 of this *SPD Supplemental EIS* describes a 60 percent reduction in plutonium-239 after irradiation for two cycles in a commercial nuclear power reactor. The use of MOX fuel in commercial nuclear power reactors is consistent with U.S. nonproliferation policy and international nonproliferation agreements. For further discussion, refer to

plutonium. And obviously the United States has declined to (inaudible) as well.

MR. BROWN: About a minute left.

MR. HUTCHISON: All right. Now, out of this morassive (phonetic) thinking some wise person has proposed burning MOX fuel in TVA Sequoyah reactor just a few miles upstream from downtown Chattanooga. TVA's the vendor of choice because no private company is willing to take on the risk. The people of Chattanooga and Alabama should not be asked to take on the risk either.

TVA is the vendor of choice because it is accountable to no one except a few Congress people who can be and often have been bought for campaign donations. The Tennessee River on whose banks the Sequoyah nuclear reactor stands has borne significant environmental insults over the years for contamination flushed out of the Oak Ridge Nuclear Reservation. That's another part of the history that was referred to earlier this evening. And more recently tritium contamination from Watts Bar, another idea brought to you by the NNSA/TVA team, where their nicely laid plans did not account for higher than expected levels of leakage.

Do the plans for using MOX fuel and

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Section 2.4, Topic A, of this CRD.

1021-4 There are some minor differences between MOX fuel and LEU fuel, such as the amount of actinides in used MOX fuel rods would be higher than in used LEU fuel rods. These differences, however, are not expected to affect reactor safety or meaningfully increase the environmental consequences or risks associated with the use of a partial MOX fuel core. As summarized in Chapter 4, and described in detail in Appendices I and J, of this *SPD Supplemental EIS*, the impacts associated with using a partial MOX fuel core versus a full LEU fuel core in commercial nuclear power reactors are expected to be similar. The risks associated with postulated accidents would be small. For further discussion, refer to Section 2.5, Topic B, of this CRD.

From a technical perspective, DOE believes that MOX fuel could potentially be used in any domestic commercial nuclear power reactor. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors, including, but not limited to five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants. These reactors are explicitly considered because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Section I.1). However, the MOX Alternative also analyzes irradiation in generic commercial nuclear reactors including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2), and is not dependent on TVA participation.

1021-5 If TVA and DOE determine that the Sequoyah Nuclear Plant reactors are needed to

burning it in the Sequoyah reactor account for the tritium that's in those reactors from the weapons tritium program? Do they address the added security risk that Sequoyah is burning weapons-grade plutonium and producing nuclear weapons tritium at the same time? Tens of thousands of people rely on the Tennessee River immediately downstream from Sequoyah for their drinking water. Placing this at risk unnecessarily is unconscionable.

One other quick work. I'm very pleased to see the students and members of the American Nuclear Society represented here tonight. I think it's great because I've been to a lot of these meetings where nobody was in the room but a few of us. As a layperson, the larger society doesn't need you to cheerlead for MOX. They need you to identify the technical challenge, and there are some. They need you to ask the questions that will lead to safety. They need you to address and solve the problems. The lack of evidence of critical thinking here tonight is scary to me. And I hope you will distinguish yourselves by asking and answering the hard questions before you fall into the MOX pit. Thank you.

MR. BROWN: Thank you. William

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support tritium production and TVA decides to use MOX fuel in them, TVA would not produce tritium and irradiate MOX fuel during the same fuel cycle.

1021-6 Security at the Sequoyah Nuclear Plant is regulated by NRC and is designed to protect the facility and all nuclear and radioactive materials present at the plant. The Sequoyah safeguards and security would provide protection for MOX fuel as it currently does for LEU fuel, used nuclear fuel, and all other radioactive materials at the site. While DOE and TVA recognize the importance of a rigorous safeguards and security program at Sequoyah, the use of MOX fuel and the production of tritium would not compound the security risks.

1021-7 As described in Appendix I, Section I.1.2.7.3, of this *SPD Supplemental EIS*, DOE does not expect that use of a partial MOX fuel core instead of the current use of full LEU fuel cores at the TVA Sequoyah or Browns Ferry Nuclear Plants would impact the quality or quantity of surface water or groundwater resources.

Reynolds will be followed by Brian Paddock. Please go ahead.

MR. REYNOLDS: Bill Reynolds, citizen of Chattanooga. Our house is about 5 miles from where I'm standing and it's about 18 miles from Sequoyah Nuclear Power Plant. I'm a concerned citizen. I have been an activist to some degree. You know, the big goal that we're talking about here is wonderful. Who wouldn't have great heartfelt enthusiasm about destroying weapons of mass destruction with nuclear. We all want that. Whatever we can do. The goal is right.

I'm concerned about the limitation of the focus of the discussions including my impression of, you know, the EIS. It's like focused on, yeah, this is the opportunity. We're going to get electricity. You know, wow. We can turn, you know, this horribly destructive terrible weapons of mass destruction fuel into fuel to produce electricity for lights and television sets and everything. Yes, that's a wonderful goal. But we're leaving out in this discussion the whole life cycle concerns about the issue.

The Alliance for Nuclear Accountability has done some accounting, measuring of some sort.

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I'm not in on that, how they did it, but they've come out with the idea that -- or conclusion that the MOX program would cost around $17 billion dollars in terms of eliminating the threat of these nuclear weapons fuel compared to 4 billion to manage them as nuclear waste instead of putting them into nuclear reactors.

Now, I'm going to connect that to, in the summary, and I'll quote it, "DOE must dispose of U.S. surplus weapons usable plutonium in a safe, secure, and environmentally sound manner". And most of the discussion, I dare say, about whole of the discussion tonight has been around whether or not it's safe and secure operating in the plants, being burned -- I called it burned -- in the nuclear power plants.

But that's leaving out the issue of the materials being run around all the roads, you know, to go to the plants and then whatever has to be done, the dangers there. Although that's been mentioned a little bit. But my impression is the EIS does not address in particular -- it doesn't address that -- but in particular doesn't address adequately the real hard questions that the previous speaker mentioned about the long-term. Is it 2400

66

1022-1

1022-1 There are some minor differences between MOX fuel and LEU fuel, such as the amount of actinides in used MOX fuel rods would be higher than in used LEU fuel rods. These differences, however, are not expected to affect reactor safety or meaningfully increase the environmental consequences or risks associated with the use of a partial MOX fuel core. As summarized in Chapter 4, and described in detail in Appendices I and J, of this *SPD Supplemental EIS*, the impacts associated with using a partial MOX fuel core versus a full LEU fuel core in commercial nuclear power reactors are expected to be similar. The risks associated with postulated accidents would be small. For further discussion, refer to Section 2.5, Topic B, of this CRD. Plutonium-239, an actinide found in a small percentage of both used MOX and used LEU fuel, has a half-life of 24,000 years. DOE is evaluating various options for the long-term storage of used fuel; however, there would be no substantial increase in risk to the public if used MOX fuel were managed instead of used LEU fuel.

years or 24,000 years that the waste will remain hazardous? And how much does it cost and will the financial -- the economic conditions to pay the cost to protect the human race and the environment from the dangers, potential dangers and all that.

To me I'm not at all satisfied from what I'm hearing in this EIS in terms of addressing those hard questions and I've the sense that they're coming up with easy answers rather than the, you know, real hard answers, which may not be in favor of MOX fuel in reactors.

MR. BROWN: Okay. Thank you. Brian Paddock.

MR. PADDOCK: Good evening. My name is Brian Paddock. I am what's left of a beaten up old attorney from Jackson County, Tennessee. I come here as a TVA rate payer who happens to make it a point to go to every TVA board meeting. I get my energy from a nuclear reaction except that it occurs 93 million miles away. My home is solar powered. I haven't had an electric bill for three and a half years now. I would hope that some of you in nuclear engineering would think about what we could do with these billions of dollars including the $2 billion we're going to use to try to finish Watts Bar and

67

1022-1 cont'd

1022-2

1022-2 Cost, worker and public safety, and environmental impacts are among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

put those into alternative energy.

I think that the decision-making process that led to this EIS went wrong back in 2000 when immobilization was taken off the table and the decision was made to go primarily to a MOX path. And I think it's particularly a problem since the Fukushima -- horrible -- because there was a great deal of concern at that time that one of those reactors was MOX fuel and was considered to be a much more potentially dangerous situation if there were to be releases.

And I don't think we learned much from Fukushima and I know there is widespread opinion and criticism that the NRC is not implementing post-Fukushima learnings at all. That's something, by they way, that the Federal Court's going to consider next month.

So we have TVA plans on the cover of this thing which affects me as a rate payer and yet this things purports to refer to some kind of generic reactor. And those of you in the nuclear business know there's no such thing as a generic reactor. They were all built one at a time, uniquely. They're all different. And in fact, the two that are mirror images at Watts Bar, the one being built

68

1023-1

1023-1 Appendix J, Section J.3.3.3, of this *SPD Supplemental EIS* describes the NRC recommendations developed in response to the March 11, 2011, accident at the Fukushima Dai-ichi Nuclear Power Station in Japan and the subsequent actions TVA has taken to further reduce the likelihood and severity of accidents at its nuclear plants. In response to the Fukushima accident, all nuclear plant operators, including TVA, are performing NRC-mandated evaluations of plant designs and operations to provide additional protection against beyond-design-basis events. For further discussion, refer to Section 2.5, Topic A, of this CRD.

1023-2

1023-2 DOE is aware that there are differences in design among commercial nuclear reactors. TVA reactors are evaluated in this *SPD Supplemental EIS* because DOE and TVA have entered into an interagency agreement to evaluate the use of MOX fuel in the Sequoyah and Browns Ferry Nuclear Plants. From a technical perspective, DOE believes that MOX fuel could potentially be used in any domestic commercial nuclear power reactor. Therefore, other domestic commercial, but unspecified, reactors are analyzed as part of the "generic reactor" analysis in this *SPD Supplemental EIS* (see Appendix I, Section I.2).

and the other one are so alike that you can actually cut the cables off of the active nuclear reactor thinking that you're working on the second one. That actually happened.

Now, this issue of MOX for TVA is going to come up. We're going to raise it in the Sequoyah relicensing whenever the NRC decides to tell TVA that it's ready to listen about Sequoyah relicensing. We're going to raise the question of what the storage of spent fuel would be, radiated fuel, particularly if it's got to be spent, if it's got to be stored on site for a much longer period because it is either thermally or radioactive to a greater degree.

1023-3

We will certainly continue to press the issue of Browns Ferry as a red flag, the only red flag reactor in the entire United States. I have never heard an NRC inspector act the way they did when they came down and reported after the first few months of that and the lead inspector at Browns Ferry for the NRC spent an hour going over what was wrong at Browns Ferry. And he said basically they are really good at making lists of all the safety problems, and all the maintenance needs, and all the things they need to do. They just forgot the part

1023-4

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1023-3 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. Use of MOX fuel in a commercial nuclear power reactor in the United States would require an amendment to the reactor's operating license. NRC would determine whether to issue a license amendment that would allow the reactor to use MOX fuel.

MOX fuel produces more heat over the long term than the LEU fuel currently used at the Browns Ferry and Sequoyah Nuclear Plants. The heat from MOX fuel would not affect the ability of TVA to safely store this fuel on site and would not prevent the MOX fuel from ultimately being placed in a geologic repository or other long-term storage facility.

The nuclear reactor operator, with oversight by NRC, is responsible for used fuel storage at the reactor. As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel—by storing it in the reactor's used fuel storage pool or placing it in dry storage. The amount of additional used fuel is not expected to affect used fuel management at the reactor sites. For further discussion, refer to Section 2.5, Topic B, of this CRD.

1023-4 The Browns Ferry Nuclear Plant is designed and maintained to meet stringent NRC safety requirements for nuclear power reactors. Safety-related equipment is regularly inspected, maintained, and monitored in accordance with procedures and vendor recommendations and replaced well before the end of its scheduled operating life. As discussed in Appendix J, Sections J.1 and J.2, of this *SPD Supplemental EIS*, continued assurance of the safe operation of these plants is the responsibility of the plant operator which operates under the independent regulatory oversight of NRC, including NRC regulations and license conditions. If the plant operator were to make a decision to use MOX fuel, it would be the joint responsibility of the plant operator and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely. For further discussion, refer to Section 2.5, Topics A and B, of this CRD.

about working on the lists and sending anybody out to do any of these things.

MR. BROWN: About a minute left.

MR. PADDOCK: Thank you. So basically we're proposing to put this stuff, if we can ever fabricate it, into operation, which has shown that it has a very difficult time walking and chewing gum at the same time when it comes to nuclear.

Now, if it's going to create more radiated waste, you should know as TVA rate payers that the TVA board has already authorized $350 million for the first step of cask storage because you have existing overcrowded spent fuel pools. And the ultimate cost of that is going to be upward of a billion. So you're going to see every year or so they're going to go back to the low price bidder and they're going to spend another quarter of a million dollars or more to gradually put things into casks. These casks are not mobile casks. They will sit at these plants forever.

The other thing that comes into this is -- and I think this is a deficiency in the EIS, the waste confidence decision has been vacated by a Federal court. In other words, the NRC's finding

1023-4 cont'd

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1023-5 As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel—by storing it in the reactor's used fuel storage pool or placing it in dry storage. The use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would displace LEU fuel that otherwise would have been used to power the nuclear power reactor. Use of MOX fuel could increase used nuclear fuel generation by 8 to 10 percent for TVA's Browns Ferry and Sequoyah Nuclear Plants, and from 2 to 16 percent for generic reactors during the period MOX fuel could be used at a reactor. It is expected that increases of this magnitude would be managed within the reactor's normal planning for storage of its used fuel.

that it could go ahead with licensing, that it could go ahead with a lot of its other activities was based on a fiction and a fabrication that for 40 years the NRC has been saying, boy, when we need it, they'll be a hole in some mountain some place to put all this stuff. And the Court said, no, no, no, no, no. History doesn't show that that's really very likely.

So without geologic storage, with on site forever cask storage, the creation of more waste, whether it's the two percent or the sixteen percent additional that your own EIS suggests is something that TVA rate payers for both safety and financial reasons should be very concerned about.

I would just close by saying that I think we need to go back to the question of disposal of these materials from weapons in a way that isolates them now totally and completely so that they are ready to be stored in geologic when, if, and ever in another decade or two or three or five we have a place to store it. Thank you.

MR. BROWN: Thank very much.

That concludes our list of speakers and it concludes our meeting. I'd like to thank everybody who took the time to attend and also to make

1023-6

1023-6 As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium.

As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel. In addition, as discussed in Appendix B, Section B.1.4, of this *SPD Supplemental EIS*, DWPF canisters containing vitrified plutonium with HLW would be stored in S-Area at SRS; these DWPF canisters would be managed in the same manner as other DWPF canisters containing HLW. DOE has terminated the program for a geologic repository for used nuclear fuel and HLW at Yucca Mountain, Nevada. Notwithstanding the decision to terminate the Yucca Mountain program, DOE remains committed to meeting its obligations to manage and ultimately dispose of used nuclear fuel and HLW. For further discussion, refer to Section 2.7, Topic A, of this CRD.

comments and we are officially adjourned. Thanks very much.

(Whereupon, the hearing was adjourned.)

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COUNTY OF HAMILTON)

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U.S. DEPARTMENT OF ENERGY

DRAFT SURPLUS PLUTONIUM DISPOSITION
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

PUBLIC HEARING

SEPTEMBER 13, 2012
5:30 P.M.

CALHOUN COMMUNITY COLLEGE - DECATUR CAMPUS
6250 HIGHWAY 31 NORTH
AEROSPACE BUILDING - LECTURE HALL
TANNER, AL 35671

Holmes Brown, Facilitator

PANEL MEMBER:
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U.S. DEPARTMENT OF ENERGY

SURPLUS PLUTONIUM DISPOSITION
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

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HEARING

MR. BROWN: Okay. Folks. Let's take our seats and we'll get started with the evening's meeting. Good evening. Welcome to this hearing on the Department of Energy's Surplus Plutonium Disposition Draft Supplemental Environmental Impact Statement or Draft Supplemental EIS. I hope you had an opportunity to browse the displays and talk with staff during the just-completed open house next door.

My name is Holmes Brown. I will serve as the facilitator for this hearing. I'm not an employee of the Department of Energy nor an advocate for any party or position. My role this evening is to make sure that the meeting runs on schedule and that everybody has an opportunity to speak.

I would like to explain the format and ground rules for this evening's hearing. At the registration table you should have received a copy of the slide presentation

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you're about to see. It contains important information on the surplus plutonium disposition program and the supplemental EIS. If you didn't get a copy, please raise your hand and staff can deliver one to you. Did anybody miss out on getting one? I think we've got one back there. Anybody else?

There are two parts to this hearing: the information segment and the formal comments segment. The information segment began with a just-concluded hour-long open house and continues with a 25 minute slide presentation by Sachiko McAlhany, who is the supplemental EIS document manager for the Department of Energy. Ms. McAlhany will discuss the surplus disposition program, the contents of the Draft Supplemental EIS, the National Environmental Policy Act that governs the EIS process, and the schedule for completion of the supplemental EIS.

The formal comments segment will follow the slide presentation. During this segment members of the public will provide comments on the Draft Supplemental EIS. The Court Reporter will transcribe your comments

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verbatim and they will be included in the permanent record. The DOE official and a representative of TVA will be present to hear your comments but neither will be responding to questions or comments.

If you wish to make a comment this evening and have not yet signed up to do so, please add your name to the list at the registration table. Based on the number of people signing up, each speaker will be allotted an amount of time in which to speak. Speakers may not defer or yield their time to another speaker.

We will now resume the information segment. I would like to introduce Sachiko McAlhany, supplemental EIS document manager for DOE, who will now make her presentation.

(Whereupon, the presentation was made to the public by 6:56 p.m.)

MR. BROWN: Thank you, Mrs. McAlhany.

This concludes the information segment of this evening's hearing. We will now take a five minute break in order to review the sign-up sheet for tonight's speakers. So we will

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resume very shortly, and at that point we will begin the formal comment segment. Thanks very much.

AUDIENCE MEMBER: There's no comment by TVA?

MR. BROWN: That's correct. Not tonight.

AUDIENCE MEMBER: Strange.

MR. BROWN: All right. We'll take a quick break and be back for comments.

(Whereupon, a recess was taken from 6:57 p.m. until 7:04 p.m.)

MR. BROWN: Again, if folks will take their seats we'll begin the public comment segment. Okay. Thanks. It's now time to begin the formal comment segment. This is your opportunity to provide DOE with your comments on the content for the Draft Supplemental EIS. Our Court Reporter tonight is Toby Chambers who will transcribe your comments.

Let me review a few ground rules for formal comments. Please step up to the microphone over there when your name is

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called, introduce yourself providing an organizational affiliation where appropriate. If you have a written version of your statement, please provide a copy to the Court Reporter after you've completed your remarks.

I will call two names at a time. The first will be the speaker and the second is the person to follow. In view of the number of folks who indicated an interest in speaking tonight, I'm going to ask that folks confine their remarks to four minutes. Usually with this number of people signed up it would be three, but I know a few folks have somewhat longer statements. I would like them to be able to complete their remarks.

We did have a scoping hearing here about two years ago, and we did lose about four or five signed-up speakers because the meeting lasted fairly late. So I'll ask people if you can complete your remarks in about the three minute time that will assure that everybody who signed up has an opportunity to speak.

Sachiko McAlhany of DOE and Mick Mastilovic of TVA will serve as hearing

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officers during the formal comment segment. Neither will be responding to questions or comments. When you get to the three minute mark I'll hold up this one minute sign. If you happen to be looking over here that's fine. If you're maintaining eye contact with the audience, I may give you a verbal que that you're approaching about one minute left.

So with that by way of introduction, let me call on our first speaker. Tom Clements will start off and Barbara Crow will be following Tom.

MR. TOM CLEMENTS: Good evening. My name is Tom Clements, and I'm with the Alliance for Nuclear Accountability which is in Columbia, South Carolina. I've been tracking this plutonium disposition program actually before its inception when the Office of Technology Assessment began looking at the DOE complex and what to do with the nuclear materials and the complex itself after the cold war.

I was later the director of the Nuclear Control Institute in Washington, and a DOE employee who was working on the immobilization

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of plutonium program came into our office and he said he was getting pressure from higher-ups in management to cook up a cost that showed that disposing of the plutonium as waste to immobilize it was actually more expensive than the MOX route when, in fact, their determination was it was a cheaper route. And that remains the same today.

By my estimation the plutonium fuel program, the MOX program, has about seventeen and a half billion dollars left to be spent where disposing of the plutonium as waste is on the order of about four billion dollars. Don't take those estimates from me. I encourage you to ask DOE and NNSA. The problem is you won't get an answer. Even though this is a federal government program, they should know what the life cycle costs are, but they will not tell the public how much money is being spent on the program.

It's very really quite shocking. If you're concerned about big government and fiscal responsibility, we found a program here that's really running out of control. The Savannah River MOX facility near where I live

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1100-1

1100-1 Cost information on DOE programs is made publicly available as part of the President's annual budget submission to Congress. CEQ and DOE NEPA regulations do not require that costs be included in an EIS. Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

looks to be about six billion dollars, but this program is being pursued with really the total cost unknown. It's being built with no customers because TVA hasn't agreed. It's being built without any knowledge of the production schedule of the MOX plant.

Now, we don't have any clarity about what kinds of fuel will be produced on what schedule, and we don't even know if it's going to get an operating license because it has to get that from the NRC, and there's an intervention against the license.

So this is really an example of what's wrong with the government right now, pursuing such a massively expensive program without knowing at all where it's going. It's really stunning. The MOX program has turned into an inefficient jobs program for the State of South Carolina, and the reason for this is primarily Senator Lindsey Graham, who is republican. This is part of his big government. He's spending our taxpayer money on a misguided program.

Now, turning to Browns Ferry just down the road here, which is a GE Mark 1 reactor

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1100-1 cont'd

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1100-4

1100-2 The disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts as required by NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors, including, but not limited to five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants. These reactors are explicitly considered because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Section I.1). However, the MOX Alternative also analyzes irradiation in generic commercial nuclear reactors including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2), and is not dependent on TVA participation.

The decision to use MOX fuel in the reactors at the Browns Ferry and Sequoyah Nuclear Plants would be made independently by TVA, subject to license amendments by NRC. There are currently no agreed-upon terms and conditions for the arrangement under which TVA would use MOX fuel.

1100-3 A detailed program schedule is not required to perform the environmental impacts analysis in this *SPD Supplemental EIS*. The actual production schedule for MFFF would depend on factors such as license conditions and the specific contracts received from customers to manufacture specific types of MOX fuel. As shown in Appendix B, Table B–2, MFFF is estimated to operate for 21 to 24 years, depending on the amount of surplus plutonium to be fabricated into MOX fuel. As described in Appendix B, Section B.1.1.2, of this *SPD Supplemental EIS* and analyzed in the *Interim Action Determination, Flexible Manufacturing Capability for the Mixed Fuel Fabrication Facility* (DOE 2011a), signed on April 1, 2011, MOX fuel could be fabricated for use in BWRs, PWRs, or next-generation LWRs. There are currently no plans to fabricate fuel for other types of reactors. Use of MOX fuel in other types of nuclear reactors would require the preparation of additional NEPA documentation. NRC would issue the license when it is satisfied that MFFF can operate safely and within all design parameters. MFFF would not produce MOX fuel on a commercial scale unless contracts or other arrangements are in place for its use.

1100-4 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium

like Fukushima, Global Nuclear Fuels makes low-enriched uranium fuel for those reactors. At a presentation at the Nuclear Regulatory Commission they said that there would be required testing from 2019 to 2025, which impacts the operation of the MOX plant at Savannah River Site.

In this document before us there's essentially no discussion of the required testing, and TVA, DOE, and AREVA are hoping they can license this new fuel form without any type of testing whatsoever, and you the public, in my opinion, shouldn't stand for that given the safety implications.

So in conclusion I would encourage TVA to stick with the no MOX preferred alternative which was presented in the slides and which is in the document. TVA should not be pressured before the end of this year to make a decision to use this new type of fuel given the risks it poses and the costs. Peter Swafford was quoted, who is the chief nuclear officer, was quoted in the paper today saying it's way down the road about TVA's decision, yet DOE is trying to twist TVA's arm to make a decision

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1100-4 cont'd

ranging from reactor-grade to weapons-grade. Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

It is important to note that whether using reactor- or weapons-grade plutonium, the total quantity of fissile plutonium within a fuel element is adjusted so that it represents only small fraction of the material within the fuel rod (currently planned to be approximately 4 to 5 percent fissile plutonium within each MOX fuel rod).

The information presented by GNF was based on use of a GNF-designed fuel and did not address the potential use of AREVA-designed MOX fuel. AREVA has extensive data on the performance of reactor-grade MOX fuel in both BWRs and PWRs. As discussed above, additional information is available from the prior irradiation of MOX LTAs at the Duke Energy Catawba Nuclear Station.

As summarized in Chapter 5, Section 5.3.3, of this *SPD Supplemental EIS*, use of MOX fuel in TVA or other reactors would require an amendment to the reactor's operating license in accordance with 10 CFR Part 50. For further discussion, refer to Section 2.4, Topic A, of this CRD.

1100-5 The public is involved with TVA NEPA documents in accordance with CEQ

to use this material now. I think that's horribly misguided.

There's not enough information because they haven't conducted a test at Browns Ferry, and the public hasn't been involved in a TVA environmental impact statement. Therefore, TVA should stick with it's preferred alternative which is no use of mixed oxide fuel at this point. TVA should revisit the option to dispose of plutonium as nuclear waste. Thank you very much.

MR. BROWN: Barbara, before you get started, the person succeeding the speaker, you don't need to stand behind. I appreciate your saving us the time, but when I call the next speaker you can either stand or you can just come on down. This is a relatively small auditorium. But thank you.

So Barbara Crow is next and Roy Crossfield will be after you.

MRS. BARBARA CROW: Well, I think Tom said most of what I had on my mind except that he was talking about the cost of this facility that they are building to make this fuel, this MOX fuel that potentially might be burned at

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1100-5

regulations, including those summarized in Appendix A, Section A.3. As described in Chapter 2, Section 2.5, in this *Final SPD Supplemental EIS*, TVA is a cooperating agency for this *SPD Supplemental EIS* and is not required to declare a preferred alternative. TVA does not have a preferred alternative in this *Final SPD Supplemental EIS*.

1101-1

1101-1 DOE and TVA acknowledge the comment. Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

Browns Ferry, and we the community I assure you do not want nuclear at all. I don't understand why they keep producing something that nobody wants in their community.

But back to this facility, I asked one of the gentlemen if they weren't over budget, and he first said no they weren't over budget, where did you hear that, but then he said they were rebasing. I said, what does rebase mean, and that's they're rebasing because they are over budget. So it's a tremendous, as he said before me, it's a tremendous cost to the taxpayers that we should not have the burden of this. I don't understand why they want to pursue such an expensive ongoing. They don't have licenses from any facility to burn this, but yet they are spending these billions of dollars building this facility and nobody has approved to burn it yet. It just doesn't make any sense to me. It's insanity and bottom line is we don't trust you.

MR. BROWN: Thank you.

Okay. Roy Crossfield? Is Roy here?

MR. ROY CROSSFIELD: I'm here.

MR. BROWN: Okay. You're just taking

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1101-1 cont'd

1101-2

1101-2 Disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts per NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors (see Appendix I, Section I.2). Use of MOX fuel in one or more domestic commercial nuclear power reactors would be under the terms of NRC license(s). NRC would only issue a license agreement or license amendments to each applicable reactor operator when it is satisfied that the reactor can operate safely and within all design parameters. For further discussion, refer to Section 2.4, Topic A, of this CRD.

photos.
MR. ROY CROSSFIELD: I just pose the question, I wanted to know when Russia started using this in their ordinance?
MR. BROWN: Yeah, I'm sorry.
MR. ROY CROSSFIELD: If that is possible. So nobody probably might know that.
MR. BROWN: Well, the Court Reporter will record that comment by you and they may address it. Okay. Thanks.
Now I have Sara Crossfield. Yes, Sara Crossfield is next.
MRS. SARA CROSSFIELD: I can speak very loudly though.
MR. BROWN: Well, we do have a microphone.
MRS. SARA CROSSFIELD: I was a 33 year school teacher and fell in love with 8,000 children, and that's why I'm here tonight really when you really think about it and some of their parents. I don't like anything new that sounds fishy, do you? So when I read on page 13 of the News Courier two years ago there would be a meeting the next day about something to burn at Browns Ferry I paid

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1102-1

1102-1 MOX fuel is used in nuclear power reactors to produce electricity. It is not used in nuclear weapons or other military ordnance.

attention.

But I didn't have my little children any more. My classes would have loved this as a project. We could have gone to Japan. We could have learned chemicals. We could have learned who all works for TVA. We could have learned who's in the Department of Energy, how much they get paid, how much the people are going to make that make these little bitty beads. They would have loved it. Probably would have been down here at the meeting tonight.

But, anyway, the next day I went to see the mayor, I went to see the Chamber of Commerce, it may shock you I am a member, and I went to see the Limestone County Commission. And, honey, we had that place packed that night, didn't we? We were here. But, anyway, I have paid attention, but I don't know if any of you left this meeting -- how many of you were here two years ago?

(Whereupon, hands were raised.)

MRS. SARA CROSSFIELD: You were here. You went down Highway 31 here and found an SUV

Response side of this page intentionally left blank.

in the road, and that was the death of my grandchildren's stepfather. And so despite the fact that I was going to take on this issue and research, we're all human, aren't we? I got into all these other things that my family needed. And then suddenly I watched the television and it said MOX was burning in Japan, and boy I got my attention on it.

Then April 27th I was in a building that was hit by the tornado, and that man who didn't respond over there saved my life.

Roy take a hand.

He did. There were a lot of heroes in Limestone County that night. That's mine. But if my little children were all here and they were listening to me tonight, I would say go to your computer because I don't have one, it blew away on April 27th, and look up this word that I can't say. I called it -- well, I'm not going to say what I called it. But Fukushima Daiichi Nuclear Power Plant in Japan was burning MOX in, what, reactor three and they couldn't put the fire out. I heard tonight by one of the officials because they were scared to let the stuff go because they

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1103-1

1103-1 At the time of the March 11, 2011, accident at the Fukushima Dai-ichi Nuclear Power Station, Unit 3 was operating using a partial MOX fuel core. However, at least one authority has determined that the accident involved failures unrelated to the use of MOX fuel, and there is no evidence to suggest that the presence of MOX fuel in Unit 3 increased the consequences of the accident (ONR 2011). For further discussion, refer to Section 2.5, Topic C, of this CRD.

already had an atomic bomb over there one time and they didn't want another one.

They got the little thermal imagery going and took a picture of the power plant and saw it scattered all in that reactor and saw it on the outside too. That got my attention.

MR. BROWN: You've got about --

MRS. SARA CROSSFIELD: I told them out there we're going to get no MOX T-shirts made. We're going to get them all over here.

MR. BROWN: You've got about a minute left.

MRS. SARA CROSSFIELD: How many more minutes?

MR. BROWN: One minute.

MRS. SARA CROSSFIELD: One minute. Limestone County is karst. That means limestone, full of hundreds, and hundreds of sink holes. We are not a stable soil here.

Roy, can I have one of your minutes that you didn't talk?

MR. BROWN: No, I'm sorry, you can't.

MRS. SARA CROSSFIELD: I reckon they want to shut me up. I'm Sara Crossfield,

1103-1 cont'd

1103-2

1103-2 The Browns Ferry Nuclear Plant is operating under a license issued by NRC. The NRC licensing process considers the ability of the reactor to operate safely under environmental conditions including adverse foundation conditions. As described in Appendix J, Section J.3, of this *SPD Supplemental EIS*, reactor accident analyses consider natural phenomena hazards such as floods, tornados, earthquakes, and unstable foundation conditions. For more information, see the *Browns Ferry Nuclear Plant Updated Final Safety Analysis Report* (TVA 2009).

874-3737. Give me a call we'll talk class.
MR. BROWN: George Cassimus is next.
MR. GEORGE CASSIMUS: I don't got nothing to say. I just don't like it. I wanted to sign up just in case, but everybody else they know more about it than I do. If somebody else wants to stand up and say something you can have the floor.
MR. BROWN: Thank you. Okay. Caroline Terry.
MRS. SARA CROSSFIELD: I'll be here to the end, sir, because I didn't finish, and what I had to say was important.
MR. GEORGE CASSIMUS: She can have my turn.
MR. BROWN: I'm sorry, we don't yield time. I wanted to make sure we called people in the order they signed up.
MRS. SARA CROSSFIELD: They're dealing with time.
MR. BROWN: Caroline Terry is next.
(No response.)
MR. BROWN: Is Caroline here?
(No response.)
MR. BROWN: Jimmy Green.

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1104-1

1104-1 DOE acknowledges the commentor's opinion.

MR. JIMMY GREEN: I hate to follow that.
MR. BROWN: Okay. Stewart Horn will be after you.
MR. JIMMY GREEN: My name is Jimmy Green, and I'm with the Southern Alliance for Clean Energy out of Knoxville, Tennessee. Although I'm living in Knoxville now, I grew up around here. I was in Huntsville last year when the tornadoes came through. We were without electricity for about a week. Browns Ferry was also without electricity for about a week. Fortunately, unlike a Fukushima, the diesel back-up generators did come on at Browns Ferry.
Now, the Browns Ferry infamous safety record, of course, began way back in 1975. I'm sure y'all are aware there was a big fire and lots of damage. It continued on for several decades, and recently I guess in October of 2010 they found a valve that apparently hasn't been operating for like a year and a half, and NRC gave them a red finding, which is the next step before you close the plant down. There's only been a

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1105-1

1105-1 The Browns Ferry Nuclear Plant is designed and maintained to meet stringent NRC safety requirements for nuclear power reactors. Safety-related equipment is regularly inspected, maintained, and monitored in accordance with procedures and vendor recommendations and replaced well before the end of its scheduled operating life. As discussed in Appendix J, Sections J.1 and J.2, of this *SPD Supplemental EIS*, continued assurance of the safe operation of these plants is the responsibility of the plant operator which operates under the independent regulatory oversight of NRC, including NRC regulations and license conditions. If the plant operator were to make a decision to use MOX fuel, it would be the joint responsibility of the plant operator and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely. For further discussion, refer to Section 2.5, Topics A and B, of this CRD.

handful of those issued in the last decade or so, and they are still operating under this red finding.

So clearly Browns Ferry is not the place to try out an unlicensed, untested, and potentially dangerous new nuclear fuel source. So we're willy nilly trying it. Let's see what TVA has to say. In the document they are identified only as a cooperating agency and the document states quote, "The TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose." Now, that's not exactly a ringing endorsement and it's definitely not a firm commitment.

So let's talk about the folks at Duke. They initiated a test running this material in their Catawba reactor and aborted the test two-thirds of the way through. Now, they claim that the tests were completed successfully, but they're not representative as a party to this agreement and they're not a cooperating agency. We think that if it's not

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1105-1 cont'd

1105-2

1105-3

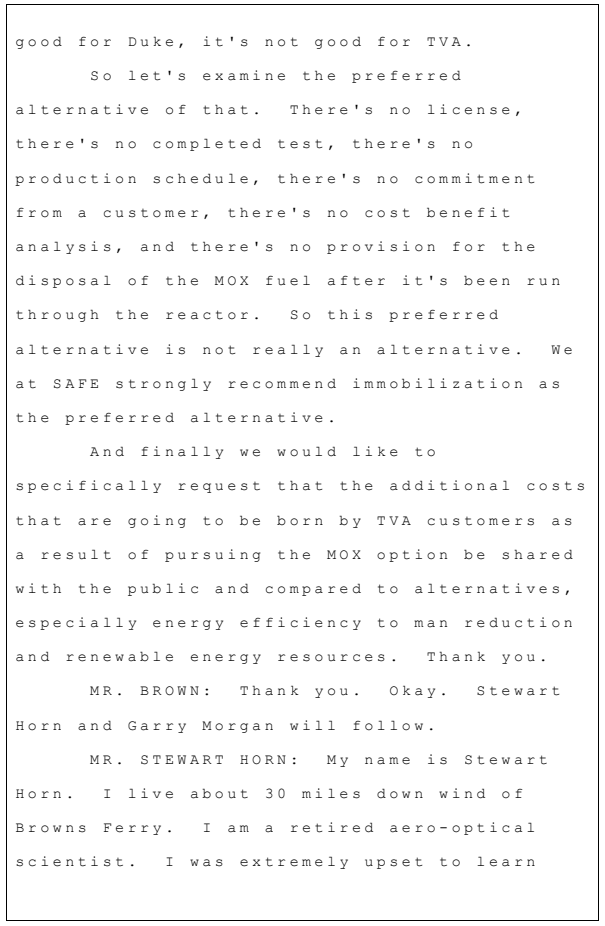
1105-2 The disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts as required by NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors, including, but not limited to five reactors at TVA's Browns Ferry and Sequoyah Nuclear Plants. These reactors are explicitly considered because, in February 2010, DOE and TVA signed an interagency agreement to study this possibility (see Section I.1). However, the MOX Alternative also analyzes irradiation in generic commercial nuclear reactors including existing domestic commercial BWRs and PWRs (see Appendix I, Section I.2), and is not dependent on TVA participation.

Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In the *Draft SPD Supplemental EIS*, the MOX Fuel Alternative was DOE's Preferred Alternative for surplus plutonium disposition. DOE's preferred option for disposition of surplus non-pit plutonium that is not suitable for MOX fuel fabrication was disposal at WIPP. DOE's preferred option for pit disassembly and conversion of surplus plutonium metal, regardless of its origins, was to use some combination of facilities at TA-55 at LANL and K-Area, H-Canyon/HB-Line, and MFFF at SRS, rather than to construct a new stand-alone facility.

In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose.

1105-3 Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as



good for Duke, it's not good for TVA.
So let's examine the preferred alternative of that. There's no license, there's no completed test, there's no production schedule, there's no commitment from a customer, there's no cost benefit analysis, and there's no provision for the disposal of the MOX fuel after it's been run through the reactor. So this preferred alternative is not really an alternative. We at SAFE strongly recommend immobilization as the preferred alternative.
And finally we would like to specifically request that the additional costs that are going to be born by TVA customers as a result of pursuing the MOX option be shared with the public and compared to alternatives, especially energy efficiency to man reduction and renewable energy resources. Thank you.
MR. BROWN: Thank you. Okay. Stewart Horn and Garry Morgan will follow.
MR. STEWART HORN: My name is Stewart Horn. I live about 30 miles down wind of Browns Ferry. I am a retired aero-optical scientist. I was extremely upset to learn

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1105-3 cont'd

1105-4

1105-5

part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

1105-4 As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS.* This *SPD Supplemental EIS* evaluates alternatives, including immobilization, for disposition of an additional 13.1 metric tons (14.4 tons) of surplus plutonium.

When licensed to operate, the production schedule for MFFF operation would depend on the requirements of its customers. DOE and TVA have an agreement to evaluate the use of MOX fuel in TVA reactors.

Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. The results of tests at Duke Energy's Catawba Reactor showed that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel. In addition, as discussed in Appendix B, Section B.1.4, of this *SPD Supplemental EIS*, DWPF canisters containing vitrified plutonium with HLW would be stored in S-Area at SRS; these DWPF canisters would be managed in the same manner as other DWPF canisters containing HLW. DOE has terminated the program for a geologic repository for used nuclear fuel and HLW at Yucca Mountain, Nevada. Notwithstanding the decision to terminate the Yucca Mountain program, DOE remains committed to meeting its obligations to manage and ultimately dispose of used nuclear fuel and HLW. For further discussion, refer to Section 2.7, Topic A, of this CRD.

1105-5 TVA is a cooperating agency for this *SPD Supplemental EIS* and, as such, is not required to declare a preferred alternative. TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose. TVA, as a cooperating agency, may adopt this *Final SPD Supplemental EIS* after independently reviewing the EIS and determining that its comments and suggestions have been satisfied (40 CFR 1506.3(c)).

that the NRC and the TVA are planning to put deadly, weapons-grade plutonium fuel in all three reactors at Browns Ferry and to ship the fuel through many communities between the MOX fuel plant in South Carolina and Browns Ferry in north Alabama.

There are many excellent reasons why NRC and TVA should not use this fuel. Three reactors at Browns Ferry all had very poor operational track records since they started operations. A former TVA nuclear scientist reported unit one had the poorest performance record of any reactor in the United States, including a horrible fire in about '75 with which that caused the NRC to in 1980 generate fire regulations that TVA is still not in compliance with 32 years after the regulations were issued because of the fire at Browns Ferry.

That the NRC and TVA have allowed this issue to remain unresolved is beyond belief. All three reactors at Browns Ferry have a long history of many automatic shutdowns from a premature weakening in the containment structures due to the thermal shocks and

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1106-1

1106-1 It is NRC's responsibility to regulate the operation of nuclear power reactors in the United States. However, as a courtesy to commentors, TVA provides the following discussion of safety issues at the Browns Ferry and Sequoyah Nuclear Plants.

The Browns Ferry Nuclear Plant is designed and maintained to meet stringent NRC safety requirements for nuclear power reactors. Safety-related equipment is regularly inspected, maintained, and monitored in accordance with procedures and vendor recommendations and replaced well before the end of its scheduled operating life. As discussed in Appendix J, Sections J.1 and J.2, of this *SPD Supplemental EIS*, continued assurance of the safe operation of these plants is the responsibility of the plant operator which operates under the independent regulatory oversight of NRC, including NRC regulations and license conditions. If the plant operator were to make a decision to use MOX fuel, it would be the joint responsibility of the plant operator and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely. For further discussion, refer to Section 2.5, Topics A and B, of this CRD.

Browns Ferry upgraded its fire protection program in response to the NRC requirements defined in 10 CFR 50 Appendix R, issued in 1980. However, the fire protection program relied upon a substantial number of OMAs to assure safe shutdown of the reactors in the event of a design-basis fire. As industry experience with nuclear plant fire protection evolved, these previously allowable OMAs were disallowed, resulting in notice of violations to Browns Ferry for the fire protection program. To address these findings, TVA initiated actions to reduce the reliance upon OMAs and change the fire protection program to voluntarily comply with the 2001 NFPA Standard 805. A number of changes have already been completed to reduce the risk of damage due to a fire. When all of the NFPA Standard 805 changes are complete, the risk of core damage due to fire will be reduced to a level consistent with other design-basis accident risks (see TVA presentation to NRC from a public meeting on December 8, 2011, entitled *BFN Fire Risk Reduction and NFPA 805 Transition*, available at http://pbadupws.nrc.gov/docs/ML1135/ML11353A319.pdf).

As at all nuclear power reactors, every automatic or manual reactor shutdown that occurs is documented in plant operating records. Shutdowns are monitored, tracked, and evaluated by both NRC and TVA to ensure there is no increase in safety risk (see the Reactor Oversight Process described at www.nrc.gov/reactors/operator-licensing/oversight-programs.html).

Comments from the Tanner, Alabama Public Hearing (September 13, 2012)

stresses caused by much more rapid cooling that occurs in automatic shutdowns.

The boiling water reactors at Browns Ferry and Fukushima reported we have a very poorly designed, fragile containment structure along with the defective hardened vent design. Three of the hardened vents at Fukushima failed causing three reactor buildings to explode and spread dangerous radiation across the globe. Recently the Browns Ferry reactor has been licensed by NRC to operate an additional 20 years beyond the designed lifetime.

Plutonium fuel has never been used in a boiling water reactor. This will make Browns Ferry an experiment. It is hard to believe that NRC would allow TVA or any utility to experiment in any commercial reactor where even a minor accident could bring great harm to many of the customers. Experiments in nuclear reactors should be conducted far from any population center, not in commercial operating nuclear power plants.

Scientists estimate that a reactor accident in a plutonium fuel plant could cause

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1106-1 cont'd

1106-2

1106-3

The Browns Ferry Nuclear Plant has a GE Mark-I type containment. From what is known from the 2011 accident at the Fukushima Dai-ichi Nuclear Power Station in Japan, the GE Mark-I type containment remained intact and undamaged from the immediate impacts of the earthquake and tsunami. The operators were unable to successfully operate the containment venting system in a timely manner, which resulted in a buildup of pressure that precluded early injection of coolant into the reactor vessel. The lack of coolant, in turn, resulted in extensive core damage, high radiation levels, hydrogen production, and leakage of radioactive gases and hydrogen. The leakage of hydrogen gas into the reactor buildings resulted in explosions in the secondary containment buildings of Units 1, 3, and 4, and the ensuing damage to the facility contributed to the release of radioactive material to the environment (NRC 2013). The design of the Browns Ferry reactors is being evaluated to determine whether changes may make it better able to ameliorate the consequences of an unlikely severe accident. NRC has mandated implementation of requirements for reliable hardened containment vents capable of operation under severe accident conditions for Browns Ferry and other reactors with Mark I or Mark II containments (NRC 2013). For further discussion, refer to Section 2.5, Topics A and C, of this CRD.

1106-2 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. As summarized in Chapter 5, Section 5.3.3, of this *Final SPD Supplemental EIS*, use of MOX fuel in TVA or other reactors would require an amendment to the reactor's operating license in accordance with 10 CFR Part 50. This process would require a demonstration by the reactor operator that the proposed amendment (1) would not involve an unreviewed environmental or safety question and (2) would provide for public notice and an opportunity for public comment before issuance of the license amendment.

1106-3 Since the publication of the report cited by the commentor, a number of additional technical studies and analyses related to reactor accidents and the use of MOX fuel have been released (NRC 2012a; ORNL 2013; SNL 2010, 2011). The results reported in this *Final SPD Supplemental EIS* are consistent with this more recent information and the application of later versions of the advanced computer codes used in the report cited by the commentor. The analysis included in this *Final SPD*

up to 50 percent more injuries and deaths than an accident in a typical uranium fuel-based plant. Not only is this increased risk unacceptable to myself and local residents, it would instantly make this plant more of a prime target for terrorists than all of the regular commercial reactors in the country because of the increased potential harm to the public. This alone is reason enough to not conduct this experiment which would put all downwind residents at increased risk of losing everything, including their health.

Three of the Mark 1 reactors at Fukushima exploded when hydrogen built up in the secondary containment structures and blew the reactors apart.

MR. BROWN: You've got one minute left.

MR. STEWART HORN: One minute. I'll move on then. Duke Energy has experimented with MOX fuel in their reactor, which I thought was horrible and couldn't believe that they were allowed to do this and permitted by NRC to do it. Since Fukushima it has become widely known that boiling water reactors have

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1106-3 cont'd

1106-4

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Supplemental EIS uses updated nuclear cross sections and fuel and reactor design parameters for the Browns Ferry and Sequoyah Nuclear Plants (ORNL 2013). As indicated in Appendix J, Section J.4, of this *SPD Supplemental EIS*, a 2011 study by Sandia National Laboratories found that the highest consequence accident scenarios release fractions from a partial MOX fuel core are similar to those of a full LEU fuel core. For further discussion, refer to Section 2.5, Topic B, of this CRD.

As addressed in Chapter 4 and Appendix I, operation of reactors using a partial MOX fuel core is not expected to change substantively from operations using a full LEU fuel core. Under both normal operating and postulated accident conditions, the impacts of operating reactors using a partial MOX fuel core are not expected to change appreciably from those associated with use of full LEU fuel cores. This assessment is consistent with the analysis performed for the *SPD EIS* (DOE 1999).

As summarized in Chapter 4, Section 4.1.2, and described in detail in Appendices I and J, of this *SPD Supplemental EIS*, the risks associated with both normal operations and accidents for a partial MOX fuel core and full LEU fuel core are expected to be comparable. The risks associated with postulated accidents would be small. This assessment is consistent with the analysis performed for the *SPD EIS* (DOE 1999). For further discussion, refer to Section 2.5, Topic B, of this CRD.

1106-4 As indicated in footnote 3 in Chapter 2 of this *SPD Supplemental EIS*, plutonium-239 may make up only 4 percent of a MOX fuel assembly. The MOX fuel is composed of a mixture of plutonium and uranium oxides that has been sintered into a ceramic form and sealed in pressurized zirconium alloy tubes.

There are some minor differences between MOX fuel and LEU fuel, such as the amount of actinides in used MOX fuel rods would be higher than in used LEU fuel rods. These differences, however, are not expected to affect reactor safety or meaningfully increase the environmental consequences or risks associated with the use of a partial MOX fuel core. As summarized in Chapter 4, and described in detail in Appendices I and J, of this *SPD Supplemental EIS*, the impacts associated with using a partial MOX fuel core versus a full LEU fuel core in commercial nuclear power reactors are expected to be similar. The risks associated with postulated accidents would be small. For further discussion, refer to Section 2.5, Topic B, of this CRD.

The purpose of the Surplus Plutonium Disposition Program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus

a very dangerous spent fuel pool that resides above the reactor. It is especially dangerous if it loses primary power or water.

These fuel pools have been allowed to be condensed in spacing rods between beyond their "designed-to-density" to allowed for storage of more fuel than they were designed to hold. These pools have only a metal roof above them, not tornado safe. This EF5 tornado passed within five miles of Browns Ferry.

I'm going to skip on. I believe the NRC and TVA has been talked into the use of this fuel by the Department of Energy and the French consultant AREVA. AREVA not only has a large consulting contract with TVA but also has a very large vested interest in the MOX fuel program and in convincing TVA to experiment with MOX fuel. They've already received millions of dollars working on the MOX fuel program and they are in position to receive up to billions in the future. AREVA has a definite conflict of interest in advising TVA about the use of this fuel, and they should not be allowed to do this.

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1106-6 cont'd

1106-7

plutonium in the United States in an environmentally sound manner to ensure that it can never again be readily used in nuclear weapons. Current nuclear power reactor security provides protection from terrorists and groups seeking access to nuclear material, including nuclear fuel, in accordance with NRC regulations. Central to the purpose of the Surplus Plutonium Disposition Program is protecting plutonium from terrorists, so appropriate safeguards and security measures are taken at facilities and during transportation to protect against unauthorized access to materials. As shown in Appendix J, Section J.3, the risks associated with postulated accidents are extremely low. Therefore, a nuclear reactor using MOX fuel does not present a more attractive target for a terrorist attack.

1106-5 See the response to comment 1106-1 regarding the accident at the Fukushima Dai-ichi Nuclear Power Station.

1106-6 Browns Ferry Nuclear Plant's used nuclear fuel is temporarily stored in a specially designed and engineered fuel pool. The pool's floor and walls are multiple feet thick, and it contains large volumes of water (300,000 gallons [1,100,000 liters] or more) to help ensure no releases of radioactive material to the environment. The fuel pools at Browns Ferry have been modified to safely store more used fuel. The nuclear industry and NRC have studied the potential impact of an F-5 tornado and determined that the used fuel would remain safely covered. Initial reports from the Fukushima Dai-ichi Nuclear Power Station show little damage to the used fuel stored in the plant's fuel pools.

1106-7 DOE disagrees with the commentor's characterization of DOE's interactions with NRC, TVA, and AREVA. DOE's and TVA's work with AREVA on MFFF is subject to the requirements of Federal contracting regulations and other applicable requirements, and MFFF and any reactors using MOX fuel must be licensed by NRC. DOE and TVA contracting strategies for surplus plutonium disposition activities are outside the scope of this *SPD Supplemental EIS*.

In summary I'm convinced utilizing plutonium based fuel in any commercial generating reactor is a horrible idea. The NRC will be highly negligent to allow this to be permitted, especially true in the aging, already dangerous, poorly designed Browns Ferry reactors. I'm also concerned that the MOX fuel shipments will be traveling on America's highways through many communities passing very close to my house and land. An accident during transportation could release deadly plutonium into neighborhoods and over lands and contaminate the people and lands permanently.

The TVA should not be allowed to increase the risk and danger to local residents by the use of this fuel. No other utilities is interested in this, and TVA should not be the location of this potentially deadly experiment.

MR. BROWN: If you can make a final statement, please.

MR. STEWART HORN: I'm done.

MR. BROWN: Thank you.

If folks have a longer printed

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1106-8 **1106-8** Any use of MOX fuel at the Browns Ferry Nuclear Plant or any other U.S. commercial nuclear reactor would be in accordance with NRC evaluation and approval of an amendment to the reactor license. This process would require a demonstration by the reactor operator that the proposed amendment would not involve an unreviewed environmental or safety question, and would provide for public notice and opportunity for comment before issuance of the license amendment.

1106-9 **1106-9** Transportation risks are analyzed for all alternatives proposed in this *SPD Supplemental EIS*, including the threat of theft and diversion of radioactive materials. Chapter 4, Table 4–23, of this *SPD Supplemental EIS* presents the potential impacts on the transportation crew and the general public from transportation of MOX fuel from SRS to TVA or other domestic reactors. This table shows that, over the life of the project, the transportation risks associated with incident-free operations and accidents are low. Whereas the radiological risk from accidents cited in Table 4–23 includes all of the MOX fuel shipments and accounts for the probability of an accident, Appendix E, Table E–12, presents the consequences if a maximum reasonably foreseeable accident were to occur. Table E–12 shows that, if such an accident were to occur during the shipment of MOX fuel (a probability of less than 1 chance in 300,000), the increased risk of a single LCF in the exposed population would be about 0.002 (1 chance in 500). A severe accident that would result in land contamination is unlikely; however, if it were to occur, cleanup actions would be implemented to reduce the levels of contamination below risk-based levels.

In regard to the risks associated with using MOX fuel in TVA reactors, the risks associated with normal operations and accidents for a partial MOX fuel core and a full LEU fuel core are expected to be comparable. For further discussion, refer to Section 2.5, Topic B, of this CRD.

statement, again I'll ask if you can summarize within four minutes your key points and submit it to the Court Reporter. As was mentioned earlier, whatever form your comments are in they all are counted equally. So, again, if you can summarize that will help out the folks who are signed up later. Thanks.

Garry, go ahead.

MR. GARRY MORGAN: I'm Garry Morgan, retired from the United States Army Medical Department. My experience and training within the United States Army included nuclear, biological, and chemical weapons protection. I was also involved in personal liability programs related to Nuclear Surety and military physical security. My experience and education include risk management as it relates to health care and health care organizations. I received a Bachelor's of Science degree from Baylor University in 1979.

Plutonium is one of the most dangerous substances known to human kind and is a critical element for nuclear weapons. There is one important message that needs to be

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1107-1

1107-1 As summarized in Appendix J, Section J.2, of this *SPD Supplemental EIS*, use of MOX fuel within nuclear reactors could require some modifications to core design, reactivity control systems, fuel management procedures, and technical specifications. For example, concerns that the higher neutron flux in MOX fuel can lead to pressure vessel embrittlement can be addressed through fuel management procedures. The referenced tests at the French CABRI reactor are among a number of tests that have been performed in specialized test reactors in support of the definition of safety limits at high burnup. Other reactors performing similar tests include the NSRR test reactors in Japan and the IGR and BIGR reactors in the Russian Federation. A 2007 report providing a review and interpretation of reactivity-induced accident experiments addressed the subject and found that CABRI tested as well as numerous others. It also concluded that there is no evidence that MOX fuel behaves differently than LEU fuel in terms of failure propensity (Vitanza 2007). This *SPD Supplemental EIS* does, however, analyze the risks associated with the use of a partial MOX fuel core under various accident scenarios, including failures that could lead to a core meltdown, and concludes that the risks are comparable to those associated with the use of full LEU cores (see Chapter 4, Section 4.1.2.4, and Section J.3.2). Notwithstanding this conclusion, use of MOX fuel in one or more commercial nuclear reactors in the United States would require an amendment to the reactor's operating license. As summarized in Chapter 5, Section 5.3.3, of this *SPD Supplemental EIS*, use of MOX fuel in TVA or other reactors would require an amendment to the reactor's operating license, in accordance with 10 CFR Part 50, that demonstrates that the proposed change would not involve an unreviewed environmental or safety question.

conveyed concerning the utilization of weapons-grade plutonium MOX fuel in commercial nuclear reactors: The commercialization of nuclear weapons plutonium as a fuel for commercial nuclear reactors is compounded insanity.

Plutonium fuel weakens the reactor pressure vessel due to embrittlement of the metal in the primary containment as a result of a high neutron flux. At Cabri France when AREVA was testing the MOX fuel, testing demonstrated plutonium MOX fuel has a higher failure potential than uranium oxide fuel, and there is also a potential for fuel rod rupture at comparable burn-up.

Now, all these points I'm making I've referenced. I make reference to all the points, and most of the references are peer-reviewed material.

Plutonium reactor fuel can be utilized to fabricate a nuclear weapon. The use of plutonium as a commercial nuclear reactor fuel increases the risk of theft and diversion of nuclear materials. The threat of terrorism and nuclear weapons proliferation is greatly

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1107-1 cont'd

1107-2

1107-2 As described in Chapter 1, Section 1.2, of this *SPD Supplemental EIS*, the purpose of DOE's proposed action is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally sound manner to ensure that it can never again be readily used in nuclear weapons. MOX fuel cannot readily be used to fabricate a nuclear weapon. As indicated in footnote 3 in Chapter 2 of this *SPD Supplemental EIS*, plutonium-239 may make up only 4 percent of a MOX fuel assembly. The MOX fuel is composed of a mixture of plutonium and uranium oxides that has been sintered into a ceramic form and sealed in pressurized zirconium alloy tubes. Therefore, complex mechanical disassembly and chemical processing would be required to extract and purify the plutonium in this MOX fuel. Once the fuel has been irradiated in a reactor, it would be highly radioactive and the difficulty of recovering plutonium would increase substantially because operations would have to be performed remotely.

Central to the purpose of the Surplus Plutonium Disposition Program is minimizing the risks of diversion and protecting plutonium from terrorists, so appropriate safeguards and security measures are taken at facilities and during transport to protect against unauthorized access to materials. Current security systems and procedures at SRS, LANL, and the Pantex Plant are designed to protect plutonium inventories and to prevent access by unauthorized personnel (e.g., terrorists). Current nuclear power reactor security provides protection from terrorists and groups seeking access to nuclear material in accordance with NRC regulations. By converting weapons-grade or weapons-usable plutonium metal into MOX fuel and using it in a reactor, the threat of terrorism and nuclear weapons proliferation is greatly reduced.

increased.

Utilization of plutonium as a commercial nuclear reactor fuel serves one purpose, the financial benefit of the commercial nuclear power industry. Taxpayers are paying for the construction of the plutonium MOX fuel facility to benefit the nuclear power industry. The use of plutonium fuel at Browns Ferry, Alabama or Sequoyah, Tennessee compounds the insanity of utilizing the dangerous high-risk nuclear fuel.

Both reactors are old, and in the case of Browns Ferry the reactors are defective GE Mark 1 reactors which are under increased scrutiny by the Nuclear Regulatory Commission. Weapons grade mixed oxide fuel is high risk and has failed in previous testing at civilian nuclear power reactors. The use of ex-warhead plutonium imposes a significant increased health risk to the public if an accident occurs, and that health risk increases approximately 26 percent for latent cancer fatalities.

The solution, which is recommended for all plutonium waste materials as indicated in

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1107-2 cont'd

1107-3

1107-4

1107-5

1107-3 The United States remains committed to the PMDA (USA and Russia 2000) with the Russian Federation, under which both countries have agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. It is important that DOE begin plutonium disposition operations to demonstrate progress to the Russian government, meet U.S. legislative requirements, and reduce the quantity of surplus plutonium and the concomitant cost of secure storage. Use of MOX fuel in domestic commercial nuclear power reactors would render surplus plutonium into a used fuel form that is not readily usable for nuclear weapons.

Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

1107-4 GE Mark-I reactors are in use at the Browns Ferry Nuclear Plant and a number of other locations in the United States. NRC has determined through its licensing and regulatory processes that the reactors can operate safely; the Mark-I is not a defective reactor design. Based on lessons learned from the accident at the Fukushima Dai-ichi Nuclear Power Station in Japan, changes are being implemented to improve the safety of these reactors. For example, NRC has mandated implementation of requirements for reliable hardened containment vents capable of operation under severe accident conditions for reactors with Mark I or Mark II containments (NRC 2013).

Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

The comparison results presented in Appendix J, Section J.3, Reactor Accidents, in this *SPD Supplemental EIS* demonstrate that the use of partial MOX fuel and full LEU fuel cores in the TVA reactors would not make any substantive difference in the potential risks associated with the accidents analyzed. For some accidents, the consequences would be lower with a partial MOX fuel core and in others they would be higher. Table J–9 shows that general public

the National Nuclear Security Administration draft of Environmental Impact Statement regarding plutonium weapons material and waste is glass vitrification, not the plutonium mixed oxide fuel manufacturing.

MR. BROWN: About one minute.

MR. GARRY MORGAN: Thank you, sir.

The solution as national policy, there should be two separate initiatives here: One, develop dealing with the military and civilian plutonium to proceed on separate tracks eventually to be brought together, and this would involve the United States as well as Russia.

The experimentation of nuclear weapons plutonium and MOX fuel in any civilian nuclear reactor is not a smart or safe alternative for disposal of weapons grade plutonium material. Once again, the preferred method and what we ask the NNSA and all government agencies to consider is the glass vitrification of mixed oxide fuel. Thank you.

There is one additional little comment I would like to make and I'll step down. I really appreciate the different materials that

1107-5 cont'd

1107-5 cont'd

1107-6

impacts for beyond-design-basis accidents would range from 5 percent lower to 5 percent higher depending on the accident should it occur. Therefore, the risks associated with these accidents are nearly identical. For further discussion, refer to Section 2.5, Topics A and B, of this CRD.

1107-5 The United States remains committed to the PMDA (USA and Russia 2000) with the Russian Federation, under which both countries have agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. It is important that DOE begin plutonium disposition operations to demonstrate progress to the Russian government, meet U.S. legislative requirements, and reduce the quantity of surplus plutonium and the concomitant cost of secure storage. Use of MOX fuel in commercial nuclear power reactors would render surplus plutonium into a used fuel form that is not readily usable for nuclear weapons.

There are some minor differences between MOX fuel and LEU fuel, such as the amount of actinides in used MOX fuel rods would be higher than in used LEU fuel rods. These differences, however, are not expected to affect reactor safety or meaningfully increase the environmental consequences or risks associated with the use of a partial MOX fuel core. As summarized in Chapter 4, and described in detail in Appendices I and J, of this *SPD Supplemental EIS*, the impacts associated with using a partial MOX fuel core versus a full LEU fuel core in commercial nuclear power reactors are expected to be similar. The risks associated with postulated accidents would be small. For further discussion, refer to Section 2.5, Topic B, of this CRD.

1107-6 The pamphlet in question was prepared by Shaw AREVA MOX Services, LLC and shared with the public at the public hearings to provide additional information about MOX fuel manufacturing. The pamphlet was not intended as advertising material.

are placed out for the consumption of citizens. They are appreciated, but I have a question. Now, I asked specifically about this particular pamphlet right here. I asked, who pays for this pamphlet? I was told we the taxpayers paid for this pamphlet and that brings a problem. Since when does the United States Government start advertising for a civilian contractor, and that being Shaw-AREVA. Thank you.

MR. BROWN: I'm sorry I didn't give you warning but you knew where you came on this sign-up sheet. So Gretel Johnston is next. Joseph Imhof will be following Gretel.

MRS. GRETEL JOHNSTON: Hi, good evening. I'm Gretel Johnston and I'm representing Mothers Against Tennessee River Radiation. I just want to say first that this really is, this is really a good program. We are taking plutonium out of warheads that were pointed across the world and we're removing it. The thing -- the problem is we need to make sure it's put in a secure form and in a secure place. We can't just take it out and say, oh, now the job is done, and we advocate

1107-6 cont'd

1108-1

1108-1 DOE acknowledges the commentor's support of the Immobilization to DWPF Alternative. As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium, including immobilization.

for vitrification.

We think that those glass logs put into disposal is the way to go, and that this boondoggle of mixed oxide plutonium is bringing it back in. It's recirculating it into our environment and into the risk factors involved with plutonium itself. We think we do not need MOX fuel. There is no reason for us to have MOX fuel.

It is -- I'm sorry. It doesn't secure the threat. It doesn't remove the plutonium from circulation, which is the purpose of this program, to dismantle the warheads and disposition of the plutonium.

The other concern we had and I think everyone needs to remember that the average nuclear power plant has a thousand times more long-lived radioactivity than the bomb we dropped on Hiroshima, and we just need to be aware of that.

This is a dangerous way to get our lights turned on. There are much more reasonable alternatives now. Solar has been less expensive. Solar has been less expensive than nuclear for a couple of years now, and

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1108-1 cont'd

1108-2

1108-2 The purpose of the Surplus Plutonium Disposition Program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally sound manner to ensure that it can never again be readily used in nuclear weapons. Central to the purpose of the Surplus Plutonium Disposition Program is protecting plutonium from terrorists, so appropriate safeguards and security measures are taken at facilities and during transportation to protect against unauthorized access to materials.

Although unirradiated (fresh) MOX fuel may not be sufficiently radioactive to be self-protecting, fresh MOX fuel is not an attractive target for terrorist attack because it is not readily usable for a nuclear device or dirty bomb. The plutonium in MOX fuel is blended with approximately 20 times as much depleted uranium as plutonium and is formed into ceramic pellets encased in metal cladding. Moreover, the MOX fuel is contained in large, heavy fuel assembly structures that would make theft extremely challenging. Without substantial physical dismantling and chemical separation, the plutonium in the MOX fuel cannot be used in a nuclear bomb. Once the fuel has been irradiated in a reactor, it would be highly radioactive, and recovering the residual plutonium would be impossible without highly specialized equipment. Furthermore, the isotopic distribution of the residual plutonium in irradiated MOX fuel would be changed, resulting in a much smaller percentage of fissile plutonium isotopes than that in weapons-grade plutonium.

DOE would transport plutonium between DOE sites and MOX fuel from SRS to domestic commercial nuclear power reactors using the NNSA Secure Transportation Asset Program, as described in Appendix E. Under this program, security measures specific to the materials being transported would be implemented to protect them from diversion.

the new reports from the NREL show that Tennessee alone is capable of producing enough utility -- rural utility solar for 2.2 million gigawatt hours of solar power just in Tennessee alone.

Okay. So I just want to say that this is a public health issue, and the MOX fuel risks seem to far outweigh the benefits that on this anniversary of 9/11 I just want us to remember that we cannot predict catastrophes. We cannot predict disasters. We cannot predict the way that things will be distorted and used in dangerous ways by terrorists. We just can't do it. We try, we do our best, but we're not really capable of doing that, even our brightest minds.

I want to say I live directly downwind from Browns Ferry. So it's personal for me. I just -- Browns Ferry has enough problems as it is. It's not designed for this hotter fuel. I cannot see why we would be taking and putting this in aging reactors and creating even more stress on the systems.

And finally I would like to conclude with a quote by Ed Lyman who was a very well-

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1108-3

1108-4

1108-3 As summarized in Chapter 4, Section 4.1.2, and described in detail in Appendices I and J of this *SPD Supplemental EIS*, the risks associated with both normal operations and accidents for a partial MOX fuel core and full LEU fuel core are expected to be comparable. The risks associated with postulated accidents would be small. For further discussion, refer to Section 2.5, Topic B, of this CRD.

1108-4 The Browns Ferry Nuclear Plant is designed and maintained to meet stringent NRC safety requirements for nuclear power reactors. Safety-related equipment is regularly inspected, maintained, and monitored in accordance with procedures and vendor recommendations and replaced well before the end of its scheduled operating life. As discussed in Appendix J, Sections J.1 and J.2, of this *SPD Supplemental EIS*, continued assurance of the safe operation of these plants is the responsibility of the plant operator which operates under the independent regulatory oversight of NRC, including NRC regulations and license conditions. If the plant operator were to make a decision to use MOX fuel, it would be the joint responsibility of the plant operator and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely. For further discussion, refer to Section 2.5, Topics A and B, of this CRD.

As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. There are differences in nuclear reactor core physics between MOX and LEU fuel cores, but these differences are understood and can be addressed using measures such as modifications to reactivity control systems and core fuel management procedures. Presently available information and analysis indicate that, with minor modifications, the Browns Ferry Nuclear Plant has the capability to safely utilize MOX fuel. For further discussion, refer to Section 2.4, Topic A, and Section 2.5, Topic B, of this CRD.

respected nuclear physicist, and it's in an article entitled "Public Health Risks of Substituting Mixed Oxide For Uranium Fuel." He says, "The Department of Energy's plan to dispose of ex-warhead plutonium by using it in MOX fuel in commercial nuclear reactors will impose a significant risk on the public." Thank you very much.

MR. BROWN: Joseph Imhof. And Ruth Hart will follow.

MR. JOSEPH IMHOFF: Good evening. My name is Joseph Imhof from Huntsville, and I want to thank you for allowing us to speak at this meeting this evening. Thank you very much.

My opinion is that I don't think you really want to hear my opinion. So what I'm going to do is not give my opinion but rather try to present some facts and draw a conclusion. Number one is that the conclusion is that when TVA officials and decisionmakers get together and try to save money it's been proven over and over again that it winds up costing taxpayers thousands and millions of dollars. And my biggest concern is disposal

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1109-2

1109-1 Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

TVA is a cooperating agency for this *SPD Supplemental EIS* and, as such, is not required to declare a preferred alternative. TVA does not have a preferred alternative at this time regarding whether to pursue irradiation of MOX fuel in TVA reactors and which reactors might be used for this purpose. TVA, as a cooperating agency, may adopt this *Final SPD Supplemental EIS* after independently reviewing the EIS and determining that its comments and suggestions have been satisfied (40 CFR 1506.3(c)).

1109-2 Chapter 4, Section 4.1.4, of this *SPD Supplemental EIS* discusses the estimated quantities of waste that would be generated under the various plutonium disposition alternatives. Section 4.1.4 also discusses the various disposal pathways for various waste streams and the impacts on existing waste management systems. As discussed in Section 4.5.3.6.3, CH-TRU waste generated as a result of surplus plutonium disposition activities could use between 24 percent (under the No Action Alternative) and 108 percent (under the WIPP Alternative) of the unsubscribed WIPP disposal capacity. The WIPP Alternative, where 13.1 metric tons (14.4 tons) of pit and non-pit plutonium would be processed for potential disposal at WIPP, is the only alternative where CH-TRU waste generation could exceed the available unsubscribed capacity at WIPP. However, if FFTF fuel were direct-shipped to WIPP and criticality control overpacks were used for packaging other surplus plutonium for WIPP disposal instead of POCs, then the volume of CH-TRU waste under the WIPP Alternative could be reduced to 65 percent of the unsubscribed WIPP disposal capacity instead of 108 percent. For further discussion, refer to Section 2.2, Topic B, of this CRD.

As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel—by storing it in the reactor's used fuel storage pool or placing it in dry storage. The use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would displace LEU fuel that otherwise would have been used to power the nuclear power reactor. Use of MOX fuel could increase used nuclear fuel generation by 8 to 10 percent for TVA's Browns Ferry and Sequoyah Nuclear Plants, and from 2 to 16 percent for generic reactors during the period MOX fuel could be used at a reactor. DOE expects that increases of this magnitude would be managed within the reactor's normal planning for storage of its used fuel.

of the waste. You know, if this comes about that MOX fuel is used in commercial reactors, the disposal of the waste.

But I want to illustrate my point by eluding to the coal ash spill in Kingston, Tennessee that occurred approximately three to four years ago in December. We fought the disposal of having that waste coming to Alabama, but it wasn't just the fact that it was disposed of in Alabama. It was the way it was disposed of. Basically the coal ash waste, which actually is not just coal ash, it contains dangerous things like mercury and radium.

Okay. So this is, you know, not just a simple coal ash. It's toxic material. And what happened was it was transported by rail and it was transported through Birmingham on rail cars, and there are pictures of seepage coming out of the rail cars as they pass through Birmingham.

But it was taken down to Union Town, Alabama, which is in the black belt, and it was dumped in a city dump. Okay. Not far from there, about probably less than 100 miles

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1109-2 cont'd

Low-level radioactive waste, mixed low-level radioactive waste, hazardous waste, and nonhazardous waste would continue to be generated at the nuclear power generating stations as part of normal operations. As discussed in Appendix I, Section I.1.2.4, the use of MOX fuel is not expected to increase the generation rates of these wastes when compared with those generated from the use of LEU fuel. This is consistent with information presented in the *SPD EIS* (DOE 1999).

west of there, is Alabama's official hazardous waste dump called Emelle. And Emelle is set up -- Emelle is in an area in west Alabama near Mississippi where there's a deep formation of karst. Like it's 100 feet of clay that would contain the waste and then they put liners inside of that.

So instead of dumping the waste in a recognized hazardous waste dump, it was dumped on Union Town, Alabama. And, you know, the only thing I can think of is that it might have been a few dollars per ton less to dump it in a city dump rather than dumping it in a proper facility.

MR. BROWN: You've got one minute left.

MR. JOSEPH IMHOFF: Okay. So, anyway, these decisions -- and I'm trying to give facts, but I do want to express my opinion. And my opinion is that the people, the decisionmakers and the officials in positions of responsibility need to take due diligence in deliberating and getting all the facts and making sure that there's no repercussions when the decisions are made. So I think that was a

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poor decision to take that waste and dump it in a city dump. I'm wondering what other decisions are made on an expedient basis so that money can be saved.

The other thing is --

MR. BROWN: If you could make just one more point. Thanks.

MR. JOSEPH IMHOFF: We do pre-environmental studies before we build things, but it doesn't seem like we ever do a post-environmental study. Thank you very much.

MR. BROWN: Thank you. Our next speaker is Ruth Hart, and Roy Crossfield has chosen to make a brief statement. So he will follow.

MRS. RUTH HART: I'm Ruth Hart. I'm here as a concerned --

MR. BROWN: If you could pull the mic down.

MRS. RUTH HART: I'm Ruth Hart. I'm here as a concerned citizen of Limestone County. I wanted to clarify one point. Is there not one representative from TVA here tonight?

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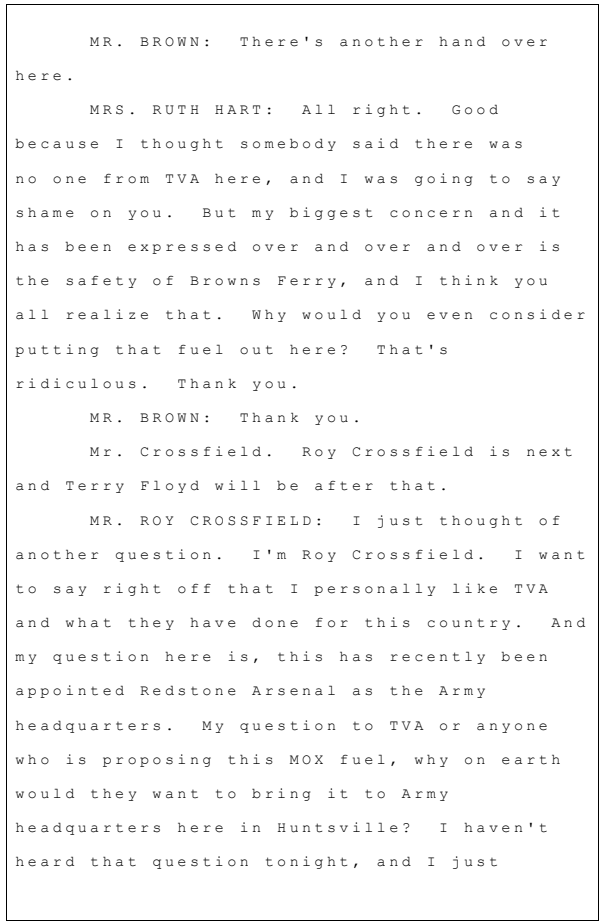
1109-3

1109-3 Environmental monitoring is performed at all DOE and TVA sites. The monitoring documents the impacts of activities at the sites. Information about monitoring may be found in the SRS, LANL, and WIPP annual environmental reports (accessible at www.srs.gov/general/pubs/ERsum/index.html, http://www.lanl.gov/community-environment/environmental-stewardship/index.php, and www.wipp.energy.gov/Documents_Environmental.htm, respectively), as well as environmental monitoring reports for the Browns Ferry and Sequoyah Nuclear Plants available through the NRC website (accessible at www.nrc.gov/reading-rm/adams.html).



MR. BROWN: There's another hand over here.

MRS. RUTH HART: All right. Good because I thought somebody said there was no one from TVA here, and I was going to say shame on you. But my biggest concern and it has been expressed over and over and over is the safety of Browns Ferry, and I think you all realize that. Why would you even consider putting that fuel out here? That's ridiculous. Thank you.

MR. BROWN: Thank you.

Mr. Crossfield. Roy Crossfield is next and Terry Floyd will be after that.

MR. ROY CROSSFIELD: I just thought of another question. I'm Roy Crossfield. I want to say right off that I personally like TVA and what they have done for this country. And my question here is, this has recently been appointed Redstone Arsenal as the Army headquarters. My question to TVA or anyone who is proposing this MOX fuel, why on earth would they want to bring it to Army headquarters here in Huntsville? I haven't heard that question tonight, and I just

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1110-1

1102-2

1110-1 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. As summarized in Chapter 5, Section 5.3.3, of this *SPD Supplemental EIS*, use of MOX fuel in TVA or other reactors would require an amendment to the reactor's operating license in accordance with 10 CFR Part 50. This process would require a demonstration by the reactor operator that the proposed amendment would not involve an unreviewed environmental or safety question, and would provide for public notice and an opportunity for comment before issuance of the license amendment.

Appendix I of this *SPD Supplemental EIS* describes the potential impacts, as well as the differences in impacts between use of a partial MOX fuel core and a full LEU fuel core, and summarizes the results of the more detailed accident analysis in Appendix J. There are some minor differences between MOX fuel and LEU fuel, such as the amount of actinides in used MOX fuel rods would be higher than in used LEU fuel rods. These differences, however, are not expected to affect reactor safety or meaningfully increase the environmental consequences or risks associated with the use of a partial MOX fuel core. As summarized in Chapter 4 and described in detail in Appendices I and J of this *SPD Supplemental EIS*, the impacts associated with using a partial MOX fuel core versus a full LEU fuel core in commercial nuclear power reactors are expected to be similar. The risks associated with postulated accidents would be small. For further discussion, refer to Section 2.5, Topic B, of this CRD.

1102-2 *Commentor 1102 continued.*

As described in Chapter 2 of this *SPD Supplemental EIS*, MOX fuel could be used in TVA nuclear power reactors, including the BWRs at the Browns Ferry Nuclear Plant near Athens, Alabama. Alternatives for surplus plutonium disposition do not include the use of army facilities or facilities in Huntsville, Alabama.

thought of it and thought that that might be an interesting thing to find out.

MR. BROWN: That's a good addition. That hasn't been brought up. Thanks very much.

MR. ROY CROSSFIELD: Okay.

MR. BROWN: Terry Floyd. Nancy Muse will be next.

MR. TERRY FLOYD: Good evening. I'm Terry Floyd. I'm from Milledgeville, Georgia, and I have mixed emotions about this. I don't live that far away from Augusta. But I think that considering the weapons, weapons of mass destruction situation, something has to be done; however, I believe there's something a lot better than what is being proposed here, and what it is is nuclear and it was proposed by the fathers of nuclear energy. And one of them was Enrico Fermi and Eugene Wigner and Dr. Alvin Weinberg who was the director of Oak Ridge for about 25 years.

Now, Dr. Alvin Weinberg described nuclear energy as the Faustian bargain, and I think the reality there is there's several different versions of the Faustian bargain in

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the theatre and movies. And so I'm not quite sure exactly which one he was talking about, but my understanding of it is that he was -- he on response to Enrico Fermi in 1944 said that the nuclear -- this was right during the heat of the production of the weapons grade material for the Manhattan Project that was dropped on Hiroshima. And Mr. Fermi said that the nuclear power generation from nuclear energy would be something that the public would not accept because of the dangers.

And so Eugene Vigner set off on exploring using other nuclear active elements, and that's under periodic table and it is Thorium. And Dr. Weinberg at Oak Ridge spent 20 years developing what is now known as -- a version of it is now known as the liquid fluoride Thorium reactor. Dr. Weinberg called it the Thorium molten salt breeder reactor, and the reason that you've never heard of it is because Richard Nixon made a decision in 1973 that we were going to go with the liquid metal breeder reactor, and they cut funding to Dr. Weinberg's project. One of the leading congressmen in the House of Representatives at

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I don't know if it was at a public hearing or not told Weinberg to his face, he said, Alvin, if you're so concerned about nuclear safety there's no room for you in this business, and that's why we have what we have today and we're in this malaise. With the Liquid Fluoride Thorium reactor there's many benefits that would eliminate a lot of the concerns that have been expressed here this evening.

MR. BROWN: One minute left.

MR. TERRY FLOYD: Okay. One of the benefits is that the reactor is fluid. It burns 90 percent of the fuel, and it can -- it's also a multifuel reactor in the sense that it can use natural Thorium, natural uranium 238, and it can use nuclear waste, spent fuel from the LWR reactors. By the way, Dr. Weinberg has a patent on the LWR. He didn't spend 25 years trying to make another reactor because he thought that the LWR was not going to have problems. So he, like I said, he worked on this Thorium multisalt reactor, and it also can consume weapons-grade material in the weapons grade material waste stream.

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1111-1

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1111-1 As described in Appendix B, Section B.1.1.2, of this *SPD Supplemental EIS*, there are currently no plans to fabricate fuel for nuclear reactors other than BWRs, PWRs, or next-generation LWRs. Use of MOX fuel in other types of nuclear reactors would require the preparation of additional NEPA documentation.

So I encourage you to explore this, and because the liquid fluoride Thorium reactor is scalable it can be built in the size of a 40 foot container and can be located on site of where the spent fuel is being stored or the weapons grade repositories are as we speak. Probably Savannah River.

MR. BROWN: If you could summarize, please.

MR. TERRY FLOYD: They can be located on site. So you eliminate the transportation thing, and you're burning 90 percent of it. Let's get educated. Thank you.

MR. BROWN: Nancy Muse is next and Don Safer will follow.

MRS. NANCY MUSE: I have some fragmented comments tonight. During this dialogue with all the facts that have been presented and after talking to the DOE representatives, I heard two conflicting statements made: one, someone told me that the Duke experiment, number two, kind of was a dismal failure and they had some trouble extracting the rod out of the position that it had been in and they decided not to go ahead

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1111-2 cont'd

1112-1

1111-2 See the response to comment 1111-1 regarding fabrication of fuel for other types of nuclear reactors.

1112-1 As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. There are differences in nuclear reactor core physics between MOX and LEU fuel cores, but these differences are understood and can be addressed using measures such as modifications to reactivity control systems and core fuel management procedures. Tests of MOX LTAs performed by Duke Energy at the Catawba Nuclear Station demonstrated that MOX fuel containing weapons-grade plutonium performed as expected in a nuclear power reactor similar in design to TVA's Sequoyah Nuclear Plant. The need for additional testing of MOX fuel to support its use in U.S. commercial nuclear power reactors would be determined in the future by NRC as part of the fuel qualification and licensing process. For further discussion, refer to Section 2.4, Topic A, of this CRD.

One fission of uranium-235 produces about 200 megaelectronvolts or 3.2×10^{-11} joules of energy, while one fission of plutonium-239 produces about 210 megaelectronvolts, or about 3.4×10^{-11} joules of energy, about 5 percent more energy per fission. In a reactor, the fuel rod and assembly temperatures for both

with the third phase of that experiment.

I want to know the truth. Is this fuel burning hotter than the standard enriched uranium fuel because I've heard two different things said: no, that it isn't and, yes, that it does. Does it or not? Can I ask the question?

MR. BROWN: Well, just make that part of the record so that that will be answered in the --

MRS. NANCY MUSE: Okay. Thank you.

MR. BROWN: -- in the final document.

MRS. NANCY MUSE: I really have to wonder with all the facts and knowing that plutonium may be like one of the representatives said, it may not go through the skin until it has decayed and it starts to emit gamma radiation. But if inhaled and it is terrible one tiny speck can cause a cancer that is very debilitating, only a speck. I don't know how big the speck is, but it's very, very toxic and that's been well-documented.

So I have a recurring question during this dialogue that keeps haunting me, and I

44

1112-1 cont'd

1112-2

LEU and MOX fuel are managed through design of the fuel enrichments, burnable poisons, control rods, and distribution of the fuel within the reactor to control the actual fuel temperatures to acceptable values over the life of the fuel rod. Overall operating parameters for both MOX and LEU assemblies must be maintained within the operating limits established for the reactor and the operating license with NRC. As the fuel is consumed within the rod and fuel assembly, the power level and temperatures vary within the desired ranges. At refueling times, the fuel assemblies are redistributed within the reactor to help manage the power levels and ensure maximum energy return is obtained from the fuel assemblies.

On average, the MOX fuel assemblies in reactors do not operate substantially hotter than the LEU fuel. The plutonium concentration is adjusted during fabrication of the fuel assembly to result in a desired power production out of the fuel rod, as well as a fuel assembly. The reload design process determines the number of assemblies to be replaced, the uranium-235 concentration for the LEU fuel rods and assemblies and, for a partial MOX fuel reload, the plutonium concentrations needed to meet acceptable power distribution and safety limits.

The MOX core would be designed and licensed to the same operating and safety criteria as a full LEU core (e.g., same operating temperature, electrical output). The MOX core may require enhanced reactivity controls (increased soluble boron in the reactor coolant for pressurized water reactors and additional control rods) to meet the licensed operating conditions.

Used MOX fuel produces more heat over the long term than the used LEU fuel currently used at the Browns Ferry and Sequoyah Nuclear Plants. The heat from MOX fuel would not affect the ability of TVA to safely store this fuel on site and would not prevent the MOX fuel from ultimately being placed in a geologic repository or other long-term storage facility. For further discussion, refer to Section 2.5, Topic B, of this CRD.

1112-2 The danger of plutonium has been recognized since its first large-scale production in 1945. The awareness and knowledge of plutonium toxicity have resulted in DOE's use of special designs, operations, and procedural measures to protect workers and the public; such safety features and controls are or would be incorporated into the design and operation of all facilities that support surplus plutonium disposition activities. As described in Chapter 4 and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, risks to the public are expected to be minor from both normal operations and potential accidents under any proposed alternative.

can't help but think of the Iraq war and the relationship of a huge mega-corporation like Haliburton profiteering off of taxpayers through the federal government and with, you know, cronyism. So I have to wonder tonight if this situation is mostly contrived by big players behind the scenes in DOE, TVA, two federal government agencies, and if they are creating a situation which allows a mega-corporation like Shaw AREVA to profiteer at our expense. It's very disturbing.

We've seen this happen. People know it happens but it keeps happening, and I don't want it to happen. I do not want a plant like Browns Ferry -- I can't speak too much about Sequoyah. I do know a few facts, but Browns Ferry, I used this in the last TVA meeting, the Associated Press investigative report, just imagine that people still do some investigative reporting, said that -- to make a long story short that these plants simply are not designed to have a life extended. We have been coming to the Browns Ferry NRC meetings and know there are ongoing problems. The safety culture it sounds good but while

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1112-3

1112-3 DOE does not agree with the commentor's characterization of DOE's interactions with TVA and AREVA. DOE's and TVA's work with AREVA on MFFF is subject to the requirements of Federal contracting regulations and other applicable requirements, and MFFF must be licensed by NRC. DOE and TVA contracting strategies for surplus plutonium disposition activities are outside the scope of this *SPD Supplemental EIS*.

1112-4

1112-4 TVA reactors are licensed by NRC to operate safely. The Browns Ferry Nuclear Plant's operating licenses have been extended based on detailed analyses and review by NRC. NRC would perform a comprehensive safety review before MOX fuel could be used. Ultimately, NRC would make any decisions related to future use of MOX fuel in TVA reactors as a result of this review process. TVA will continue to fulfill its responsibilities to its customers and neighbors to operate its reactors within its NRC-approved operating licenses whether it is using a partial MOX fuel core or a full LEU fuel core. As described in Appendix I of this *SPD Supplemental EIS*, the impacts from the use of a partial MOX fuel core are not expected to be meaningfully different from the impacts of reactor operation using a conventional full LEU fuel core.

they're talking about the safety culture, malfunctions are still occurring. And like I call it not really the safety culture but the secret culture. They've kept things secret even during these meetings. Things have happened and we don't hear about it until weeks or months later in the paper. While they are talking about the safety culture they're keeping secrets.

So another point to be made that's already been made but I would like to reiterate, that the more this very toxic plutonium is transferred, handled, reprocessed, moved around the country from Los Alamos to Savannah River or back and forth the more risk it is going to find it's way out into the environment and the more risk -- I mean, I had one of the DOE representatives try to describe to me tonight how do they transport it. They have it in shipping containers I think he said and it's an armored vehicle and there's lots of security. But that's still not good enough. This stuff is around forever. It's not good enough, and we don't want it.

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1112-4 cont'd

1112-5

1112-5 Transportation risks are analyzed for all alternatives proposed in this *SPD Supplemental EIS*, including the threat of theft and diversion of radioactive materials. In developing the proposed action and reasonable options for pit disassembly and conversion and surplus plutonium disposition, DOE has determined that transportation of plutonium materials between sites cannot be avoided. The alternatives in this *SPD Supplemental EIS* were developed recognizing that plutonium materials are currently stored at multiple DOE sites and individual sites have their own specific capabilities with respect to pit disassembly and conversion and plutonium disposition. Appendix E of this *SPD Supplemental EIS* presents the transportation analysis methodology, assumptions, and results. The packaging to be used would meet all applicable regulatory requirements, as summarized in Appendix E, Section E.3. As presented in Section E.12, for all alternatives, it is unlikely that the transportation of radioactive material and waste would cause an additional fatality as a result of radiation, either from incident-free operation or postulated transportation accidents.

As shown in Chapter 4, Table 4–22, the radiological risks to the public from shipments of radioactive materials would be comparable under all alternatives, with no LCFs expected among the transportation crew or general public along the transportation routes.

And I don't know if you people in DOE are just pigeonholing into this nuclear division, but this money could be spent on solar farms. Germany is doing it and their latitudes are farther north than ours. We need to spend this money on renewable energy and quit pandering to mega-corporations like AREVA and Shaw, and who knows what money is being transferred from one good old boy to another and at our expense. Please do not go forward with this MOX fuel project.

MR. BROWN: Thank you. Don Safer and Kirk Sorensen will be after Don.

MR. DON SAFER: Hi, I'm Don Safer from Nashville with the Tennessee Environmental Council and the Bellefonte Efficiency Sustainability Team. Thank you for the opportunity. I was here a couple of years ago. Basically going to say the same thing. You can take that but I'll do it again.

This is a classic government boondoggle. It has been from the get-go. Even during the height of the cold war when all of this plutonium was made it was a great expense both to the federal government, to us

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the taxpayers, and to the environment. Read about the environmental troubles around Rocky Flats that was closed down. It was actually raided by the FBI and EPA and it was shut down. But that's where these fish were put together, many of them.

And so at great expense with private contractors, big business like the previous speaker said, this is a government handout to big business in a big way.

And the plutonium has been talked about how dangerous it is, how awful it is, breathing it, but the expense of it. I did a little Google search today. They said the free market if you could actually buy plutonium it would be $4,000 a gram. That works out to be $3,584,000,000 a ton that our government paid to produce this stuff, and now the insanity is we have to spend billions to take it apart. And putting it into this fuel is yet another, like I say, government boondoggle.

The free market has spoken on this. When it was first proposed in the late nineties many utilities, private utilities

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1113-1

1113-1 Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

Under the PMDA (USA and Russia 2000), which entered into force in 2011, the United States and the Russian Federation agreed to each dispose of at least 34 metric tons (37.5 tons) of excess weapons-grade plutonium in nuclear reactors to produce electricity, or by any other method as may be agreed to by the parties in writing. Russia plans to irradiate its MOX fuel in fast reactors (BN-600 and B-800) under certain nonproliferation conditions. To that end, Russia has successfully irradiated 21 prototypic MOX fuel LTAs in its BN-600 fast reactor; completed over 50 percent construction of the BN-800 fast reactor; completed formal siting of its MOX fuel fabrication facility; established an integrating contracting office for implementation of PMDA activities; and actively participated with the United States and the IAEA in negotiating a verification agreement that will enable the IAEA to independently verify that the objectives of the U.S.–Russian Plutonium Management and Disposition Agreement are met. More information on the PMDA is located on the U.S. State Department website at www.state.gov/r/pa/prs/ps/2010/04/140097.htm.

said it was interested. Now it's just down to TVA. And I ask you that's not the free market, TVA. TVA has done some wonderful things. I think it can do wonderful things in the future if it adopts energy efficiency and renewable energy, then it's a perfect vehicle to do that. It needs to get off this nuclear kick. TVA is the only utility in the United States that produces Tritium which is radioactive hydrogen for use in nuclear weapons for the DOE. TVA wants to get a contract from DOE to develop small modular reactors. So TVA is not without -- DOE is not without leverage on TVA. The relationship between TVA and DOE goes to the Manhattan Project when the secret city of Oak Ridge developed the uranium, the enriched uranium to build the bomb and drop it on Hiroshima, and that relationship continues until this day.

So if you think it's an independent decision by TVA think again. The problems with Tritium production at the reactor at Watts Bar are documented. Again the free market has spoken.

MR. BROWN: One minute.

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MR. DON SAFER: Thank you. This program came from an agreement with the Russian or the Soviet Union at the time to take this bomb material down, which is good and vitrification has been brought up as the best approach. But it's important to note that the Russians are not using this fuel in these types of reactors. They want to use it in a breeder reactor where they can make even more plutonium. So we don't have to do this in a MOX form. We don't have to get rid of this plutonium in MOX form and burn it in these reactors that have already been talked about how questionable their safety is.

And, again, just the last thing I'll say is that renewable energy is and energy efficiency can really do it. The big utilities, the coal companies, the nuclear companies are fond of saying, oh, they just can't do it. Well, the National Renewable Energy Lab in Colorado, it's a federal agency or federally funded, has just come out with a study that says 80 percent of our electricity by 2050 can be brought to us reliably through renewable energy. It can be done. TVA needs

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1113-2

1113-2 As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS*, but DOE is evaluating alternatives for the disposition of 13.1 metric tons (14.4 tons) of additional surplus plutonium.

to lead the way to deal with a perfect vehicle to do that, and right now TVA is looking for a new board chairman. Every one of us needs to contact -- not a new board chairman, a new CEO. Every one of us needs to contact the board and say we want TVA to go in a different direction and lead the way to an energy future that we can Be proud of. Thanks.

MR. BROWN: Thank you.

Kirk Sorensen. Jackie Posey will follow.

MR. KIRK SORENSEN: Hi, my name is Kirk Sorensen. I live in Madison downwind from the reactors at Browns Ferry. I wanted to start out and commend the leadership here today for your patience and your politeness. I know a lot of people have impugned you. That's not fair. I think what you are doing is you're trying to do the best you can.

I'm not here to speak on behalf of MOX, but I am here to speak on behalf of the benefits of nuclear fuel. People said we don't need nuclear, we don't want nuclear. I completely disagree. There are many of us in Huntsville and Madison who enjoy clean air and

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great benefits from nuclear energy, and I for one am very, very glad we have nuclear energy.

Now, are the Browns Ferry plants old? Yes. Yes, they are. Is this the best place to try MOX fuel? I'm really not here to talk about that. What I would like to talk about, though, is some long-term solutions to plutonium, and we have the 34 tons of weapons-grade plutonium which is the subject of this MOX but then we have hundreds and hundreds of tons of reactor grade plutonium that is being produced in our reactors every year.

Plutonium does not go away on its own. It has a number of isotopes, the most famous of which is plutonium 239 with a 24,000 year half-life.

If you want to get rid of plutonium, vitrifying it and throwing in the ground is not the way to get rid of it. The way to get rid of plutonium if that is your desire is to consume it in a nuclear reactor. Plutonium is not evil nor good. It does not have characteristics. It is what we choose to do with it.

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Now, plutonium was introduced to the world in a horrible way in Nagasaki many years ago, but plutonium also has the potential to give great benefit to the world. I think we are making a mistake by trying to demonize something that has the potential to give us cleaner air and a better quality of life.

I worked at NASA ten years and I worked on space power systems, and most of that time I worked on solar. I learned an awful lot about how solar works. Solar is not a replaceable alternative to baseload energy like we have now. You may want to wish it so but it's just not the case. If we want to have reliable, clean energy nuclear is the best way to do it. Now, I said nuclear, not necessarily the way we are doing nuclear now.

Terry eluded to a better nuclear technology based on fluoride salts done by Alvin Weinberg at Oak Ridge National Labs. This has great potential to solve the issues connected with both weapons and reactor grade plutonium because it does not require expensive fabrication of the MOX pellets. Plutonium can be fluorinated into a salt which

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1114-1 **1114-1** As described in Appendix B, Section B.1.1.2, of this *SPD Supplemental EIS*, there are currently no plans to fabricate fuel for nuclear reactors other than BWRs, PWRs, or next-generation LWRs. Use of MOX fuel in other types of nuclear reactors would require the preparation of additional NEPA documentation.

can be used in a liquid fluoride reactor. This is a safe reactor that consumes the material at low pressure. There's no possibilities of meltdown. There's no possibility of explosion.

Most of what you're upset about Browns Ferry has to do with the nature of the reactor, not the nature of the fuel. This fuel can be used effectively if we choose to do so, and the fluoride form is a cheap and inexpensive way to prepare for plutonium for ultimate destruction.

Now, let me tell you what it can mean in these machines. You can get rid of it permanently. If that's what you want you can do it. These reactors when they run on fluoride they don't make any more plutonium. So if we build these reactors and use them we would not be adding to the list of plutonium. We could actually get rid of all the plutonium if that's what we wanted to do and still have a nuclear-powered world.

This technology was demonstrated with plutonium trifluoride fuel at Oak Ridge in 1969 successfully, and I think this is

1114-1 cont'd

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something that the NNSA should be looking at as an alternative to MOX because it will save you a lot of money and it will increase safety. Thank you.

MR. BROWN: Thank you.

Okay. Jackie Posey. Larry Pollock will be next.

MRS. JACKIE POSEY: Well, if what he said is true I would recommend that you all pay close attention to that. I am a retired elementary school teacher, and because of the children that's the reason that I'm here. I was at the Savannah River at one of their hearings -- I'm not sure how many they've had -- several years ago. I guess it was probably a couple of years ago, and it was very similar to this one in a number of ways.

My husband tells me that these are dog-and-pony shows, and, you know, I really am afraid that may be what this really is is a dog-and-pony show. We've got two people here from TVA. Sometimes it's kind of like beating your head against a brick wall. So many of the things that have been said here tonight are very important things. I have a question,

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1114-1 cont'd

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and I would like for you all to show me by a show of hands, how many of you all have seen the documentary The Children of Chernobyl?

(Whereupon, hands were raised.)

MRS. JACKIE POSEY: Everybody needs to watch it. Y'all watch it, Google it. There's a new revised version and because -- it's not revised. It's more now a current version of it. But the children of Chernobyl, that's why I'm here. I live on the Tennessee River. I'm downstream right outside the ten mile radius of Browns Ferry. I've been to numerous meetings like this where we've gotten to say our thing about it, but nuclear -- there's got to be a better way, and I will always oppose nuclear.

When you all were giving your statistics, you look at The Children of Chernobyl, and if that happens to one child that's the reason right there not to do it. The deformities are awful beyond belief and this happens. And, you know, people die and we can do better. I have to believe that we can do better with other forms of energy.

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1115-1 **1115-1** DOE acknowledges the commentor's opinion.

1115-2 **1115-2** As discussed in Appendix J, Sections J.1 and J.2, of this *SPD Supplemental EIS*, continued assurance of the safe operation of these plants is the responsibility of the plant operator which operates under the independent regulatory oversight of NRC, including NRC regulations and license conditions. If the plant operator were to make a decision to use MOX fuel, it would be the joint responsibility of the plant operator and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely. For further discussion, refer to Section 2.5, Topics A and B, of this CRD.

And, like I said, if what he says is true, but it's really strange that, you know, we've never heard anything about that.

Let's see. What else was it I had down here to say? Oh, France. Also there have been some real problems in France with nuclear. Germany is phasing it out, and there's talk of France phasing it out also, and if they can we can.

MR. BROWN: Thank you.

Larry Pollock is approaching the podium. Charles Rose will be after you.

MR. LARRY POLLOCK: Good evening. My name is Larry Pollock, and I'm a concerned citizen. I live within 20 miles of Browns Ferry Nuclear Plant in Athens, Alabama. I work at Calhoun Community College which is within seven miles of the nuclear plant. This is the same plant that in May of 2011 received a red safety rating for having not discovered a defective valve for the previous 18 months, which if there had been an emergency a disaster may have occurred. Unfortunately as of today that issue has not been resolved.

The VP at Browns Ferry Nuclear stated

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1115-2 cont'd

1116-1

1116-1 It is NRC's responsibility to regulate the operation of nuclear power reactors in the United States. However, as a courtesy to commentors, TVA provides the following discussion of safety issues at the Browns Ferry and Sequoyah Nuclear Plants.

The Browns Ferry Nuclear Plant is designed and maintained to meet stringent NRC safety requirements for nuclear power reactors. Safety-related equipment is regularly inspected, maintained, and monitored in accordance with procedures and vendor recommendations and replaced well before the end of its scheduled operating life. As discussed in Appendix J, Sections J.1 and J.2, of this *SPD Supplemental EIS*, continued assurance of the safe operation of these plants is the responsibility of the plant operator which operates under the independent regulatory oversight of NRC, including NRC regulations and license conditions. If the plant operator were to make a decision to use MOX fuel, it would be the joint responsibility of the plant operator and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely. For further discussion, refer to Section 2.5, Topics A and B, of this CRD.

Browns Ferry upgraded its fire protection program in response to the NRC requirements defined in 10 CFR 50 Appendix R, issued in 1980. However, the fire protection program relied upon a substantial number of OMAs to assure safe shutdown of the reactors in the event of a design-basis fire. As industry experience with nuclear plant fire protection evolved, these previously allowable OMAs were disallowed, resulting in notice of violations to Browns Ferry for the fire protection program. To address these findings, TVA initiated actions to reduce the reliance upon OMAs and change the fire protection program to voluntarily comply with the 2001 NFPA Standard 805. A number of changes have already been completed to reduce the risk of damage due to a fire. When all of the NFPA Standard 805 changes are complete, the risk of core damage due to fire will be reduced to a level consistent with other design-basis accident risks (see TVA presentation to NRC from a public meeting on December 8, 2011, entitled *BFN Fire Risk Reduction and NFPA 805 Transition*, available at http://pbadupws.nrc.gov/docs/ML1135/ML11353A319.pdf). For further information, refer to Section 2.5, Topic A, of this CRD.

on June the 22nd of 2012 that the plant is still not ready for the third and final inspection. On June 22nd of 2012 an article by the News Curious TVA spokesman Ray Goodman discussed the issuance of a black finding that followed the red finding and that when Browns Ferry plant operators were quizzed concerning fire containment issues it was discovered that the response demonstrated a lack of knowledge in fire containment prevention. This comes five months after TVA and Browns Ferry had implemented procedures for such an event. Yet the following statement was issued by TVA as quoted in the News Courier article dated July 10th, 2012, and I quote, "TVA's top priority is the safe operation of its nuclear plants. We are upgrading our fire protection systems at Browns Ferry as part of an improved fire protection plan and an official statement provided by the utilities. TVA promptly addressed the issue and the cause related to the issue. We have an improved plan for Browns Ferry's overall performance and will submit an improved fire protection plan to the NRC for review by March 2013." TVA only

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1116-1 cont'd

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addressed the issue after inspection by NRC. Where's the responsiveness for public safety. TVA's attitude appears to be if we write it down it will happen. This is the same nuclear plant that in 1975 a worker caused a fire by using a candle as a light source while performing an inspection. This is the same nuclear plant today 37 years later that still does not meet the fire requirements set by the NRC. In 37 years it has not complied.

May I remind you that the great pyramids of Egypt did not take 37 years to build with the lack of technological innovations we have today. On June 22nd, 2012, NRC's Deputy Administrator Leonard Worth made this statement at a public meeting concerning the safety at Browns Ferry Nuclear Plant when asked about the lack of competence and compliance and progress over the past 37 years concerning this issue and I quote, "There are some things we have not gotten across the goal line and fire safety is one them." He said, "We've come a long way since that fire and we've not had another fire at Browns Ferry since because of such -- because

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1116-1 cont'd

1116-2

1116-2 See the response to comment 1116-1 regarding safety modifications to the Browns Ferry Nuclear Plant. NRC is continually inspecting and assessing the safety of the Nation's nuclear power reactors and issuing Notices of Violation to help assure these plants continue to operate safely. As discussed in Appendix J, Sections J.1 and J.2, of this *SPD Supplemental EIS*, the continued assurance of the safe operation of these plants is the responsibility of the plant operator, which operates under the independent regulatory oversight of NRC, including NRC regulations and license conditions.

of some of the things that we have implemented." When the deputy administrator of the NRC issues an analogy of the safety of a nuclear plant and the disaster that could possibly occur, it could involve multiple deaths, multiple casualties, untold environment damage, property loss, displacement of masses of individuals for 25 to a 50 mile radius like in the situation with Fukushima disaster and for decades in the Russian Chernobyl. When he addresses that in terms of a game of football, is it any wonder that the public has no trust in his commitment to policing the nuclear industry.

MR. BROWN: One minute left.

MR. LARRY POLLOCK: Let me go over one other thing just real quickly. Many of you may or may not know that on July the 28th, early morning there was a break-in at the uranium storage facility located at Y-12 National Security Complex in Oak Ridge. Whenever I think I have a break-in like that I'm thinking about Bruce Willis and Die Hard. I'm thinking about Tom Cruise and Mission Impossible. I'm talking about people who are

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1116-2 cont'd

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just really highly trained. The hammering -- and I'm reading to you from the Center For Public Integrity. "The hammering of the wall on America's premier storage vault for nuclear weapons grade uranium in pitch darkness six weeks ago was loud enough to be heard by security guards, but they assumed incorrectly that workmen were making an after-hours repair and ignored it. Minutes earlier a perimeter camera had caught the images of intruders, not workmen, breaching an eight foot high security fence around the sensitive facilities outside Knoxville, Knoxville, Tennessee. The guard operating the camera had missed it. A different camera stationed over another fence also breached by the intruders was out of service, and a defective protective force had ignored it for six months.

Now, in theory the pounding might have been the work of a squad of terrorists preparing to plant an explosive, powerful explosive in the wall of the highly-enriched uranium materials facility. This half billion dollar vault that stores the making of more than ten thousand nuclear bombs. Instead it

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was the group of three peace activists including an 82 year old nun armed only with flashlights and binoculars, bolt cutters, bread, flowers, a Bible, and several hammers. These three individuals -- "

MR. BROWN: If you can submit that.

MR. LARRY POLLOCK: "-- were 57 years old, 63 years old, and 82 years old got into a plant that the United States government paid over $5,000,000,000 to an outside, independent United Kingdom company to protect you and I, and these three individuals were able to breach that security."

MR. BROWN: You can submit that for the record. Thanks.

Okay. Charles Rose. Kirk Dorius is after Charles. Go ahead.

MR. CHARLES ROSE: My name is Charles Rose. I'm with the Shoals Environmental Alliance. I live in Sheffield, Alabama, probably 40, 45 miles downstream from Browns Ferry. I'm here to speak against the use of mixed oxide fuel in TVA's aging reactors. I read that the Nuclear Regulatory Commission regards mixed oxide as a new fuel form which

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1117-1

1117-1 The Browns Ferry Nuclear Plant is designed and maintained to meet stringent NRC safety requirements for nuclear power reactors. Safety-related equipment is regularly inspected, maintained, and monitored in accordance with procedures and vendor recommendations and replaced well before the end of its scheduled operating life. As discussed in Appendix J, Sections J.1 and J.2, of this *SPD Supplemental EIS*, continued assurance of the safe operation of these plants is the responsibility of the plant operator which operates under the independent regulatory oversight of NRC, including NRC regulations and license conditions. If the plant operator were to make a decision to use MOX fuel, it would be the joint responsibility of the plant operator and NRC to establish the operating conditions and controls that would ensure the MOX fuel could be used safely. For further discussion, refer to Section 2.5, Topics A and B, of this CRD.

As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. There are differences in nuclear reactor core physics between MOX and LEU fuel cores, but these differences are understood and can be addressed using measures such as modifications to reactivity control systems and core fuel management procedures. Presently available information and analysis indicate that, with minor modifications, the Browns Ferry Nuclear Plant has the capability to safely utilize MOX fuel. For further discussion, refer to Section 2.5, Topics A and B, of this CRD.

has never been used commercially. It's a fuel that has never been proven safe inside of reactors, and it's predicted to burn hotter than normal. And where does -- where does DOE want to burn this new, unproven fuel? In Browns Ferry with its aging Fukushima style reactors.

In a few years the three reactors there at Browns Ferry are going to be 40 years old. I was reading my local paper this morning, the Times Daily, and this article caught my attention. It's entitled, "Browns Ferry to add 100 workers," and there were several quotes in here from the Tennessee Valley Authority's chief nuclear officer Preston Swafford, and the article it mentions the fact that all three Browns Ferry units are operating at a degraded performance level. Two and three have been issued a white finding indicating problems of low to moderate safety systems, and, of course, everyone knows unit one has been issued the red finding, which is its harshest sanction. NRC's harshest sanction short of closing a plant down.

So that's where this new unproven fuel

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is supposed to go. Mr. Swafford had a couple of comments, and one was he said, "The NRC findings were in part a consequence of the effort to improve the plants and more findings are possible." More findings are possible? He said quote, "It is not unusual in a turnaround for it to get pretty dark and gray before the light starts to shine through." He also said quote, "It takes years to uncover latent issues that weren't addressed like they should have been."

So what's in the future here at Browns Ferry and we're going to use this unproven fuel in these forty-year-old reactors. One other comment by Mr. Swafford. He said -- oh, he did say, "TVA is committing few resources to this mixed oxide issue. TVA is really not looking at this." Here's one final quote from Mr. Swafford: Quote, "I'm not going to get caught up in the middle of that fray," speaking of the M-O-X. "It would be nothing but a distraction for me. It takes my eye off the ball." And that's who DOE is entrusting with this new, unproven fuel.

It scares me to death, and I think

64

1117-2 **1117-2** DOE acknowledges the commentor's opinion.

mixed oxide fuel is an idea whose time has not come. Thank you.

MR. BROWN: Okay. Barbara Paul will follow Kirk.

MR. KIRK DORIUS: Good evening. My name is Kirk Dorius. I'm a resident here in Huntsville, Alabama, and you already heard from my colleague Kirk Sorensen. We are both working on molten salt reactor development here in Huntsville, and molten salt reactors really are a different kind of nuclear. The lady that spoke after Kirk Sorensen said, "I will always oppose nuclear." Well, unfortunately nuclear has become largely synonymous in the public's mind with solid uranium fueled water cooled reactors, and that is what a lot of people equate nuclear to mean.

There are lots of ways to do nuclear. The original pioneers thought of many, many different fuel forms, fuels, reactor coolants, and we have largely settled into light water reactors in this country, and they've had a great performance record despite some of the instances that have been brought up. There

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1117-2 cont'd

1118-1

1118-1 Since there are currently no domestic, commercial accelerators using this technology and none are currently under construction, this technology is not a reasonable alternative within the time period necessary to implement the Surplus Plutonium Disposition Program objectives.

are differences in a liquid fuel form, and molten salt reactors are very advantageous for the issues that seem to have so many emotions running high tonight, that is, what do we do with the long-lived actonites, specifically plutonium 239.

Molten salts runs on fluoride salts that are tremendously chemically stable. They can dissolve uranium 235, uranium 233, plutonium 239, and Thorium all very stably in the salt and they can consume them fully without generation of trans.

Now, the other nice thing about these reactors is they run at low pressure. There's no stored energy to drive an atmospheric release. The coolants are very chemically stable. There are no stored chemical reactivity to drive an atmospheric release.

Now, we've had discussions with decision-makers in the UK about this very issue because they have 114 tons of reactor grade plutonium that they have extracted from theirs and the Japanese spent fuel, and we -- Mrs. McAlhany led off by saying the cold war has left us a legacy of fissile material, and

66

1118-1 cont'd

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in this context we always use legacy in the derogatory term. But in discussions we've had in the UK and elsewhere, there is a positive side to legacy when it comes to fissile material and, that is, in this type of reactor fissile material doesn't just represent a one-time or worse a partial one-time consumable. Fissile material represents power generation capacity indefinitely. How is that? Because this type of reactor does not consume the original fissile material. It uses fertile materials, another class of nuclear fuel that is largely untapped in this country. In fact, we have 400 times as much fertile material as fissile material naturally, and the key to accessing that 400 times of natural energy resources that our earth has been blessed with is fissile material. Without fissile material you can't access the benefits of fertile. If we consume once the fissile materials, we have reduced our power generation capacity forever more. On the other hand, if --

MR. BROWN: One minute.

MR. KIRK DORIUS: Yes. On the other

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hand, if we use that fissile material in these molten salt reactors, it unlocks the fertile reserves to be the consumable. In the context of the combined 114 tons of plutonium in the UK and 35 tons that's already ready from the weapons program, that 115 tons of fissile material could represent not a few tens of gigawatts once but 150 gigawatts of power production capacity indefinitely with abundant fertile materials as the consumable instead. To put that in context, that's more than twice the entire power consumption of the UK right now.

I would encourage you to view some of the many presentations that my colleague Kirk Sorensen has posted on the internet. They get over 1,000 views a week worldwide. We have presented to many utilities, many government agencies. We will be in DC presenting to some of your colleagues in the DOE and the NNSA in mid-October. We would be happy to visit you. We would be happy to visit folks at TVA as well. There's lots of documents available on our website. Oak Ridge documented their research and 22,000 hours of very successful

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operation of their first-of-a-kind prototype.

MR. BROWN: Okay.

MR. KIRK DORIUS: We are developing a commercial version and invite you to learn that there are other nuclears. Thank you.

MR. BROWN: Thank you.

MRS. BARBARA PAUL: Hello again.

MR. BROWN: Pull the microphone down. Sounds like my backbone.

MRS. BARBARA PAUL: I don't know if I'm fissile or fertile. Anyway, hello. My name is Bobbie Paul, and my friend Dianne Valentin and I drove up today from Atlanta. Unfortunately I'm glad we're not in charge of the mics because we left at 2:30 and got terribly lost. So we're very glad to be here.

We missed your presentation. I was at the other presentation at North Augusta, but I really wanted to come up here because I've heard about Browns Ferry in this region. We work with a lot of people in the room, and I thank you all for sharing so much of your concern. Some of these people I've met at conferences.

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I'm someone who's been following nuclear and MOX for sixteen years. I live in Atlanta, Georgia, and I've been working, looking at Savannah River Site watchdogging it. And when I add -- it seems kind of like whack-a-mole with MOX where it keeps coming up, and I couldn't believe it was coming up again. Now it's going to be, as Tom said, another 12 years, I think I might be taking a dirt nap by the time MOX actually happens.

I'm deeply concerned about it because at Savannah River Site I head a group called Women's Action for New Directions, commonly known as Georgia WAND, founded as Women's Action for Nuclear Disarmament. Dianne is our board chair. Thank you for being here tonight.

We've been concerned about tritium and plutonium forever at Savannah River Site. As you know, we get the rods from Watts Bar. We're still in the bomb-making business down there. We still extract the tritium for our bombs to give them the big yield, the big boost. We've been worried about cleaning up Savannah River Site. As you know eight towns

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were moved to make Savannah River Site, the bomb plant, and we also remember in '77 during President Carter the promise that was made that we wouldn't ever be using weapons-grade plutonium in commercial nuclear reactors. And here we are some 30 years and some more later saying, okay, now it's going to be we're changing the game. It's now nuclear nonproliferation. We can take this thing that we made enormous amounts of money from, and, Don Safer, thank you, I want your stats on the amount of plutonium. This plutonium is worth billions, and I think this is all about money.

This is protecting our investment, and that's why we can't stand to be thinking about vitrification and immobilization, which is what my organization and as part of the Alliance for Nuclear Accountability we support.

I think MOX is a really bad idea, and one thing that I would like to just bring up that hasn't been mentioned much tonight are the people who live around it. As you know Savannah River Site is 310 square miles

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1119-1

1119-1 Chapter 3, Section 3.1.6.3, of this *SPD Supplemental EIS* summarizes the results of health effects studies conducted near SRS. The results of annual environmental monitoring are presented in publicly available reports posted at www.srs.gov/general/pubs/ERsum/index.html. The analysis presented in Chapter 4, Section 4.1.2.1, show that the risks to the general population due to radiological air emissions from normal operations of the proposed surplus plutonium disposition facilities would contribute little to the cumulative health effects among the offsite population. The same is true for the minority and low-income populations in the potentially affected area. Chapter 3, Section 3.1.11, describes minority and low-income populations near SRS. Section 4.1.6 analyzes environmental justice impacts of the disposition alternatives and the options for pit disassembly and conversion at SRS and concludes that (1) minority populations living near SRS would not be exposed to elevated risks compared to nonminority populations living in the same area from the proposed activities and (2) the risks associated with these activities are small. The analysis has shown that risks to the public are expected to be minor from the proposed actions at SRS. No LCFs are expected for the offsite population, including minority and low-income populations, as a result of the normal operations of the proposed surplus plutonium disposition facilities. For further discussion, refer to Section 2.6, Topic A, of this CRD.

around. It sits 26 miles on the Savannah River and it is in South Carolina but it's directly across the river from Augusta, Waynesboro, Burke County.

The downwinders and the downstream people in Burke County are mostly poor. Fifty-two percent of the whole county is African-American. When they moved the eight towns to make Savannah River Site they never even told the people in Burke County that they might have something to be concerned about: the air. I would say that from Savannah River Site the river itself, the crops, the cattle, the wells, all of that.

People around these places have suffered a lot, and it's really interesting to hear your stories about Browns Ferry. That's why we wanted to come. It really is amazing to me that we're taking these billions of dollars, this 17.5 billion that this MOX facility has gone from three billion to five billion and continues to go on and on and on, and yet our Department of Energy can't even see fit to give $600,000 or a million dollars to provide sampling, monitoring, and testing

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1119-1 cont'd

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for the people who live around the Savannah River Site in Georgia. We've been fighting for that for --

MR. BROWN: One about a minute left.

MRS. BARBARA PAUL: -- eight years.

Thank you.

The environmental injustice issues in this book are sorely lacking. There's many of the impacts that are sorely lacking, and I think it's about time that DOE started thinking less about the contractors, the boosters, the international, Westinghouse, Mitsubishi, Honeywell, Toshiba, and all of them and start thinking about really cleaning up this waste, really taking care of the citizens that live up here. That is the mission at the Savannah River Site. We don't want this stuff. We don't want it coming here to your reactors. It doesn't have -- we have no customers. NRC hasn't given it a license. It's ridiculous. And although the five and a half hours was long, I'm glad I'm here tonight and we made it in time for the comments. Thank you for listening.

MR. BROWN: That brings an end to those

1119-1 cont'd

1119-1 cont'd

1119-2

1119-2 Disposition of surplus plutonium as MOX fuel is a reasonable alternative, requiring a full evaluation of potential environmental impacts per NEPA, regardless of whether a specific utility has been identified to use MOX fuel today. Accordingly, this *SPD Supplemental EIS* evaluates the environmental impacts of irradiating MOX fuel in commercial nuclear power reactors (see Appendix I, Section I.2). Use of MOX fuel in one or more domestic commercial nuclear power reactors would be under the terms of NRC license(s). NRC would only issue a license agreement or license amendments to each applicable reactor operator when it is satisfied that the reactor can operate safely and within all design parameters. For further discussion, refer to Section 2.4, Topic A, of this CRD.

who signed up to speak tonight. I would like to thank everybody who is in attendance and commented, and we are adjourned. Thanks very much.

(Whereupon, the hearing concluded at 8:30 p.m.)

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REPORTER'S CERTIFICATE

I, TOBY CHAMBERS, CSR No. 303, Certified Shorthand Reporter, certify;

That the foregoing proceedings were taken before me at the time and place therein set forth;

That the testimony of the witnesses, the questions propounded, and all objections and statements made at the time of the hearing were recorded stenographically by me and were thereafter transcribed;

That the foregoing is a true and correct transcript of my shorthand notes so taken.

I further certify that I am not a relative or employee of any attorney of the parties, nor financially interested in the action.

I declare under penalty of perjury under the laws of Alabama that the foregoing is true and correct.

Dated this 24th day of September, 2012.

TOBY CHAMBERS, C.S.R. No. 303

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U.S. DEPARTMENT OF ENERGY

DRAFT SURPLUS PLUTONIUM DISPOSITION
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

CORRECTED TRANSCRIPT
10/12/2012

PUBLIC HEARING

DATE: September 18, 2012

5:30 P.M.

Northern New Mexico College
Española Campus
Center for Fine Arts Building
921 North Paseo de Oñate
Española, NM 87532

Holmes Brown, Facilitator

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U.S. DEPARTMENT OF ENERGY
SURPLUS PLUTONIUM DISPOSITION
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

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EXHIBITS RECEIVED FROM COMMENTATORS

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FORMAL COMMENTS FROM PUBLIC HEARING
ON SEPTEMBER 18, 2012

Northern New Mexico College
Center for Fine Arts Building

(Meeting in session at 5:30 p.m.)

MR. BROWN: Okay. If you will take your seats, we will get started with the public comment segment. Now it's time to begin the informal comment segment of this hearing. Before we start, I would like to introduce the Congressional staff who are in attendance to hear public comments on this important issue. Michael Lopez is here from Senator Udall's office. He is waiving at us in the back area. And Matthew Roybal with Congressman Ben Ray Lujan's office is here. And Rebecca Montoya with Senator Bingaman's office.

So to continue, this is your opportunity to provide DOE with your comments on the content of the Draft Supplemental EIS. Our court reporter for tonight is Janice Murphey, who will transcribe your comments. Let me review a few ground rules for formal comments. Please step up to the microphone over there, when your name is called, and introduce yourself, providing an organizational affiliation where appropriate. If you have a written version of your statement, please provide a copy to the court reporter after you have

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completed your remarks.

I will call two names at a time, the first of the speaker, and the second of the person to follow. In view of the number of people who have indicated interest in speaking this evening, please confine your public statement to four minutes. I will let you know when you have a minute left by holding up this sign. If you don't happen to be glancing this way, I will also give you a verbal reminder.

And I don't really mean to restrict anybody's right to speak by providing this sort of limit, but I've run a number of meetings, and I find that if we run over time, then folks who signed up at the end tend to have other obligations and such and end up leaving. And I want to make sure everybody who has made the effort to come out and signed up to speak gets an opportunity to speak tonight. But, again, as was clear from the last slide, all of your comments count equally, whether presented verbally tonight or presented in the other fashion. So if four minutes seems a little short, please summarize your key points, and you may submit the remainder of your statement and it will count equally.

Again, a reminder, Arturo Sandoval, who is down here in front, is available to assist anyone who would

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like to present their testimony in Spanish. Sachiko McAlhany will be serving as the hearing officer during this formal comment segment, but will not be responding to questions or comments.

So with that by way of introduction, let me call on the first speaker. Joe Martz is signed up first and Dave Clark will follow Joe.

MR. MARTZ: So thank you very much and good evening. My name is Joe Martz. I'm a plutonium scientist at Los Alamos speaking tonight as a private citizen. I have spent a part of my career engaged with the technical challenges of nuclear weapons dismantlement, specifically pits. I support the preferred alternative proposed here. A portion of the work under the preferred alternative will be conducted at Los Alamos, much of it by my colleagues. I know these men and women, and they are truly exceptional, many of them having devoted decades to ensuring a safe and environmentally responsible dismantlement of pits. Los Alamos uniquely possesses the expertise, along with the facility and capability to ensure the safe recovery of plutonium from pits.

I also support the recommendation that excess plutonium be used in the production of mixed uranium/plutonium oxide fuels -- also known as MOX --

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1200-1

1200-1 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

for use in nuclear power production. I note that this is the only alternative among those proposed which truly destroys the plutonium, rendering it unusable for weapons.

I would like to offer one piece of constructive criticism with respect to the Supplemental EIS. In both your public presentation and in the EIS itself, you reference the risk due to radiation exposure in the former of the latent cancer fatalities, or LCFs. You state that the preferred alternative will result in between 0 and some small number of latent cancer fatalities, between 1 and 4.

I have reviewed the EIS and carefully listened to public comments from prior hearings regarding this issue of latent cancer fatalities. I have obtained and read the supporting references for these statistics, and I suggest that your use of LCFs is taken out of context of the intended use. The LCF number is based upon a recommendation that for comparative risk assessment a figure of 0.0006 cancer fatalities be used for each person-REM of radiation exposure. And I know that's a lot of small numbers. For illustrative purposes, this number can be used to calculate the number of latent cancer fatalities for radiation due to naturally-occurring radiation in both New Mexico and

1200-2

1200-2 See the response to comment 1200-1 regarding the revised Preferred Alternative. Appendix C, Section C.1, of this *Final SPD Supplemental EIS* was revised to include additional information regarding the risk factor and the scientific basis for its use. Consistent with U.S. radiation protection practices, the linear non-threshold approach to LCF risk determination was used for the analysis in this *Final SPD Supplemental EIS*. As discussed in the background information in Appendix C, the risk factors that have been developed over the years are based on studies of epidemiological data from populations that have been exposed to radiation and, although there are many assumptions connected to the derivation of the risk factors, they represent the best scientific estimates of impacts from radiation exposure. Thus, the values in this *Final SPD Supplemental EIS* provide a valid semi-quantitative assessment of the incremental potential impacts (beyond those from background radiation) of the alternatives, recognizing that the modeling assumptions employed typically result in conservatively high impacts.

the United States. This number predicts approximately 560 cancer deaths per year in New Mexico due to natural background radiation, and 60,000 cancer deaths per year in the United States as a whole. These per-year numbers compare to the predicted 0 to 1 latent public cancer fatalities over the entire duration of the work under the Supplemental EIS.

Critically, these LCF statistics entail many assumptions and simplifications, a thorough discussion of which would take far more time than I have tonight. The source reference in the Supplemental EIS recommends use of this number only for comparative risk assessment. You have presented LCF statistics as absolute numbers. A more accurate statement would be that there is no appreciable difference in risk due to radiation exposure among all the listed alternatives, including the No Action Alternative.

Thank you for providing this opportunity to comment on a critical proposal of relevance to all of us here in New Mexico.

MR. BROWN: Thank you very much.

Dave Clark is next, and Charles Bowman will be after you.

MR. CLARK: Good evening. My name is David Clark, and I'm a senior scientist at Los Alamos

1200-2 cont'd

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National Laboratory. I'm here tonight as a citizen and as a scientific expert on matters related to plutonium and to say that I support the preferred alternative for disposition.

And I say that because, as a scientist, I worry that there's well over 2000 metric tons of plutonium throughout the world in various different forms. Regardless of your views on how that situation came to be, it's clear that these large inventories must be prudently managed for many centuries, and we must secure it against theft and diversion. The U.S. and Russia have agreed to dispose of 68 metric tons of weapons-usable plutonium as an essential step in reducing the global nuclear danger.

Better still, the NNSA proposes to convert 7 metric tons of plutonium that's currently in weapons into plutonium oxide and MOX fuel as part of this plan. Surely, we can all agree that the destruction of excess pits is a positive development for the country.

The NNSA is looking for some existing facilities that can do the work, and all of the facilities described are capable of performing the mission. In the case of Los Alamos, it was Los Alamos scientists that demonstrated and developed the seminal science and technology for pit disassembly and conversion, known

Page 9

1201-1

1201-1 Chapter 2, Section 2.5, was revised to change the Preferred Alternative. In this *Final SPD Supplemental EIS*, DOE has no Preferred Alternative for the disposition of the 13.1 metric tons (14.4 tons) of surplus plutonium that is the subject of this *SPD Supplemental EIS*. Also, DOE has no Preferred Alternative regarding the sites or facilities to be used to prepare surplus plutonium metal for disposition (i.e., pit disassembly and conversion capability). Consistent with the requirements of NEPA, once a Preferred Alternative is identified, DOE will announce its preference in a *Federal Register* notice. DOE would publish a Record of Decision no sooner than 30 days after its announcement of a Preferred Alternative.

colloquially as "ARIES," that would be used in any facility under consideration. It's not a new activity for Los Alamos, and we're currently disassembling pits and converting them to oxides with that science and technology today. Los Alamos not only has the work force with the appropriate depth and skills to support that effort, and I, therefore, support Los Alamos as playing one of the roles in that portion of this important plutonium disposition mission.

Now, the second part of the Supplemental EIS explores disposal of plutonium once it's been extracted from pits. The options include vitrification and storage, burial at the WIPP site, or burning as MOX fuel in reactors. Personally, I'm opposed to burial. We heard in some of the earlier comments at other meetings that we should take the pits and somehow render them safe and bury them as is, and I'm absolutely opposed to that idea. Storing plutonium glass or ceramic in canisters underground will not reduce the global inventories.

The only one of these options that is before us today that will destroy plutonium, either through fission burning or make it unsuitable for weapons by changing the isotopic mix, is to burn it in a nuclear reactor. MOX is a proven fuel that has been used for

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over 30 years around the world that gives a 60 percent reduction in inventory of plutonium after 2 irradiation cycles. I support reducing the global plutonium inventories; and, therefore, I support conversion to MOX fuel as the preferred disposition option for our country. Thank you.

MR. BROWN: Thank you.

Charles Bowman, and Rolland Johnson will be after.

MR. BOWMAN: I'm Charles Bowman, and I'm with ADNA Corporation, and I worked at the Los Alamos National Laboratories for many years and prior to that with Lawrence Livermore Laboratory. And almost all of the sciences that I have done have been related to this issue. We want to talk about here a new way of destroying weapons plutonium.

And by way of introduction, I want to say that the effective neutron multiplication factor k>1 corresponding to a diverging chain, where neutrons multiply and grow rapidly, is the basis for nuclear weapons. That was originated in Los Alamos. Los Alamos carried out many activities with k=1, where you keep a chain stable and run it for years, and that's nuclear energy.

Los Alamos had many different reactors that they

1202-1

1202-1 Since there are currently no domestic commercial nuclear power reactors or accelerators using the disposition technologies described by the commentor and none are currently under construction, these technologies are not reasonable alternatives within the time period necessary to implement the Surplus Plutonium Disposition Program objectives.

actually built and operated, and so we have the LWRs today, and that's the way we get a lot of our nuclear energy. But that's the 1960s technology that remains today. What can happen right now is to have a decaying chain, with k<1, where you use a proton accelerator to make many neutrons to make chains which die away. But if they last for 100 fissions before they die away and you start many chains, then these fissions can run at just as high a power level as the k=1 reactors, but they have no critical mass, so they can never explode with this technology.

So Los Alamos had a program like this back in 1995 called "Accelerator Transmutation of Waste," and I was leader of that program for a time. It was proposed as the primary mission of that program to destroy weapons plutonium. It was said that, This accelerator technology is too far advanced for us; that this is an urgent matter; and that we've got to get on with it immediately. And so 20 years later, we're still discussing this.

In the meantime, we have developed many advances in accelerators and the concept of how to do this transmutation. And so right now there's nuclear waste here from many reactors. If you bring accelerators into the picture, you can do things that are very

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1202-1 cont'd

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important and different.

And so I want to show here in this slide of plutonium isotope fractions what happens when you try to burn plutonium. I show here, on the back row of the slide, weapons plutonium, which is 93 percent of Plutonium 239, and about 7 percent Plutonium 240. That's the weapons plutonium that we wished to destroy back in 1995, when we looked at converting it through fast-breeder reactors. And so you see what happens there in that case, on the next row of the slide, those are reactors that burn up plutonium, but you actually get more plutonium out than you put in by 15 percent. So the Plutonium 239 has gone up, and you can see that there are other isotopes built in which are considered to be beneficial.

MR. BROWN: You've got just about a minute left, so if you could make your remaining key points.

MR. BOWMAN: So I want to make the point here that if you run it through our system, you don't build up plutonium, you almost eliminate it to a very large degree.

And we can show the next slide. This slide shows a different aspect of burning the plutonium. What we show here on the ordinate is the probability of giving a particular yield from an explosion, which on

Page 13

1202-1 cont'd

1202-2

1202-2 See the response to comment 1202-1 regarding the use of exotic disposition technologies.

the abscissa goes from a dud to a 20-kiloton explosion and things in between. Weapons plutonium gives a very high yield, but if you take it through our technology, you can see that the yield drops down to a very low level; that we have duds here, and the probability of actually getting the weapon to go off is down in the 20-parts-per-million range.

MR. BROWN: If you can make one point, I would like to --

MR. BOWMAN: This is a very simple point: So if you burn commercial plutonium or burn weapons plutonium to a form so it looks like commercial plutonium, then it seems that's a very safe thing to do. But, basically, this isn't true because when you burn it to that point, there is a 50 percent probability that a bomb will go off with at least 5 kilotons of nuclear power.

And what is that? That's 44 trailer trucks stacked 5 deep on a football field. That's what is going to happen 50 percent of the time if you take commercial -- or weapons plutonium --

MR. BROWN: Okay. Thank you. Thank you.

MR. BOWMAN: -- and burn it as commercial plutonium.

MR. BROWN: Okay. Thanks very much.

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1202-2 cont'd

1202-3

1202-3 cont'd

1202-3 See the response to comment 1202-1 regarding the use of exotic disposition technologies.

Next, Rolland Johnson. And Marilyn Hoff is after you. Why don't you go ahead.

MR. JOHNSON: My name is Rolland Johnson, and I'm the president of Muons, Incorporated, and it's a company that deals in particle accelerators. And what I'm here to tell you about is that in the last few years accelerators have become powerful enough to do what Charlie Bowman just described.

And this is something new. And here you can see on September 28, 2009 -- that's just two years ago -- the SNS at Oak Ridge actually got 1 megawatt out of a 1 GeV proton accelerator, but they were only running it at a 6 percent duty factor. If you ran it at a hundred percent duty factor, CW operation, you could get more than 10 megawatts, which is enough to do what we want to do to destroy 34 tons of plutonium. This is what we're talking about.

Here is a picture of the SNS. The heart of this proton accelerator is the niobium superconducting RF cavities that are each about a meter long, shown on the inset. You can buy them from industry, and it's a technology that's well known.

Next slide. So here is the GEM*STAR reactor. This is a graphite-moderated reactor, and this pink stuff here is the weapons-grade plutonium that's fed in

Page 15

1203-1

1203-1 Since there are currently no domestic commercial nuclear power reactors or accelerators using the disposition technologies described by the commentor and none are currently under construction, these technologies are not reasonable alternatives within the time period necessary to implement the Surplus Plutonium Disposition Program objectives.

at 30 grams an hour. And with a 2.5 megawatt proton beam, it produces 500 megawatts thermal and 220 megawatts electrical power, if you want to produce electricity with it. And it has all kinds of interesting features that we are very pleased to talk about. One interesting feature is that helium gas in this picture carries out volatile radioactive elements where they can be safely stored to eliminate Fukushima kinds of accidents. This reactor, in fact, has lots of interesting safety features.

Let's see the next slide, please. And this is a way to eliminate weapons-grade plutonium or spent nuclear fuel to reduce the amount of fuel that you have to store. We can safely use these two examples of weapons-grade plutonium or spent nuclear fuel from light-water reactors to produce environmentally clean power. This can change nuclear waste into a valuable fuel for inexpensive, carbon-neutral, industrial processes and electricity production as well. There is no possibility for large accidental releases of volatile radioactive fission products since, as I just described, the helium bath continuously removes them for safe remote storage. The reactor is subcritical. There's never a critical mass of material needed for an uncontrolled, self-sustaining chain reaction. There

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1203-1 cont'd

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are also reduced possibilities for nuclear weapons proliferation.

In fact, with this technology, the fuel doesn't need to be enriched, as in the case of the spent nuclear fuel, or reprocessed. We would like to take this 75,000 tons of stored spent nuclear fuel and 34 tons of weapons-grade plutonium and burn them without reprocessing or MOX preparation, without danger of future weapons use, and delete or reduce their storage requirements.

MR. BROWN: Thanks very much.

Marilyn Hoff. And she'll be followed by Marian Naranjo.

MS. HOFF: Hello. My name is Marilyn Hoff. I'm from Taos, New Mexico, and I have never been employed by the nuclear industry. I appreciated this demonstration, and I assume that's one of those alternatives that was never considered in this current Supplemental Environmental Impact Statement. Here is my written comment now as to the scheme to transport 7 tons of plutonium pits to LANL to convert the plutonium to MOX fuel for nuclear reactors.

The Purpose: The NNSA has decided it would be bad for a plutonium pit to fall into the hands of terrorists or other irresponsible parties. Well, these

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plutonium pits, now retired from the U.S. nuclear arsenal, are already in the hands of an irresponsible party, the U.S. defense establishment, which drove the manufacture of these pits to insane numbers and used nuclear weapons, and our country's willingness to use them, to terrorize the world. But since all these retired pits can easily be turned into atomic bombs with the addition of explosives, this program is being justified by the fear that the pits can fall into the hands of terrorists.

The Transport: So why is it a good idea to put these pits on our highways and railways, where they are susceptible to accident and hijack by these imputed terrorists? If safety, and not the craving for more make-work at LANL, is indeed the consideration, anything done to decommission these pits should be done where the pits currently reside.

The Destination: Los Alamos National Laboratory straddles many earthquake faults on the slopes of a dormant volcano. At least three earthquakes have occurred in the Jemez region in the last two years. And while LANL touts its expertise in dealing with plutonium to justify this proposed mission, this now private, for-profit business has a disgraceful record of carelessness; witness the cesspool of pollution in

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1204-1 Transportation risks are analyzed for all alternatives proposed in this *SPD Supplemental EIS*, including the threat of theft and diversion of radioactive materials. In developing the proposed action and reasonable options for pit disassembly and conversion and surplus plutonium disposition, DOE has determined that transportation of plutonium materials between sites cannot be avoided. The alternatives analyzed in this *SPD Supplemental EIS* were developed recognizing that plutonium materials are currently stored at multiple DOE sites and individual sites have their own specific capabilities with respect to pit disassembly and conversion and plutonium disposition. The Pantex Plant in Texas, where the surplus plutonium pits are stored, does not have the capability to disassemble pits or convert plutonium metal to an oxide; the pits must be transported elsewhere for these operations.

As discussed in Chapter 1, Section 1.7, pits are currently stored at the Pantex Plant. In the *SPD EIS* (DOE 1999), DOE analyzed and dismissed locating pit disassembly and conversion activities at the Pantex Plant (see 65 FR 1608) because it possesses neither the experience nor the infrastructure needed to support plutonium processing. DOE is reconsidering options for pit disassembly and conversion capabilities only at locations with existing plutonium processing capabilities (i.e., LANL and SRS).

As indicated in Chapter 2, Section 2.1, of this *SPD Supplemental EIS*, pits would be transported by the NNSA Secure Transportation Asset Program. All shipments of plutonium pits and other surplus plutonium materials are conducted using specially designed trucks and security measures to protect the cargo from attack, as further described in Appendix E, Section E.2.4. Packaging and transportation of radioactive materials would be conducted in compliance with NRC and DOT regulations that are designed to ensure the safe transport of these materials on the Nation's highways, as described in Section E.3. Although the packaging used is intended to withstand a crash, this *SPD Supplemental EIS* analyzes the impacts of an accident that causes failure of a package. As shown in Chapter 4, Table 4–22, the radiological risks to the public from an accident are comparable among alternatives, and the chance of a package failure resulting from an accident would be less than 1 chance in 10,000 (0.0001) over the duration of the project.

1204-2 Chapter 3, Section 3.2.2, of this *SPD Supplemental EIS* describes geology and soils conditions at PF-4 at LANL, including the location of faults and volcanic hazards and the occurrence of earthquakes. This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for

which it resides and which it has bestowed on the surrounding communities. The privatization of LANL has only increased its corruption and lack of accountability. The money to be spent on this dangerous project should, instead, be used to clean up the toxic mess which is LANL's enduring legacy.

The Danger: Plutonium is, arguably, the most dangerous element on earth. It can catch fire spontaneously. Its fires are explosive and are extremely dangerous to extinguish, since the presence of water can boost plutonium to criticality. If a plutonium fire breached containment, it could render large swaths of Northern New Mexico uninhabitable.

The Proposal: MOX fuel for nuclear reactors is an idea whose time has passed. Very few commercial nuclear reactors are equipped to use MOX fuel, with one exception being the reactor at Fukushima, which still threatens a wider catastrophe to the world and Japan. Meanwhile, many nations are moving away from nuclear power, which is itself a terrible idea whose time has passed, potentially made even more dangerous and polluting by any addition of plutonium as fuel.

MR. BROWN: One minute left.

MS. HOFF: Okay. I'm just about done.

MR. BROWN: Okay.

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varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9). The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD. This *SPD Supplemental EIS* also considers the potential impacts of volcanic eruptions in Section D.1.5.2.11.

1204-3 As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. Decisions regarding funding for specific Federal programs and projects at LANL, such as cleanup activities, are outside the scope of this *SPD Supplemental EIS*. For further discussion, refer to Section 2.3, Topics A and C, of this CRD.

1204-4 The accident analyses in Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9, of this *SPD Supplemental EIS* consider a range of internal and external events as the possible initiators of accidents, including criticalities and facility fires. As stated in Section D.1.2.1, the general safety strategy for plutonium facilities requires that plutonium materials be contained at all times with multiple layers of confinement, and energy sources large enough to disperse the plutonium are minimized. Also see Appendix C for a discussion of human health impact measures and assessment methods for radiological exposures.

The potential effects of land contamination following a severe accident are described in Appendix D, Section D.2.9.1, of this *SPD Supplemental EIS*. The LANL Emergency Preparedness program, which combines Federal and local emergency response capabilities, is discussed in Chapter 3, Section 3.2.6.5.

As detailed in a report by Oak Ridge National Laboratory (ORNL 1999) and described in a discussion added to Appendix J, Section J.2, of this *Final SPD Supplemental EIS*, MOX fuel has been used in commercial and experimental nuclear power reactors worldwide for more than 40 years. This experience base includes the use of MOX fuel in PWRs and BWRs, including tests using plutonium ranging from reactor-grade to weapons-grade. There are differences in nuclear reactor core physics between MOX and LEU fuel cores, but these differences are understood and can be addressed using measures such as modifications to reactivity control systems and core fuel management procedures. As summarized in Chapter 4, Section 4.1.2, under normal operating as well as postulated accident conditions, the impacts of operating reactors using partial MOX fuel cores would not change meaningfully from those associated with use of full LEU fuel cores.

MS. HOFF: Burning plutonium in a nuclear reactor simply serves to create even more deadly spent reactor fuel in a world that still has no idea where to put it.

The Alternative: Immobilize all of the plutonium in glass, where it is presently located, and keep it stored onsite. Clean up Los Alamos National Laboratory and change its mission to something of actual benefit to the human race, like the need for energy sources that do not endanger life on earth. Such a positive mission would, indeed, justify LANL's continuing existence.

MR. BROWN: Thank you.

Marian, is next and Jeanne Green will follow.

MS. NARANJO: Umbi A:gin di. With your respect, my name is Marian Naranjo, a mother of four, a grandmother of seven, a traditional Pueblo potter and Director of Honor Our Pueblo Existence, HOPE, a community-based organization located at the Pueblo Kha Po Owingeh, Santa Clara Pueblo. I am a Kha Po Owingeh resident and tribal member.

Thank you for the opportunity to comment and for the extension of time to submit comments. These comments are my personal comments, and, for the record, more research and extensive comments by HOPE will be

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Appendix J, Section J.3.3.3, of this *SPD Supplemental EIS* describes the NRC recommendations developed in response to the March 11, 2011, accident at the Fukushima Dai-ichi Nuclear Power Station in Japan, as well as the subsequent actions TVA has taken to further reduce the likelihood and severity of accidents at its nuclear plants. For further discussion, refer to Section 2.5, Topics B and C, of this CRD.

As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, the use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would displace LEU fuel that otherwise would have been used to power the nuclear power reactor. Use of MOX fuel could increase used nuclear fuel generation by 8 to 10 percent for TVA's Browns Ferry and Sequoyah Nuclear Plants, and from 2 to 16 percent for generic reactors during the period MOX fuel could be used at a reactor. It is expected that increases of this magnitude would be managed within the reactor's normal planning for storage of its used fuel.

As described in Chapter 4, Section 4.4, of this *SPD Supplemental EIS*, less LEU fuel would need to be fabricated. Therefore, the environmental impacts associated with fabrication of the LEU fuel would be avoided by the use of MOX fuel in the reactors.

Examining the long-term storage of used fuel is not within the scope of this *SPD Supplemental EIS*. DOE is evaluating various options for the long-term storage of used fuel; however, there would be no substantial increase in risk to the public if used MOX fuel were managed instead of used LEU fuel. For further discussion, refer to Section 2.7, Topic A, of this CRD.

1204-5 As discussed in Chapter 1, Section 1.7, pits are currently stored at the Pantex Plant. In the *SPD EIS* (DOE 1999), DOE analyzed and dismissed locating pit disassembly and conversion activities at the Pantex Plant (see 65 FR 1608) because it possesses neither the experience nor the infrastructure needed to support plutonium processing. DOE is reconsidering options for pit disassembly and conversion capabilities only at locations with existing plutonium processing capabilities (i.e., LANL and SRS).

The current pit disassembly and conversion operations ongoing at LANL are performed in accordance with previous DOE NEPA analyses and decisions, including the 2008 *LANL SWEIS* (DOE 2008) and ROD (73 FR 55833). This *SPD Supplemental EIS* evaluates the impacts of expanding these existing operations,

as well as the impacts from implementing other options for pit disassembly and conversion. For further discussion, refer to Section 2.2, Topic A, of this CRD.

LANL's core mission, as directed by Congress and the President, includes (1) supporting nuclear deterrence, (2) reducing global threats, and (3) fostering energy security. Examining the mission of DOE at LANL is not within the scope of this *SPD Supplemental EIS*. See the response to comment 1204-3 regarding LANL environmental restoration programs.

Immobilization is one of the alternatives evaluated for the 13.1 metric tons (14.4 tons) of additional surplus plutonium addressed in this *SPD Supplemental EIS*.

submitted.

I have been involved in the NEPA process since 1998, and I question, and have questions, about the NEPA process that this EIS supplement is undergoing. More research is being looked into. According to the NNSA's Phase 7 Dismantlement Flow released on September 13, 2012, it does not include LANL, but includes Sandia. However, LANL is included in the NNSA's fact sheet on the MOX Fuel Fabrication Facility and U.S. Plutonium Disposition Program as benefits of MOX Strategy, which is a process developed by France and supports traditional NNSA/DOE missions.

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I regret that this EIS states that there is no impact as far as environmental justice. I have stated before, and will continue to reiterate the fact, that Los Alamos National Laboratory is located within the ancestral homelands of Pueblo peoples. We have witnessed four generations of disconnect to portions of our sacred places, and we are suffering because of this disconnect. The Creator gave us this place; it is a place that defines who we are.

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We have sacrificed enough years of environmental devastation in this area, to the point of holding onto what is left of our cultural survival life ways. The devastation of the people of Santa Clara Pueblo, in

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1205-1 The Phase 7 Dismantlement Flow diagram describes nuclear weapon dismantlement. Examining the weapons dismantlement process is not within the scope of the activities described in this *SPD Supplemental EIS*.

1205-2 Chapter 3, Section 3.2.11, of this *SPD Supplemental EIS* describes minority and low-income populations near LANL. Chapter 4, Section 4.1.6, analyzes environmental justice impacts of the options for pit disassembly and conversion at LANL, and concludes that Native Americans living near LANL would not be exposed to elevated risks compared to nonminority populations living in the same area from the proposed activities, and that the risks associated with these activities are small. For further discussion, refer to Section 2.6, Topic A, of this CRD.

This *SPD Supplemental EIS* includes an analysis for a special pathways receptor that was developed for the 2008 *LANL SWEIS* (DOE 2008) using the best information available to DOE to reflect exposures that could result from traditional living habits, including subsistence consumption of native vegetation (pinyon nuts and Indian Tea [Cota]), locally grown produce and farm products, groundwater, surface water, fish (game and nongame), game animals, other foodstuffs, and incidental consumption of soils and sediments (on produce, in surface water, and ingestion of inhaled dust); absorption of contaminants in sediments through the skin; and inhalation of plant materials. These pathways are in addition to the meat, milk, produce, water, and sediment consumption reflected in the "offsite resident" pathway assumption. The analysis concludes that persons living near LANL who practice traditional living habits would receive a higher dose than the rest of the populations living in the same area, but the risks associated with the exposures from LANL would be small (see Chapter 4, Section 4.5.3.8.2).

With respect to the impact of wildfires on LANL and the surrounding communities, LANL is continuing to work to reduce the hazards associated with wildfires. For example, forests are thinned as part of an ongoing Wildfire Hazard Reduction Program to reduce the fuel load available in the event of a fire. As exemplified in 2000, post-event soil erosion and sediment control measures are implemented to minimize the on- and offsite environmental impact potentials of wildfires (see Chapter 3, Section 3.2.2.2). The risks and potential impacts of a wildfire on the entire LANL site were evaluated in Appendix D of the 2008 *LANL SWEIS* (DOE 2008). PF-4 at TA-55 was not included as a facility that presents a substantial risk due to wildfires because it is constructed of noncombustible materials and surrounded by buffer areas in which combustible materials, including vegetation, are kept to a minimum.

particular, has undergone, and continues to bear, the aftermath of two major fires, one in which we lost our watershed. We were told that because of the radioactive waste and other toxic chemicals at LANL, that saving the Lab was more important. If the fire reached these elements, we would have all had to evacuate. Where do we go? DOE, LANL, NNSA knows this and yet, in all due respect, the mannerism that is being displayed by this Surplus Plutonium Disposition Draft EIS plan seems to disregard environmental justice impacts to health, safety, and well-being of Aboriginal people. This area is also undergoing geological changes. An earthquake has cracked my house. We are witnesses to boulders coming down from our canyon, floods that can cause damage and evacuation to some of our people.

This area is a dormant volcano close to the Continental Divide, Rio Grande Rift, and known, documented fault zones. It is not a feasibly geologically safe place to bring nuclear weapons for dismantlement resulting in plutonium oxide powder to be shipped to the Savannah River Site. Our headwaters are only 5 miles from the Lab -- 5 air miles.

Although I'm in support of the idea to dismantle nuclear weapons, it is not in the best interest for

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As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

1205-3 Chapter 3, Section 3.2.2, of this *SPD Supplemental EIS* describes geology and soils conditions at PF-4 at LANL, including the location of faults and volcanic hazards. Appendix F includes analyses of the environmental impacts and human health risks of expanded pit disassembly and conversion processes at PF-4. Appendix D, Sections D.1.5.2.11 and D.2.9, provide more-detailed information on accidents at PF-4, including consideration of natural phenomena hazards such as flooding, earthquakes, and volcanic eruptions. Section D.1.5.2.11 describes the completed and planned seismic upgrades to PF-4.

1205-4 As discussed in Chapter 1, Section 1.7, pits are currently stored at the Pantex Plant. In the *SPD EIS* (DOE 1999), DOE analyzed and dismissed locating pit disassembly and conversion activities at the Pantex Plant (see 65 FR 1608) because it possesses neither the experience nor the infrastructure needed to support plutonium processing. DOE is reconsidering options for pit disassembly and conversion capabilities only at locations with existing plutonium processing capabilities (i.e., LANL and SRS).

The environmental impacts of other missions at LANL are considered in Chapter 4, Section 4.5.3, Cumulative Impacts, of this *SPD Supplemental EIS*. In addition, DOE annually publishes an assessment of the impacts that LANL may have on the environment in publicly available environmental reports.

Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

13.1 tons of plutonium to come to our sacred place. As it is, LANL has other plutonium production missions that endanger public health and safety. It would be wiser, and probably less expensive, to relocate the ARIES Program at LANL to Pantex, for the dismantlement work, instead of trucking the weapons back to LANL, to the Pajarito Plateau for the next 24 years.

MR. BROWN: You have a minute left, please.

MS. NARANJO: I feel that there are more feasible choices that can be made in the long term for economics, fairness, health and safety to Indigenous People and the general public here in Northern New Mexico. Bringing thousands of plutonium pits to LANL will further endanger public health and safety, continue to impact our cultural life ways to extinction, and divert resources away from genuine cleanup, which is long overdue and currently a mission of LANL which, by the way, is behind schedule.

As I reviewed the National Nuclear Security Administration's mission, I ask that NNSA, DOE, and LANL review and incorporate the United Nations Declaration on the Rights of Indigenous Peoples into the environmental justice aspects of your work, which was signed and adopted by the United States on December

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1205-5 See the response to comment 1205-2 regarding environmental justice concerns and potential conflicts with the environmental restoration program.

This *SPD Supplemental EIS* evaluates the impacts of expanding these existing operations under the action alternatives. Impacts on the public from proposed activities at LANL are presented in Chapter 4, Section 4.1.2, with additional information provided in Appendices C and D; cumulative impacts are presented in Section 4.5. Impacts on the public from transportation of radioactive materials and waste are presented in Section 4.1.5, with additional information provided in Appendix E.

As described in Appendix F, and summarized in Chapter 4 and Chapter 2, Section 2.6, Table 2–3, environmental impacts and risks to the public are expected to be minor from both normal operations and potential accidents for the evaluated pit disassembly and conversion options at PF-4. For further discussion, refer to Section 2.3, Topic A, of this CRD.

The United States supports the United Nations Declaration on the Rights of Indigenous People (Declaration), which, while not legally binding or a statement of current international law, has both moral and political force. It expresses both the aspirations of indigenous peoples around the world and those of nations seeking to improve their relations with indigenous peoples. Most importantly, it expresses aspirations of the United States that this country seeks to achieve within the structure of the U.S. Constitution, Federal laws, and international obligations, while also seeking, where appropriate, to improve current laws and Government policies. To this end, Federal agencies continue to be informed by the Declaration as they implement policies and develop new initiatives together with tribal leaders.

16, 2010. If anything, and in all due respect, this would offer a checklist to enhance decision-making in the NEPA process and overall nuclear enterprise, thus helps protect peoples and their Aboriginal places, and recognizes that respect for Indigenous knowledge, cultures, and traditional practices contribute to sustainability and proper management of the environment, since time immemorial.

Our lives, our devastation here in the sacred ancestral homelands of Kha Po Owingeh, Po Jo geh, Walatowa and Cochiti is revealing the truth of the nuclear industry since the Manhattan Project and the signing of the Cooperative Agreements. The nuclear industry's 70-year history has also become our history, our story.

Concentrate on cleanup and abide by the present WIPP regulations for waste. Dismantle the weapons, but not here. We cannot afford to continue living in fear and what-ifs. Our lives are not to play with or for others to gamble and take chances. If one has a need to gamble or take chances, go to the casinos.

And for the record, I would like to offer a copy of the United Nations Declaration on the Rights of Indigenous Peoples.

MR. BROWN: That will be part of the

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1205-6 See the response to comment 1205-2 regarding potential conflicts with the environmental restoration program.

The current pit disassembly and conversion operations ongoing at LANL are performed in accordance with previous DOE NEPA analyses and decisions, including the 2008 *LANL SWEIS* (DOE 2008) and ROD (73 FR 55833). This *SPD Supplemental EIS* evaluates the impacts of expanding these existing operations at LANL, as well as the impacts from implementing pit disassembly and conversion operations at SRS.

In response to comments on the *Draft SPD Supplemental EIS*, DOE expanded the WIPP Alternative to include potential disposal of all 13.1 metric tons (14.4 tons) of the surplus plutonium for which a disposition path is not assigned. The disposal at WIPP of 13.1 metric tons (14.4 tons) of plutonium, which is approximately 26 percent of the amount considered in the *Storage and Disposition PEIS* (DOE 1996), could potentially be accomplished within WIPP's capacity and, therefore, is considered to be a reasonable alternative in this *Final SPD Supplemental EIS* (see Chapter 4, Section 4.5.3.6.3). A description of WIPP's capacity and the process that would be used to dispose of surplus plutonium as CH-TRU waste at WIPP, as analyzed in this *Final SPD Supplemental EIS*, is contained in Appendix B, Sections B.1.3 and B.3. CH-TRU waste sent to WIPP as part of the Surplus Plutonium Disposition Program would be in compliance with the WIPP waste acceptance criteria and the WIPP Land Withdrawal Act. For further discussion, refer to Section 2.2, Topic B, of this CRD.

record. Thank you.

(NOTE: Pamphlet admitted as Exhibit 1.)

MR. BROWN: Next is Jeanne Green, and then Janet Greenwald will follow you.

MS. GREEN: Jeanne Green from Taos. Over the past few years, and still, we have been told that the CMRR-NF is necessary for plutonium pit production and maintenance. Now that the project has been postponed, we're being told, Oops, we have 7.1 metric tons of plutonium from pits that have been declared excess to national defense needs. LANL, Bechtel, NNSA, and the DOE lied to us. And they continue to lie to the public, despite the fact that their operations are damaging our genes; our offspring; our health; our environment; our water, air, and soil; our very lives and futures. This newly-sprung project is an attempt by the nuclear weapons and power, privately-owned industries, and cohorting agencies to perpetuate the industry for profit on the backs of taxpayers -- Bechtel, LANL, NNSA, DOE, TVA, and SAIC, a nuclear PR firm that writes these reports.

Surplus weapons-usable plutonium was originally planned for immobilization. The Supplemental EIS contradicts the 1996 Programmatic EIS and is illegal. At the same time that DOE announces that they cannot

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1206-1 The Chemistry and Metallurgy Research Building Replacement Nuclear Facility (CMRR−NF) was not a pit production facility and was not related to any particular program, but was designed to replace analytical chemistry and materials characterization capabilities that are or were supported in the Chemistry and Metallurgy Research Building (CMR). However, the CMRR-NF will not be constructed and NNSA plans on providing the necessary analytical chemistry and materials characterization capabilities using a combination of space already available at the Radiological Laboratory/Utility/Office Building (RLUOB) and space to be made available at PF-4 (DOE 2015). The 7.1 metric tons (7.8 tons) of pit plutonium shown in Chapter 1, Figure 1–7, of this *SPD Supplemental EIS* was declared excess to U.S. defense needs in 2007 and is unrelated to operations at CMR.

Chapter 3, Section 3.2.6.3, summarizes the results of health effects studies at LANL. The results of annual environmental monitoring are presented in publicly available reports posted at http://www.lanl.gov/community-environment/environmental-stewardship/index.php. Chapter 2, Section 2.6, indicates that the impacts of alternatives for surplus plutonium disposition would generally be minor.

DOE does not agree with the commentor's characterization of DOE activities. This *SPD Supplemental EIS* was prepared in accordance with applicable CEQ and DOE NEPA regulations. As described in Appendix A, Section A.1.1, in its 2002 amended ROD (67 FR 19432), DOE amended the *Storage and Disposition PEIS* and *SPD EIS* RODs (62 FR 3014 and 65 FR 1608), and cancelled the immobilization portion of the disposition strategy. The *Storage and Disposition PEIS* (DOE 1996), *SPD EIS* (DOE 1999), supporting supplement analyses, and the decisions announced in the related RODs remain valid and, in accordance with CEQ and DOE NEPA regulations, do not need to be updated before this *Final SPD Supplemental EIS* can be issued. For further discussion, refer to Section 2.1, Topic A, and Section 2.2, Topic A, of this CRD.

1206-2 As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

Since 2003, DOE has been implementing decisions to fabricate 34 metric tons (37.5 tons) of surplus plutonium into MOX fuel in MFFF, which is currently under

meet the terms of the legal consent order to clean up the unlined radioactive waste dumps and barrels at LANL, they now propose a new scheme to recycle pits into fuel for nuclear power plants. This plan perpetuates the nuclear fuel cycle, adds more waste -- DOE spent fuel is nuclear waste -- instead of immobilizing and disposing of these insanely dangerous metals and oxides.

The SEIS states that, "No Action Alternative would not satisfy the purpose and need for agency action because no disposition pathway would be selected." Further, "Immobilization of the entire surplus plutonium inventory is not being revisited due to Records of Decision in 2002, 2003." Pit disassembly and conversion at Pantex is not being revisited. Direct disposal is not being revisited because the amount of waste exceeds the capacity of WIPP, which was never meant to house this kind and amount of waste to begin with -- Waste Isolation Pilot Project.

The SEIS also states that these issues are outside the scope of this document: Plutonium recycling, plutonium reduction, a nuclear-free world, war and nuclear weapons, the presence of radioactive chemicals in the Rio Grande and Albuquerque drinking water, et cetera.

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construction at SRS, and use MOX fuel in domestic commercial nuclear power reactors to generate electricity (see 68 FR 20134). As discussed in Section 2.2, Topic A, of this CRD, DOE's prior decisions with respect to the disposition path for the 34 metric tons (37.5 tons) of surplus plutonium (68 FR 20134) are not addressed in this *SPD Supplemental EIS*, but DOE is reconsidering options for pit disassembly and conversion. As part of this reconsideration, DOE announced in its NOI for the *SPD Supplemental EIS* (77 FR 1920) that it was considering, among several options, locating some of the pit disassembly and conversion activities at LANL. (Refer to Chapter 2, Section 2.1, for a description of the pit disassembly and conversion options analyzed in this *SPD Supplemental EIS*). DOE is also evaluating alternatives for the disposition of an additional 13.1 metric tons (14.4 tons) of surplus plutonium at locations other than LANL, including the Immobilization to DWPF Alternative, as more fully explained in Chapter 2.

As stated in Appendix I, Sections I.1.2.4 and I.2.2.4, of this *SPD Supplemental EIS*, used MOX fuel would be managed in the same manner as used LEU fuel — by storing it in the reactor's used fuel storage pool or placing it in dry storage. The use of MOX fuel in commercial nuclear power reactors would not result in the generation of large quantities of additional used fuel. Most of the MOX fuel would displace LEU fuel that otherwise would have been used to power the nuclear power reactor. Use of MOX fuel could increase used nuclear fuel generation by 8 to 10 percent for TVA's Browns Ferry and Sequoyah Nuclear Plants, and from 2 to 16 percent for generic reactors during the period MOX fuel could be used at a reactor. It is expected that increases of this magnitude would be managed within the reactor's normal planning for storage of its used fuel.

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

So we're left with four options that each include pit disassembly and conversion at PF-4 at LANL. Every option given us includes transportation of weapons-usable plutonium and more on our highways from Texas to LANL, from LANL to South Carolina, to Tennessee to Alabama, Ohio to Washington, Washington to South Carolina, to WIPP, crisscrossing the country.

However, no latent cancer fatalities are expected due to incident-free transport and there is a risk of one fatality due to an accident over the lifetime of the project. It is clear to see that the assumptions made in DOE's computer model calculations have no relation to reality. Every alternative offered lists this statement: "No radiological exposure to the public would result"; "Risks to the public would be small."

This is not science. These are blatant lies. When one looks at the premises of the data, it is easy to see how DOE reaches these conclusions. They are based on an annual frequency probability of wildfires as 1 in 20 years, despite the fact that we have had 3 enormous wildfires coming right up to LANL's boundaries over the last 16 years and severe wildfires in New Mexico every year.

MR. BROWN: One minute left.

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1206-4

1206-3 In developing the proposed action and reasonable options for pit disassembly and conversion and surplus plutonium disposition, DOE has determined that transportation of plutonium materials between sites cannot be avoided. The alternatives in this *SPD Supplemental EIS* were developed recognizing that plutonium materials are currently stored at multiple DOE sites and individual sites have their own specific capabilities with respect to pit disassembly and conversion and plutonium disposition. Appendix E of this *SPD Supplemental EIS* presents the transportation analysis methodology, assumptions, and results. The packaging to be used would meet all applicable regulatory requirements, as summarized in Appendix E, Section E.3. As presented in Section E.12, for all alternatives, it is unlikely that the transportation of radioactive material and waste would cause an additional fatality as a result of radiation, either from incident-free operation or postulated transportation accidents.

Transportation risks are analyzed for all alternatives proposed in this *SPD Supplemental EIS*, including the threat of theft and diversion of radioactive materials. As shown in Chapter 4, Table 4–22, the radiological risks to the public from shipments of radioactive materials would be comparable among the alternatives, with no LCFs expected in the transportation crew or general public along the transportation routes.

Appendix E, Section E.13, of this *SPD Supplemental EIS* discusses uncertainties associated with the transportation analysis and the use of conservative assumptions to mitigate these uncertainties. There are inherent uncertainties in any estimation of risks and consequences associated with transportation activities. These uncertainties are addressed by making conservative assumptions regarding aspects such as the composition of the cargo being transported, the number of shipments, and accident and fatality rates. The same assumptions are applied uniformly across all alternatives so that meaningful comparisons of risks can be made.

The text quoted by the commentor is made in the Summary, Table S–3 (and in Chapter 2, Section 2.6, Table 2–3), of this *SPD Supplemental EIS* in regard to human health impacts from construction and normal operations. The statement "No radiological exposure to the public would result…" is related to radiological impacts due to construction activities; these activities would have no impact on the offsite population because they would occur either in uncontaminated areas or within existing buildings. The statement "[r]isks to the public would be small…" accurately reflects the expected impacts from radiological emissions from facility operations. At either SRS or LANL, the annual population dose would be less

MS. GREEN: Okay. No mention of squirrels starting fires at LANL, nor candles starting a near-meltdown at TVA's Brown Ferry Plant, where the MOX fuel would probably go. One chance in a million for an aircraft crashing into a building. I guess they didn't factor in the possibility of terrorism. An earthquake that can result in severe damage to LANL's PF-4 facility is considered, "beyond extremely unlikely," despite the three recent earthquakes registered near Coyote and Tesuque, and despite the new geological evidence that PF-4 sits on a rift zone.

The accident probability frequency rate used in the DOE's calculations are generally 1 in 10,000 years to 1 in 100,000 years. Latent cancer fatality estimations averaged over 100,000 years would tend to be low. These computations have no relation to reality. This is not science. It is propaganda from an obsolete industry that is bilking the taxpayers to make profits on products that we don't need, can't use, and that are damaging and endangering our very existence.

MR. BROWN: Okay. Thank you. Thank you.

Janet Greenwald.

MS. GREENWALD: Hi --

MR. BROWN: And Teresa Chavez will be

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1206-4 cont'd

1206-5

1206-6

than 1 person-rem, resulting in a maximum risk of a single latent cancer fatality in the population of 1 chance in 1,700.

1206-4 DOE understands that LANL has been threatened by wildfires in recent years. The accident analyses in Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9, of this *SPD Supplemental EIS* consider a range of internal and external events as one of the possible initiators of facility fires. The facilities evaluated in this *SPD Supplemental EIS* are all in cleared, industrial-like areas not immediately vulnerable to wildfires and are constructed of noncombustible materials.

Over its 37 years of operation, the Browns Ferry Nuclear Plant has undergone numerous modifications, including the fire protection equipment and programs. For further discussion, refer to Section 2.5, Topic A, of this CRD.

1206-5 The commentor's reference to the probability of an airplane crash is related to the accident analysis discussed in Appendix D, Section D.1.5.2.11, of this *SPD Supplemental EIS*. In its evaluation of intentional destructive acts, DOE did not assign a probability of occurrence, but considered the potential consequences if the event were to occur. The environmental impacts of intentional destructive acts such as targeting a building with an aircraft are analyzed in a classified appendix to this *SPD Supplemental EIS*. Substantive details of intentional destructive act scenarios, security countermeasures, and potential impacts are not released to the public because disclosure of this information could be exploited by enemies to plan attacks.

1206-6 An earthquake severe enough to cause major damage to PF-4's structure, equipment, and containers and result in a major, facility-wide fire is estimated to have a very low probability. More-likely earthquakes, such as the recent earthquakes referred to by the commentor, would cause little or no damage and would not result in releases of plutonium to the environment.

The risk of a single LCF occurring among the public or the risk of the MEI developing a latent fatal cancer, as presented in Chapter 4, Tables 4–6 and 4–7, respectively, in this *SPD Supplemental EIS*, was calculated assuming the listed accidents had occurred. When the annual probability of such accidents occurring is considered, the risks would be 10,000 to more than 1 million times lower.

after you.

MS. GREENWALD: Hi. I'm Janet Greenwald, and I'm co-coordinator of Citizens for Alternatives to Radioactive Dumping. I live in Albuquerque now, but I raised my children in Dixon, downwind from Los Alamos, and that's where my grandchildren live now with my oldest son and his wife, also my daughter and her husband.

You know, it cannot be environmentally sound to put dangerous projects at the headwaters of a large river system. Evidence of that is the fact that now in Albuquerque, where 40 percent of our water comes from the river, there is plutonium in the finished water. We're drinking plutonium. It is below regulatory concern, but we all know that the regulation based on "Reference Man" and 1950s science -- talking about the drinking water regulations for long-lived Alcan mini radiation -- do not protect the fetus, the young child, and women.

Then there are air emissions. There are many communities downwind from Los Alamos. A few of them are Española, Dixon, Ojo Sarco, Peñasco, Taos. All these communities are EJ communities where people are resource-light and mostly of color, so there will be no impact; there is no issue of environmental justice.

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1207-1

1207-2

1207-1 Chapter 3, Section 3.2.3, of this *SPD Supplemental EIS* describes surface water and groundwater resources at and near LANL. As addressed in Chapter 4, Sections 4.1.2 and 4.1.7.3, DOE does not expect that pit disassembly and conversion at PF-4 at LANL would impact surface water or groundwater resources or cause any cancer fatalities among the public. The adequacy of the current national primary drinking water standards promulgated by EPA for alpha-emitting radionuclides is outside the scope of this *SPD Supplemental EIS*. However, monitoring of finished water at the San Juan-Chama Drinking Water Surface Water Treatment Plant has not detected gross alpha or beta particle activity, radium-226 or -228, or uranium. Additional information can be found at the Albuquerque Bernalillo County Water Utility Authority website: www.abcwua.org.

1207-2 Chapter 3, Section 3.2.6.3, of this *SPD Supplemental EIS* summarizes the health effects studies performed for the region around LANL. Table 3–37 presents cancer incidence rates for the United States, the State of New Mexico, and counties near LANL. In addition, information on environmental monitoring is provided in the environmental surveillance reports for LANL at http://www.lanl.gov/community-environment/environmental-stewardship/index.php. The analysis presented in Chapter 4, Section 4.1.2.1, shows the risks to the general population due to radiological air emissions from normal operations of the proposed surplus plutonium disposition facilities would contribute little to the cumulative health effects among the offsite population. The same is true for minority and low-income populations in the potentially affected area, including Native Americans.

Chapter 3, Section 3.2.11, of this *SPD Supplemental EIS* describes minority and low-income populations near LANL. Chapter 4, Section 4.1.6, analyzes environmental justice impacts of the options for pit disassembly and conversion at LANL, and concludes that Native Americans and other minority or low-income populations living near LANL would not be exposed to elevated risks compared to nonminority populations living in the same area from the proposed activities, and that the risks associated with these activities are small. For further discussion, refer to Section 2.6, Topic A, of this CRD.

This *SPD Supplemental EIS* includes an analysis for a special pathways receptor that was developed for the 2008 *LANL SWEIS* (DOE 2008) using the best information available to DOE to reflect exposures that could result from traditional living habits, including subsistence consumption of native vegetation (pinyon nuts and Indian Tea [Cota]), locally grown produce and farm products, groundwater, surface water, fish (game and nongame), game animals, other foodstuffs, and incidental consumption of soils and sediments (on produce, in surface water, and

That's what we read in the Environmental Impact Statement.

Well, how do we make that judgment? I would say that we should make that judgment by what has been going on concerning Los Alamos and those communities over these last many years. After the Cerro Grande fire, I traveled through Northern New Mexico to see what had happened. And I talked to a farmer in Peñasco who said that he had never seen anything like this before. Usually if a foal dies, the foal dies before it suckles. But after the Cerro Grande fire, foals died after they suckled. In Ojo Sarco, goats were born malformed and goats aborted their babies and in an unusual manner. Over in Sapello, north of Las Vegas, where there is a break in the mountains, chickens stopped laying for over a month. There are no health studies in these downwind communities.

If you really wanted to look into environmental justice, you would do health studies in these downwind communities and see what the cancer rates are like.

MR. BROWN: You have a minute left.

MS. GREENWALD: I have lots of anecdotal information concerning that. I have a friend that died of cancer in Dixon in her mid-40s. She stayed at home and ate out of her garden. She was a vegetarian. Up

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1207-2 cont'd

ingestion of inhaled dust); absorption of contaminants in sediments through the skin; and inhalation of plant materials. These pathways are in addition to the meat, milk, produce, water, and sediment consumption reflected in the "offsite resident" pathway assumption. The analysis concludes that persons living near LANL who practice traditional living habits would receive a higher dose than the rest of the populations living in the same area, but the risks associated with the exposures from LANL would be small (see Chapter 4, Section 4.5.3.8.2).

in Ojo Sarco there is a man who has a list of all the cancers in his area, including his wife's malignant brain cancer. These people live in a remote place up in the mountains. Environmental justice is an issue whose time has come, and yet we are ignoring it, the Department of Energy is ignoring it in this Environmental Impact Statement. I plead for environmental justice. Thank you.

MR. BROWN: Thank you.

Teresa Chavez is next. And I think it's Tsa Wang will follow.

MS. CHAVEZ: My name is Teresa Chavez, and I am from the Española area. And I'd just like to say that this, this avenue that we're allowed to have an opinion -- and a lot of people from our community aren't here because they don't know about these things -- and also just being up here, being a part of this process is really sickening. You know, I'm sick to my stomach, and I just feel sick, when I hear the people with lasers and charts try and fit all these statistics into how this project can be okay for our community.

There's billions of dollars being made based on bomb-making and disposing of plutonium and different things, and at the sacrifice of our land, our air, our

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1207-3 **1207-3** See the response to comment 1207-2.

water, our life that is really sacred here. And you really can't -- you really can't say that risk is okay.

And I'm here to say that I am not okay with it. And it's really an assault on our people, on our land, on our existence, and our people need to know about these things in a better way and have a voice, because I don't think that that exists right now. And as I said before, our water, our air, our land, our life is being sacrificed for the benefit of corporate greed. And I -- it sickens me, and I am personally here to say that it needs to stop.

And, you know, as far as -- I don't have the benefit of having a job, and I'm not a scientist, and I don't really grasp all of this, but what I do understand of what you are proposing is that we're going to get waste from plutonium from Texas brought to LANL. And we have our own waste to clean up, and that's going to really put some of these other cleanup projects, I feel, not as priorities. So I think we need to prioritize cleanup of the waste that exists already and not accept any waste from outside of the state. We need to deal with what we have right now.

I just think it's really disgusting and insulting that it's even being considered. So that's all I have to say.

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1208-1

1208-1 As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. As described in Appendix F, Section F.4, of this *SPD Supplemental EIS*, waste generated by pit disassembly and conversion activities at PF-4 would be within the capacities of LANL waste management facilities. For further discussion, refer to Section 2.3, Topic C, of this CRD.

MR. BROWN: Thank you. Georgia Naranjo will follow Tsa.

MR. WANG: (Speaker speaking in an unidentified language.)

I don't have a watch. We don't know how to tell time. Anyway, thank you. I wish you had a Tewa interpreter, but you got a Spanish one, a white guy over there.

You know, we were conquered a long time ago. The Spanish came and made us believe in their religion. All we asked was, Stay on that side of the river and eat. We'll feed you.

Yet, they want more. They want more. They had to go get the white people to come and take our place. That's -- after that, that's how Los Alamos came about. You took our place, you took our flowers, you took our trees, you took our bees, the animals, everything, and then you contaminated, and then you expect us to live?

Well, we live and we're always going to live, but with all due respect, I say this from my heart, let us be. Let us create what was given to us. Let us share what was given to us. Let us give what we had and what we still have, what little we have left. Our spirits, our prayers, our song, that's all we have left. That is all we have. We don't want nothing

Response side of this page intentionally left blank.

else.

We have respect for the Spanish and everybody that came and did what they did to us, but we're still going to give things. We're still going to give you life. When time comes, we're still going to be here. Because Mother Earth created us. We came from inside the earth, and all living things came from inside the earth.

Why do you want to put that shit -- excuse my language -- but why do you want to put that stuff back in there to burn the rock? We used to know the stars. We used to know the moon. We knew everything. I've got a little bragging rights because my nickname is Einstein. They call me that at home. You know, I was nicknamed after Albert Einstein, smartest man in the world. But that's what they called me, Uncle Einstein, Uncle Einstein. But that's the truth. I just want to share that with you guys.

All you people, we've been to the moon, we've been to Mars, we've been all over. We used to make lightning come. We used to make rain. We used to do all that stuff. When you start disturbing our life, our world, our Mother, our Mother Earth, we lose our heritage, we lose our songs, we lose all our -- we're losing everything.

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1209-1

1209-1 Most of the radioactive waste generated by surplus plutonium disposition activities proposed for LANL would be disposed of off site. However, some low-level radioactive waste may be disposed of on site, in an authorized disposal facility in TA-54. All waste, whether disposed of on site or off site, would be disposed of in accordance with Federal and state regulatory requirements in permitted, authorized, or licensed facilities. Waste management capabilities and facilities at LANL are described in Chapter 3, Section 3.2.10. The potential impacts are described in Chapter 4, Section 4.1.4, and summarized in Chapter 2, Section 2.6.

The Federal Government takes care of us when, in reality, we are going to take care of all of you. Don't put no more stuff in the earth. You take care of Mother Earth. You take care and you learn and listen, because when you die, or when you go to another place, we go back in there. We go back to the earth and we grow up prosperous. We're going to grow more trees, going to grow more trees, more plants, more animals. And the bees and everything are going to come and visit you. The beautiful things of life is right there, will always be in our mind. You're not going to have money and this and that and whatever, when you go. You are going to have what was there.

And when you dream, when your dreams come, your dreams are telling you what's going to be there. Your dreams are going to take you to those places. I don't want to go where there is a damn fence or a lab or all this stuff in my backyard, my hunting and stuff. Look at me. I'm getting skinny because I can't eat those apples or stuff no more, you know.

MR. BROWN: Can I ask you to allow some of the other speakers to talk.

MR. WANG: Okay. Thank you.

MR. BROWN: Thanks very much.

Okay, Georgia Naranjo, and Basia Miller will be

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1209-2

1209-2 DOE acknowledges the commentor's general opposition to activities at LANL and specific concern that foodstuffs could be contaminated by emissions from the laboratory. Chapter 3, Section 3.2.6.3, of this *SPD Supplemental EIS* lists the health effects studies performed in the region around LANL, including the LAHDRA project. As indicated in the LAHDRA final report (CDC 2010), "The LAHDRA project's primary purpose was to identify all available information concerning past releases of radionuclides and chemicals from the Los Alamos National Laboratory" (the vast majority of the releases occurred between the 1940s and the 1970s). This *SPD Supplemental EIS* analyzes the potential environmental impacts from operation of facilities at LANL that employ current technologies and practices that minimize the releases of radioactive materials and hazardous chemicals to the environment to protect workers, the public, and the environment, as evidenced by the reporting in LANL's Annual Site Environmental Reports and NESHAPs reports. As shown in Chapter 4 of this *SPD Supplemental EIS,* the potential environmental releases associated with the normal operation of proposed surplus plutonium disposition activities at LANL are very small and pose minimal risk to the public. The environmental impacts of other missions at LANL are considered in Chapter 4, Section 4.5.3, Cumulative Impacts, of this *SPD Supplemental EIS*.

This *SPD Supplemental EIS* also includes an analysis for a special pathways receptor that was developed for the 2008 *LANL SWEIS* (DOE 2008) using the best information available to DOE to reflect exposures that could result from traditional living habits, including subsistence consumption of native vegetation (pinyon nuts and Indian Tea [Cota]), locally grown produce and farm products, groundwater, surface water, fish (game and nongame), game animals, other foodstuffs, and incidental consumption of soils and sediments (on produce, in surface water, and ingestion of inhaled dust); absorption of contaminants in sediments through the skin; and inhalation of plant materials. These pathways are in addition to the meat, milk, produce, water, and sediment consumption reflected in the "offsite resident" pathway assumption. The analysis concludes that persons living near LANL who practice traditional living habits would receive a higher dose than the rest of the populations living in the same area, but the risks associated with the exposures from LANL would be small (see Chapter 4, Section 4.5.3.8.2).

next.

MS. NARANJO: I'm Georgia Naranjo from Santa Clara Pueblo. And I appreciate this opportunity. In 1944, two years before my oldest brother was born, my grandpa died of a tragic accident. He was moving the trees so that Los Alamos could become a city. In 1950, my dad began working at Los Alamos helping unload a lot of nuclear things that were starting to take place at that time. He died of liver cancer in 1950. In 1972, my grandmother died of liver and kidney cancer. In 1989, my uncle died of the same thing. In 1999, I lost my best friend, my mom, of the same diseases. And is it our turn now?

MR. BROWN: Basia Miller. And Jerry -- is it Maesfas? You know who you are, even if I mispronounce the last name.

Basia.

MS. MILLER: My name is Basia Miller. I'm a long-time resident of Santa Fe and currently on the board of Concerned Citizens for Nuclear Safety. Thank you for giving me the opportunity to comment on the Draft Surplus Plutonium Disposition SEIS.

I must say how impressive it is to hear the eloquence of some of the speakers. I feel honored to be here to hear those comments. I also want to express

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1210-1

1210-1 As described in Chapter 4, Section 4.1.2.1, and summarized in Chapter 2, Section 2.6, Table 2–3, of this *SPD Supplemental EIS*, no LCFs are expected, and there would be little offsite impact on the public from normal operations of surplus plutonium disposition facilities at LANL. As described in Section 4.5.3.3, operation of surplus plutonium disposition facilities would contribute little to cumulative health effects among the offsite population.

my appreciation for the first speakers tonight, who discussed the issue of the probabilities used in the Environmental Impact Statement. I'd like to express my sense of the inadequacy of using this term "expected." On page 12 we saw this, "Public radiation exposure, no LCFs expected."

I can feel my cheeks grow warm. I flush to imagine that the greatest scientists in the world have given us this kind of description as an evaluation of the risks of dealing with the excess plutonium disposition, given that the danger and the risk is so dramatically greater if there were an accident, say, on the transportation route, or a possible, though unlikely, disaster from seismic movements. Some variable-like range of risk might give a more realistic foundation for considering likelihood and alternatives, because, as we know, things can happen outside the bell curve.

Furthermore, the results of CDC's LAHDRA Project shows an array of health effects from the contamination at LANL with what's present, and has been present, over the last 70 years, I don't know why it should not be affected by the increase of 12,000 pounds of plutonium.

Finally, I want to say it's tempting the gods to bring additional plutonium to LANL. LANL facilities do

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1211-1

1211-2

1211-3

1211-1 DOE used standard terms and approaches for evaluating the radiological impacts of routine releases and transportation and facility accidents. These concepts and terms are similar to those used in other NEPA, safety, and NRC documents. The frequencies of these accidents are presented in this *SPD Supplemental EIS*, using terms such as "unlikely" or "extremely unlikely" to indicate there is a range of probabilities associated with such accidents and, when these ranges of probabilities are multiplied by the estimated impacts, they result in ranges of risk. To be conservative, this *SPD Supplemental EIS* presents the results of the risk calculation using the higher end of the frequency range. Uncertainties in the estimated impacts associated with such accidents, should they occur, are discussed in Appendix D, Section D.4, for facility accidents; Appendix E, Section E.13, for transportation; and Appendix J, Section J.4, for reactor accidents.

1211-2 Chapter 3, Section 3.2.6.3, of this *SPD Supplemental EIS* lists the health effects studies performed in the region around LANL, including the LAHDRA project. As indicated in the LAHDRA final report (CDC 2010), "The LAHDRA project's primary purpose was to identify all available information concerning past releases of radionuclides and chemicals from the Los Alamos National Laboratory" (the vast majority of the releases occurred between the 1940s and the 1970s). This *SPD Supplemental EIS* analyzes the potential environmental impacts from operation of facilities at LANL that employ current technologies and practices that minimize the releases of radioactive materials and hazardous chemicals to the environment to protect workers, the public, and the environment, as evidenced by the reporting in LANL's Annual Site Environmental Reports and NESHAPs reports. As shown in Chapter 4 of this *SPD Supplemental EIS,* the potential environmental releases associated with the normal operation of proposed surplus plutonium disposition activities at LANL are very small and pose minimal risk to the public.

1211-3 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios for varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to

not meet seismic standards in the case of a severe earthquake. This has been documented, researched intensively. The DNFSB, Defense Nuclear Facility Safety Board, has commented on and warned of the levels of seismic risk at the plutonium facility, for bringing an additional thousands of pounds of plutonium to LANL will only increase the risk to public health and safety from possible seismic activity to unconscionable levels. Thank you.

MR. BROWN: Thank you.

Next is Jerry Maesfas, M-A-E-S-F-A-S.

MR. MAESFAS: That's me.

MR. BROWN: And Beata Tsosie.

MR. MAESFAS: I'll start with what Elizabeth Taylor used to tell her husbands: I won't keep you long.

But this work has to be done. It will be done. The question is, where? Los Alamos has the capability, has the experts. They have done it before, they are doing it now. It's expanding the current activity, but it is going to be done. So, staying on the subject, why not do it at Los Alamos?

And I'll tell you that I have spent many, many hours talking to the people on the ground up there, the experts. We spent many, many years studying how to

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1211-3 cont'd

1212-1

Section 2.3, Topic B, of this CRD. Section D.1.5.2.11 describes the completed and planned seismic upgrades to PF-4.

1212-1 DOE acknowledges the commentor's opinion.

calculate risk in college, in graduate work. And people come off the street and tell you how -- what the risk is, right off the street, they know. And here it took us years and years of study how to calculate, how to quantify risk. The risk of driving along Cerrillos Road in Santa Fe is greater than the waste from Los Alamos. You want to turn into worm food? Go drive on Cerrillos Road in Santa Fe.

There is no contamination out here. There is -- we -- Los Alamos spends upwards of $30 million a year just on environmental surveillance. There is no contamination in the air. There is none in the Rio Grande, and the newspapers are the worst spreaders of these myths that we're all dying because of contamination from Los Alamos. That is not true.

I have the three most beautiful grandkids in the whole wide world that live right in this area. And no one would scream louder than I, if I thought that there was any risk of their getting cancer from contamination from Los Alamos. I was born and raised here, my father was born and raised here, my grandfather was born and raised here, my great grandfather was born and raised here, and I spent many years away from here, but I still came back. And I find it Wacko country.

We built a bomb that ended the war, and you talk

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to any of the Marines here in the area that were in Okinawa, waiting for the invasion of the Big Island when they dropped the bomb and stopped the war, and ask them if they're concerned about what happened in the past.

What we need to do is get this work done. We have professionals in the DOE who have analyzed this situation. You do your work. I trust you. You live here. You live -- you are citizens. I trust you and the professionals in Los Alamos to -- they live here too. They have kids. They care. But you folks that are -- you can listen to people like us all day long, till hell freezes over, but you know the tradeoffs better than anyone else.

MR. BROWN: Thank you.

Okay. Beata Tsosie, and next, Aha Gutierrez Sisneros will follow.

MS. TSOSIE: (Speaker speaking in an unidentified language.)

My name is Beata Tsosie Peña. I am a member of Kha Po Owingeh, and I just wanted to extend my comments that I made in Santa Fe at the public hearing there because I ran out of time and wasn't able to read the articles that I referenced. And those comments are all on the rights of Indigenous Peoples.

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I also wanted to comment really briefly on the lady with the cancer fatalities' number of 0 to 1. I also would say that this is a really false statement, considering that the regulations, U.S. radiation exposure regulations, are based on an adult male and do not protect children, women, the elderly, the unborn. So how can you say that that is what is going to happen when those standards don't protect those most vulnerable? So I ask that this whole EIS is redone in a way that takes up-to-date standards from today into consideration, like real science.

If you're really experts at figuring out this stuff, there's information out there. Look on the IER's website and the work of Dr. Anjani. And we can do a lot better on the standards that we're currently using, and let's protect those most vulnerable. And then, I bet you anything, when you use those standards, that LCF number is going to go way up.

So in regards to the United Nations Declaration on the Rights of Indigenous Peoples, I have stated that there were certain articles that needed to be addressed and considered when thinking about this decision. And so the first one was Article 7, and I'm going to read through these to put them in the record.

"Indigenous individuals have the rights to life,

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1213-1

1213-1 Appendix C, Section C.1, of this *SPD Supplemental EIS* discusses the risk factor of 0.0006 LCFs per person-rem. The appendix was revised to include additional background information on the derivation of the risk factor of 0.0006, which is reasonable for a population of approximately equal numbers of males and females and an age distribution such as that in the United States.

physical and mental integrity, liberty and security of person."

"Indigenous peoples have the collective right to live in freedom, peace and security as distinct peoples and shall not be subjected to any act of genocide or any other act of violence."

The expansion of LANL, in any form, is a continuation of the culture of violence that has impacted our physical, mental, and spiritual well-being.

Article 11 states that:

"Indigenous peoples have the right to practise and revitalize their cultural traditions and customs. This includes the right to maintain, protect and develop the past, present and future manifestations of their cultures, such as archaeological and historical sites, artefacts, designs, ceremonies, technologies, and visual and performing arts and literature."

LANL is located on our ancestral homelands within numerous cultural sites located on Jemez Plateau. We need to begin to heal our homelands that have been desecrated by the for-profit nuclear weapons complex. To do this would require a freeze on further production, contamination, and environmental releases,

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1213-2

1213-2 LANL performs a variety of activities in addition to its core mission as directed by Congress and the President, including maintaining a safe and secure nuclear stockpile and pit disassembly and conversion. Other activities at LANL are related to renewable energy, environmental technology, global climate change, antiterrorism and nonproliferation, and biological and biomedical research. Examining issues related to the LANL mission is not within the scope of this *SPD Supplemental EIS*. For further discussion, refer to Section 2.3, Topic C, of this CRD.

and we need to develop a focus on restorative technology and research.

Article 29 states that:

"Indigenous peoples have the right to the conservation and protection of the environment and the productive capacity of their lands or territories and resources. States shall establish and implement assistance programmes for indigenous peoples for such conservation and protection, without discrimination."

Article 29 states that:

"States shall take effective measures to ensure that no storage or disposal of hazardous materials shall take place in the lands or territories of indigenous peoples without their free, prior and informed consent."

That would mean that each Pueblo in this area, which I would say is within a hundred-mile radius of these Laboratories, needs to be consulted with, with respect to government, government relations, and sovereignty of nations that existed here before the Labs existed here. That would include land grant communities and acequia parciantes.

Article 29 states:

"States shall also take effective measures to

1213-2 cont'd

1213-3

1213-3 The United States supports the United Nations Declaration on the Rights of Indigenous People (Declaration), which, while not legally binding or a statement of current international law, has both moral and political force. It expresses both the aspirations of indigenous peoples around the world and those of nations seeking to improve their relations with indigenous peoples. Most importantly, it expresses aspirations of the United States that this country seeks to achieve within the structure of the U.S. Constitution, Federal laws, and international obligations, while also seeking, where appropriate, to improve current laws and Government policies. To this end, Federal agencies continue to be informed by the Declaration as they implement policies and develop new initiatives together with tribal leaders.

Storage or disposal of hazardous materials or waste on tribal lands is not proposed under any of the alternatives. Waste storage or disposal would be within existing waste management systems and would be done in accordance with appropriate permits. DOE has also engaged with those tribes that have requested it to arrange for government-to-government consultation. DOE continues its long-standing practice of engaging area tribal authorities through several mechanisms, including accords with four pueblo governments (Cochiti, San Ildefonso, Jemez, and Santa Clara) whose lands are adjacent to or near LANL. In addition, DOE maintains a working relationship with member tribes of the Eight Northern Indian Pueblos Council, the All Indian Pueblo Council, and others as relevant to the programs and activities at LANL. In response to requests for additional public hearings, DOE added a public hearing in Española, New Mexico, held on September 18, 2012, to the six meetings that DOE had initially scheduled. DOE held three public meetings related to the *Draft SPD Supplemental EIS* in the areas most likely to be affected by the proposed surplus plutonium disposition activities at LANL: Los Alamos, Santa Fe, and Española. DOE invited Native American tribes, as well as representatives of the state and other local governments and the public, to provide comments at seven public hearings held in Alabama, New Mexico, South Carolina, and Tennessee. In response to multiple requests for more time to review and comment on the *Draft SPD Supplemental EIS*, DOE extended the originally scheduled comment period by an additional 15 days through October 10, 2012. For further discussion, refer to Section 2.6, Topic A, of this CRD.

ensure, as needed, that programmes for monitoring, maintaining and restoring the health of indigenous peoples, as developed and implemented by the peoples affected by such materials, are duly implemented."

Article 30:

"Military activities shall not take place in the lands or territories of indigenous peoples, unless justified by a relevant public interest or otherwise freely agreed with or requested by the indigenous peoples concerned."

That obviously wasn't followed when that land was seized from our territories, but maybe now it can be respected.

Number 2 of Article 30:

"States shall undertake effective consultations with the indigenous peoples concerned, through appropriate procedures and in particular through their representative institutions, prior to using their lands or territories for military activities."

We now have military entwined with for-profit industries. How is that going to work with this decision? How is that going to be factored in?

Article 31:

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"Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures, including human and genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs, sports and traditional games and visual and performing arts. They also have the right to maintain, control, protect and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional cultural expressions."

I don't believe that the SEIS in this proposal is taking into consideration the fact that we still interact and intertwine with our land; that we are unique in that we -- our conditions are compounded in that we still live off the land, still harvest plants, hunt our own food, fish in the rivers, harvest rain water, harvest our own vegetables. I think that it actually increases our risk that we do these things. And that isn't considered in any of these risk factors and it needs to be.

MR. BROWN: We still have a few speakers

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1213-4

1213-4 The potential impacts on Native Americans as compared to the entire population and other subsets of the population within 50 miles (80 kilometers) of LANL are shown in various tables in Chapter 4, Section 4.1.6 (one for each alternative). The exposure pathways referred to by the commentor may be important with respect to other sources of radiation exposure, for example, existing contamination in the environment. Compared to the inhalation exposure pathway, the proposed action in this *SPD Supplemental EIS* would contribute little to exposure through other pathways. Although not developed specifically as a Native American exposure scenario, the 2008 *LANL SWEIS* (DOE 2008) did include a special pathways analysis that accounted for a larger portion of the diet coming from locally obtained food, including crops, game, fish, and surface water. Although not directly related to the current proposed action, the results of this analysis are included in this *SPD Supplemental EIS* in Chapter 4, Section 4.5.3.8.2 (the cumulative impacts discussion with respect to environmental justice). For further discussion, refer to Section 2.6, Topic A, of this CRD.

left.

MS. TSOSIE: I think that is about it as far as the articles I wanted to cite from. Thank you.

MR. BROWN: Thank you.

I'm not sure I got your name entirely correct. If you can help the court reporter out, I would appreciate it.

And Jeff Genauer will be next.

MS. GUTIERREZ SISNEROS: Aha X. Gutierrez Sisneros. (Speaker is speaking in Spanish.)

Thank you for the opportunity to speak tonight. I am a scientist myself. I'm a nurse. I have a Master's Degree in nursing and am a Ph.D. student in nursing also. I want to speak to this MOX project. I say nix the MOX. I say no MOX project in Northern New Mexico. I say no to 13.1 tons of plutonium. I say -- for my grandchildren I say no to this project.

(Speaker begins reciting poem.)

What new element before us unborn in nature?
is there a new thing under the Sun?
At last inquisitive Whitman a modern epic,
detonative, Scientific theme
First penned unmindful by Doctor Seaborg with
poisonous-hand, named for Death's planet
through the sea beyond Uranus

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1214-1

1214-1 DOE acknowledges the commentor's opinion. Under the alternatives evaluated in this *SPD Supplemental EIS*, activities at LANL in New Mexico would be limited to pit disassembly and conversion. MOX fuel fabrication would occur at SRS in South Carolina. Impacts associated with pit disassembly and conversion at LANL are addressed in Chapter 4 and Appendix F, with supporting analysis and information in accompanying appendices, including Appendices C, D, and E.

whose chthonic ore fathers this magma-teared
Lord of Hades, Sire of avenging Furies,
billionaire Hell-king worshipped once
with black sheep throats cut, priests's face
averted from underground mysteries in
single temple at Eleusis,
Spring-green Persephone nuptialed to his
inevitable Shade, Demeter mother of
asphodel weeping dew,
her daughter stored in salty caverns under
white snow, black hail, grey winter rain
or Polar ice, immemorable seasons before
Fish flew in Heaven, before a Ram died by the
starry bush, before the Bull stamped sky
and earth
or Twins inscribed their memories in clay or
Crab'd flood
washed memory from the skull, or Lion sniffed
the lilac breeze in Eden--
Before the Great Year began turning its twelve
signs, ere constellations wheeled for
twenty-four thousand sunny years
slowly round their axis in Sagittarius, one
hundred sixty-seven thousand times
returning to this night

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Radioactive Nemesis were you there at the
beginning black dumb tongueless unsmelling
blast of Disillusion?
I manifest your Baptismal Word after four
billion years
I guess your birthday in Earthling Night, I
salute your dreadful presence last
majestic as the Gods,
Sabaot, Jehova, Astapheus, Adonaeus, Elohim,
Iao, Ialdabaoth, Aeon from Aeon born
ignorant in an Abyss of Light,
Sophia's reflections glittering thoughtful
galaxies, whirlpools of starspume
silver-thin as hairs of Einstein!
Father Whitman I celebrate a matter that renders
Self oblivion!
Grand subject that annihilates inky hands &
pages' prayers, old orators' inspired
Immortalities,
I begin your chant, openmouthed exhaling into
spacious sky over silent mills at Hanford,
Savannah River, Rocky Flats, Pantex,
Burlington, Albuquerque
I yell thru Washington, South Carolina,
Colorado, Texas, Iowa, New Mexico,

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Where nuclear reactors create a new Thing under the Sun, where Rockwell war-plants fabricate this death stuff trigger in nitrogen baths,
Hanger-Silas Mason assembles the terrified weapon secret by ten thousands, & where Manzano Mountain boasts to store
its dreadful decay through two hundred forty millenia while our Galaxy spirals around its nebulous core.
I enter your secret places with my mind, I speak with your presence, I roar your Lion Roar with mortal mouth.
One microgram inspired to one lung, ten pounds of heavy metal dust adrift slow motion over grey Alps
the breadth of the planet, how long before your radiance speeds blight and death to sentient beings?
Enter my body or not I carol my spirit inside you, Unnaproachable Weight,
O heavy heavy Element awakened I vocalize your consciousness to six worlds
I chant your absolute Vanity. Yeah monster of Anger birthed in fear O most

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Ignorant matter ever created unnatural to Earth!
Delusion of metal empires!
Destroyer of lying Scientists! Devourer of
covetous
Generals, Incinerator of Armies & Melter of
Wars!
Judgement of judgements, Divine Wind over
vengeful nations, Molester of Presidents,
Death-Scandal of Capital politics! Ah
civilizations stupidly industrious!
Canker-Hex on multitudes learned or illiterate!
Manufactured Spectre of human reason! O
solidified imago of practitioner in Black
Arts.
I dare your reality, I challenge your very
being! I publish your cause and effect!
I turn the wheel of Mind on your three hundred
tons! Your name enters mankind's ear! I
embody your ultimate powers!
My oratory advances on your vaunted Mystery!
This breath dispels your braggart fears!
I sing your form at last
behind your concrete & iron walls inside your
fortress of rubber & translucent silicon
shields in filtered cabinets and baths of

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lathe oil,
My voice resounds through robot glove boxes &
ignot cans and echoes in electric vaults
inert of atmosphere,
I enter with spirit out loud into your fuel rod
drums underground on soundless thrones and
beds of lead
O density! This weightless anthem trumpets
transcendent through hidden chambers and
breaks through iron doors into the
Infernal Room!
Over your dreadful vibration this measured
harmony floats audible, these jubilant
tones are honey and milk and wine-sweet
water
Poured on the stones black floor, these
syllables are barely groats I scatter on
the Reactor's core,
I call your name with hollow vowels, I psalm
your Fate close by, my breath near
deathless ever at your side
to Spell your destiny, I set this verse
prophetic on your mausoleum walls to seal
you up Eternally with Diamond Truth! O
doomed Plutonium

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The Bar surveys Plutonium history from midnight
lit with Mercury Vapor street lamps till
in dawn's early light
he contemplates a tranquil politic spaced out
between Nations' thought-forms
proliferating bureaucratic & horrific
arm'd, Satanic industries projected sudden
with Five Hundred Billion Dollar Strength
around the world same time this text is set in
Boulder, Colorado before front range of
Rocky Mountains twelve miles north of
Rocky Flats Nuclear Facility in United
States of North America, Western
Hemisphere
of planet Earth six months and fourteen days
around our Solar System in a Spiral Galaxy
the local year after Dominion of the last God
nineteen hundred seventy eight
Completed as yellow hazed dawn clouds brighten
East, Denver city white below
Blue sky transparent rising empty deep &
spacious to a morning star high over the
balcony
above some autos sat with wheels to curb
downhill from Flatiron's jagged pine

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ridge,
sunlit mountain meadows sloped to rust-red sandstone cliffs above brick townhouse roofs
as sparrows waked whistling through Marine Street's summer green leafed trees.
This ode to you O Poets and Orators to come, you father Whitman as I join your side, you Congress and American people,
you present meditators, spiritual friends & teachers, you O Master of the Diamond Arts,
Take this wheel of syllables in hand, these vowels and consonants to breath's end
take this inhalation of black poison to your heart, breathe out the blessing from your breast on our creation
forests cities oceans deserts rocky flats and mountains in the Ten Directions pacify with exhalation,
Enrich this Plutonian Ode to explode its empty thunder through earthen thought-worlds
Magnetize this howl with heartless compassion,
destroy this mountain of Plutonium with ordinary mind and body speech,

Response side of this page intentionally left blank.

Thus empower this Mind-guard spirit gone out, gone out, gone beyond, gone beyond me, Wake space, So Ah!

As you all see in this summary -- I read this summary and it says that it will result in minor impacts to the public, and I disagree. I believe this will cause major impacts to our land and to our people. And I say no. I say nix the MOX. MOX nix. In German it means matter not, but I say the opposite. I say nix the MOX. Thank you.

MR. BROWN: Thank you.

Jeff Genauer. And Luis Peñe will be next.

MR. GENAUER: My name is Jeff Genauer. I'm with the Northern New Mexico College. I have previously served as Student President of Student Government here at this college. And we have signed onto the Clean Waters Community Declaration, along with other community groups, some of which are represented here tonight. And so we are very concerned about the water quality and quantity here in the Española Valley. This summer we completed the installation of a reverse-osmosis purification system in one of the buildings here on campus because we do want to drink cleaner water, and we know that the water here is contaminated with uranium, arsenic, and other impurities.

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1215-1

1215-1 Chapter 3, Section 3.2.3, of this *SPD Supplemental EIS* describes surface water and groundwater resources at and near LANL, including LANL's annual water consumption. The regional aquifer is recharged from several sources, including infiltration of precipitation from the Jemez Mountains and Pajarito Plateau canyons and groundwater underflow from the Sierra de los Valles (refer to Section 3.2.3.2 and LANL 2012). As described in Chapter 4, Section 4.1.7.3, DOE does not expect that pit disassembly and conversion operations at PF-4 at LANL would impact the quality or quantity of surface water or groundwater resources. In addition, as shown in Section 4.1.7.7, even expanded operations at PF-4 at LANL would conservatively require no more than about 2 percent of LANL's available water capacity. Also note that DOE water conservation goals for LANL include a 26 percent reduction in water intensity and 20 percent reduction in overall water consumption by the year 2020 (LANL 2012).

Water is not really addressed competently, if at all, in this draft statement. I'm trying to find out what the current water consumption level is for Los Alamos as a whole, and if this program were to be -- were to take place at Los Alamos -- if you haven't noticed, we are in a severe drought, and we are already a very dry region, and what if the water source were to run out? What if the aquifer were to go dry, or if the Rio Grande went dry and this drought continued to worsen? How would that impact the safety of Los Alamos and of this plutonium disarmament?

How about other impacts of climate change, the increasing intensity and size of fires and other kinds of unforeseen impacts from climate change? That's not addressed in this draft statement. It only covers the other side of climate change, which are the emissions. It doesn't cover the impacts of climate change.

And also the alternatives, it's really pathetic to see a few alternatives and not -- I think if you were to be honest and look at different alternative technologies to dispose of plutonium, you need at least 10, 15, 20, maybe more alternatives. So a serious Environmental Impact Statement would look at all the alternatives.

Last night the noted transformational figure and

1215-1 cont'd

1215-2

1215-3

1215-2 Chapter 4, Section 4.5.4.2, of this *SPD Supplemental EIS* addresses possible general impacts from climate change and more-specific possible impacts in the southeast and southwest, as well as the possible future need for adaptation at SRS, LANL, and WIPP as a result of climate change. Examining the adaptation of DOE sites and facilities to climate change is not within the scope of this *SPD Supplemental EIS*. However, adaptation of SPD-related facilities would be addressed in the design of such facilities.

1215-3 In this *SPD Supplemental EIS*, DOE evaluated the potential environmental impacts of a range of reasonable alternatives for the disposition of 13.1 metric tons (14.4 tons) of surplus plutonium, in accordance with the requirements of NEPA. As described in Chapter 2, Section 2.4, additional alternatives were considered but dismissed from detailed evaluation. This *SPD Supplemental EIS* supplements the *SPD EIS* (DOE 1999), which tiers from the *Storage and Disposition PEIS* (DOE 1996). The parent documents considered additional alternatives that do not need to be considered in this *SPD Supplemental EIS*.

author, Charles Einstein, spoke in Santa Fe. He had researched some of the different alternatives. There are at least 10 or 15. And those I don't see are covered in this statement. We even saw a presentation of one of them earlier tonight. If you were to be honest and thorough in this analysis, we would look at all the alternatives. So I think this statement should be redone and we should look at all the alternatives.

And, finally, I think Los Alamos is the wrong place to do this, even if we do need to turn it into MOX fuel or otherwise dispose of this excess plutonium or dismantle nuclear weapons, which, of course, is a worthy goal. We should dismantle all nuclear weapons. Los Alamos is the wrong place for many of the reasons that we heard tonight. Environmental injustice, of course, and also the earthquakes, the volcano, the fires, all the risks that are elevated here in this region, and the transportation impact and risk of bringing in this plutonium from all over the country and shipping it out again.

I would like to see a detailed analysis of Why -- of the cost benefits of doing it here as opposed to Pantex in Texas, or the Savannah River Site. I believe that there was a prior plan to do this at Savannah River Site, but Congress cut it off. They cut

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1215-3 cont'd

1215-4

1215-5

1215-4 Public and worker safety is a high priority for DOE. DOE recognizes that LANL is in the vicinity of active geologic faults and continues to take appropriate actions to further improve the safety basis that documents the hazards and controls in place at LANL to ensure safety and implement facility modifications and upgrades as necessary. DOE has ongoing programs to understand the geology and seismology of the LANL region in order to predict the likelihood of severe earthquakes.

This *SPD Supplemental EIS* evaluates the potential consequences of several postulated accident scenarios, including wildfires, volcanism, and varying levels of earthquakes (see Chapter 4, Section 4.1.2.2, and Appendix D, Sections D.1.5.2.11 and D.2.9) and describes concerns identified by DNFSB. The chances of a severe earthquake accident are extremely unlikely to beyond extremely unlikely. For further discussion, refer to Section 2.3, Topic B, of this CRD. Section D.1.5.2.11 describes the completed and planned seismic upgrades to PF-4. To be conservative, the accident analysis in this *SPD Supplemental EIS* considers the current state of PF-4 without future seismic upgrades.

As described in Chapter 4, Section 4.1.6, of this *SPD Supplemental EIS*, which addresses environmental justice, there would be no disproportionately high and adverse impacts on minority or low-income populations under all of the alternatives. Section 4.1.5 presents projected impacts from transportation of materials and waste. Under all alternatives, no LCFs are expected in the general public or to transport crews due to incident-free transport of radioactive material or waste. The risk of an LCF due to the release of the radioactive cargo under all alternatives would be much less than 1 (i.e., no more than about 1 chance in 10,000 for the duration of an alternative).

1215-5 Pit disassembly and conversion at SRS and the Pantex Plant were both evaluated in the *SPD EIS* (DOE 1999). In the *SPD EIS*, DOE analyzed and dismissed locating pit disassembly and conversion activities at the Pantex Plant (see 65 FR 1608) because it possesses neither the experience nor the infrastructure needed to support plutonium processing. DOE is reconsidering options for pit disassembly and conversion capabilities only at locations with existing plutonium processing capabilities (i.e., LANL and SRS).

As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are not expected to interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. Decisions regarding funding for specific Federal programs and projects at LANL, such as

the budget for that project. Let's look at more creative ways of financing this. Let's impose a tax on, say, Mitt Romney, and get all of his off-shore money to address these kinds of serious problems.

Today the Albuquerque Journal published an analysis of the so-called "grand bargain" that Congress agreed to, if they don't come up with some other plan to reduce the deficit; that there will be some trillion or more dollars in cuts to the military, 400 million of which would impact New Mexico and create a $40 million reduction in cleanup funds for Los Alamos and Sandia. How would those budget cuts impact this particular plan and the alternative of bringing all that plutonium to Los Alamos? Where is the money coming from? And if we don't fix our economy, how are we going to pay for it?

So, in conclusion, I think we need a new Draft EIS with at least 15 to 25 alternatives considered. Let's look at all the alternatives, and let's more seriously look at doing this in other places.

MR. BROWN: Thank you.

Luis is next, and Lisa Putkey will be next after him.

MR. PEÑE: Good evening everybody. My name is Luis Peñe, and I'm here representing Una Resolane, and Tewa Women United, an environmental

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1215-5 cont'd

cleanup activities, are outside the scope of this *SPD Supplemental EIS*. For further discussion, refer to Section 2.3, Topic C, of this CRD.

CEQ and DOE NEPA regulations do not require that costs be included in an EIS. Cost information on DOE programs is made publicly available as part of the President's annual budget submission to Congress. Congressional budget decisions and the U.S. budget deficit are not within the scope of this *SPD Supplemental EIS*. Cost is among the factors that the decisionmaker may consider when selecting an alternative for implementation. For further discussion, refer to Section 2.1, Topic B, of this CRD.

justice group. I'm here on behalf of the children that haven't been born, and I'm also here on behalf of my elders, who couldn't make it here today. I'd like to speak on the process that these public comments are created. They're disenfranchising. They are not conducive to two-way commentary, which is really what dialogue is all about. A dialogue is between two people and there's points and there's counterpoints, and people have the opportunity to weigh these points and see each other's opinions through each other's eyes. One-sided commentary asynchronous does not work and it will not work.

A lot of these public commentaries are very boring. They are not culturally relevant to Northern New Mexico and the people that live here. What we need to do is stop asking people to come to these events. We need to go to the people and ask them what their opinions are.

I'm opposed to the production of MOX in Northern New Mexico. I feel that, as Northern New Mexicans, we've already carried the brunt for many, many years. We have suffered at the hands of colonialism that has put us in the place where we are today. If we look at a lot of what ails Española, I feel, in my opinion, they are the direct result of the colonialism that has

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1216-1

1216-1 The format used for the public hearings is a standard NEPA public meeting format that has been implemented successfully by DOE and other Federal agencies for many years. Prior to the formal part of the hearing, there was a 1-hour open house for members of the public to have informal discussions with DOE and subject matter experts. DOE met with four accord pueblos surrounding LANL to discuss the scope of this *Final SPD Supplemental EIS* and the results of the *Draft SPD Supplemental EIS*.

1216-2

1216-2 DOE acknowledges the commentor's opinion. Under the alternatives evaluated in this *SPD Supplemental EIS*, activities at LANL in New Mexico would be limited to pit disassembly and conversion. MOX fuel fabrication would occur at SRS in South Carolina.

been imposed on our people. And so I ask everybody here to consider more alternatives than those that have been proposed, and I ask that when you make your decisions and you listen to us, that you listen with your heart and not just with your mind. There's many other universes out there, and them not being taken into consideration is a deep disrespect of the people that have been here for a very long time and will continue to be here for many, many generations after.

And I hope that my children and my grandchildren remember me and remember all of our friends and family members that have taken the time to come here and make public comments. I hope that they see that we've seen an injustice and we spoke what we felt was right. Even if we weren't eloquent or well-informed or had a Ph.D., we still came and we gave our public comment and we felt we were doing what was best for them. And that's all I have to say. Thank you.

MR. BROWN: Thank you.

Okay. Lisa Putkey, and she will be followed by Robert Chavez.

MS. PUTKEY: I'm going to start this like I start classes. If you can hear me, clap once. If you can hear me, clap three times. All right. Thank you. Whoa. Quite an evening. My name is Lisa Putkey

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1216-3

1216-3 In this *SPD Supplemental EIS*, DOE evaluated the potential environmental impacts of a range of reasonable alternatives for the disposition of 13.1 metric tons (14.4 tons) of surplus plutonium, in accordance with the requirements of NEPA. As described in Chapter 2, Section 2.4, additional alternatives were considered but dismissed from detailed evaluation. This *SPD Supplemental EIS* supplements the *SPD EIS* (DOE 1999), which tiers from the *Storage and Disposition PEIS* (DOE 1996). The parent documents considered additional alternatives that do not need to be considered in this *SPD Supplemental EIS*.

and I -- I'm not from here originally. I'm from California, and I got really, really interested in Los Alamos and Livermore when I was attending U.C. Berkeley and thought, What? My university is involved in what? and started researching. I worked in D.C. on these issues and then moved here a couple years ago, and now I live in Chimayo, and I work with a couple different youth groups, community groups; namely, Think Outside the Bomb, and Tewa Women United, an environmental justice group.

And, oh, first, I would like to reiterate something I said in my last comment to the Department of Energy in Santa Fe. And excuse me if I offend anybody, but (expletive) you, Department of Energy. (Expletive) you.

MR. BROWN: Okay, Lisa --

MS. PUTKEY: Okay.

MR. BROWN: Lisa --

MS. PUTKEY: That's it.

MR. BROWN: Okay, but you did offend people, so -- I had some complaints, so, okay.

MS. PUTKEY: You know what? Actually, I wanted to offend people because I'm offended. I'm offended. I think that this plan is preposterous.

First of all, plutonium disposition? This isn't

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disposition of plutonium. Why don't you work on solutions for this waste? All you have right now is scoop and move, hide and hope, and then this proposal to turn it into MOX waste. MOX fuel for nuclear power. Nuclear power? Hmmm. It's an extremely risky, expensive, and dirty way to boil water for power. It's so risky that there is not a single insurance company in the entire United States that will insure a nuclear reactor. Us taxpayers do it.

It is so dirty that there are tons and tons of waste clamping together. Now we have mountains of clay on fault lines and other places around the United States. Really, we have no solution to deal with this. So putting it into nuclear reactors is only going to continue creating waste, and I think -- I am very passionate about a nuclear weapons-free world. And I think that using this proposal, under the guise of dismantling and disarming our weapons, is a joke.

I -- also I believe that you need to find solutions, and that for the time being you should immobilize it in glass where it is and not transport it all around the United States, where it's more vulnerable. And the idea of transporting -- this breaks down to about 500 pits a year, plutonium pits being transported out basically one way, up and down

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1217-1

1217-2

1217-1 Immobilization of 13.1 metric tons (14.4 tons) of surplus plutonium is one of the alternatives addressed in this *SPD Supplemental EIS*. Pits must be disassembled and converted to plutonium oxide, however, before immobilization can take place. In the *SPD EIS* (DOE 1999), DOE analyzed and dismissed locating pit disassembly and conversion activities at the Pantex Plant (see 65 FR 1608) because it possesses neither the experience nor the infrastructure needed to support plutonium processing. DOE is reconsidering options for pit disassembly and conversion capabilities only at locations with existing plutonium processing capabilities (i.e., LANL and SRS).

The current pit disassembly and conversion operations ongoing at LANL are performed in accordance with previous DOE NEPA analyses and decisions, including the 2008 *LANL SWEIS* (DOE 2008) and ROD (73 FR 55833). This *SPD Supplemental EIS* evaluates the impacts of expanding these existing operations, as well as the impacts from implementing other options for pit disassembly and conversion. For further discussion, refer to Section 2.2, Topic A, of this CRD.

1217-2 Transportation risks are analyzed for all alternatives proposed in this *SPD Supplemental EIS*, including the threat of theft and diversion of radioactive materials. In developing the proposed action and reasonable options for pit disassembly and conversion and surplus plutonium disposition, DOE has determined that transportation of plutonium pits from the Pantex Plant to SRS or LANL cannot be avoided. The alternatives in this *SPD Supplemental EIS* were developed recognizing that plutonium materials are currently stored at multiple DOE sites and individual sites have their own specific capabilities with respect to pit disassembly and conversion and plutonium disposition. Appendix E of this *SPD Supplemental EIS* presents the transportation analysis methodology, assumptions, and results. The packaging to be used would meet all applicable regulatory requirements, as summarized in Appendix E, Section E.3. As presented in Section E.12, for all alternatives, it is unlikely that the transportation of radioactive material and waste would cause an additional fatality as a result of radiation, either from incident-free operation or postulated transportation accidents. Appendix E also includes tables showing the number of transports associated with each alternative and option (refer to Tables E–6 through E–10).

Los Alamos. And tinkering with that plutonium, the most carcinogenic, cancer-causing stuff that's known to exist -- tinkering with that and turning it into powder, which is more, more likely to catch on fire and more dangerous and more able to be spread in this area in particular, in Los Alamos, which the Center for Disease Control's report shows that Los Alamos, in just a few-year period from the beginning of the Lab's operation, was more contaminated with plutonium, airborne plutonium than Savannah River, than Rocky Flats -- which was closed down because it was so contaminated with plutonium -- and the Hanford River Site combined in their entire existence. In just a few short years, more contamination here.

So the thought of bringing even more plutonium here for these communities to have more risk, it's just a slap in the face. It's pretty much saying, You are a nuclear sacrifice site and we don't care. Not to mention the fact that 7 tons? Can anybody even grasp 7 tons of plutonium? That's so much plutonium. I was told that 1 pound spread evenly around the world could cause cancer in everyone.

And thank you, people who have mentioned that these latent cancer fatality calculations are wrong, because Reference Man, the man, the male, white Anglo

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1217-3

1217-4

1217-3 Chapter 3, Section 3.2.6.3, of this *SPD Supplemental EIS* lists the health effects studies performed in the region around LANL, including the LAHDRA project. As indicated in the LAHDRA final report (CDC 2010), "The LAHDRA project's primary purpose was to identify all available information concerning past releases of radionuclides and chemicals from the Los Alamos National Laboratory" (the vast majority of the releases occurred between the 1940s and the 1970s). This *SPD Supplemental EIS* analyzes the potential environmental impacts from operation of facilities at LANL that employ current technologies and practices that minimize the releases of radioactive materials and hazardous chemicals to the environment to protect workers, the public, and the environment, as evidenced by the reporting in LANL's Annual Site Environmental Reports and NESHAPs reports.

However, awareness and knowledge of plutonium toxicity have resulted in DOE's continual improvement of the safety of its facilities by using special designs, operations, and procedural measures to protect workers, the public, and the environment. The activities proposed in this *SPD Supplemental EIS* would take place in highly controlled environments, including working in gloveboxes with inert gas atmospheres to control the dangers associated with plutonium's pyrophoric properties.

These activities would result in releases of very small amounts of plutonium to the environment as a result of normal operations, as discussed in Appendix C, Section C.2.4, of this *SPD Supplemental EIS*. These releases would result in very small doses to the public surrounding LANL (0.025 to 0.21 person rem, annually), as discussed in Section C.4.1.

1217-4 Appendix C, Section C.1, of this *SPD Supplemental EIS* discusses the risk factor of 0.0006 LCFs per person-rem. The appendix was revised to include additional background information on the derivation of the risk factor of 0.0006, which is reasonable for a population of approximately equal numbers of males and females and an age distribution such as that in the United States.

man that these readings are based off of on how much his body can take -- women are 50 percent more likely to have cancer from the same exposure to radiation, women and children and embryos much more. We need to be protecting the most vulnerable. I just want to reiterate that.

The seismic concern. LANL is on intersecting fault lines. Intersecting fault lines. And the current facilities are not up to seismic standards for the worst-case scenarios. Look into Bob Gilkeson's work. He's a geologist --

MR. BROWN: You have about a minute left.

MS. PUTKEY: Okay. Thank you.

Also I'd like to say that please, please do health studies before you start talking about environmental justice in the area of where Española is, what? 99 percent Hispanic and it surrounds a Pueblo area. Actually, LANL is on seized Pueblo areas. Please come and give us some health studies, do some health studies before you talk about environmental justice.

And cleanup before buildup. There are 21,000 -- or no, 2100 -- thousand or hundred -- I'm sorry, late in the day, long day -- contaminated sites already up there in LANL, not to mention Area G. So many jobs can

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1217-5 Chapter 3, Section 3.2.2, of this *SPD Supplemental EIS* describes geology and soils conditions at PF-4 at LANL, including the location of faults and volcanic hazards. Appendix F includes analyses of the environmental impacts and human health risks of expanded pit disassembly and conversion processes in PF-4. Appendix D, Sections D.1.5.2.11 and D.2.9, provide more-detailed information on accidents at PF-4, including consideration of natural phenomena hazards, such as flooding, earthquakes, and volcanic eruptions. Section D.1.5.2.11 describes the completed and planned seismic upgrades to PF-4.

1217-6 Chapter 3, Section 3.2.6, of this *SPD Supplemental EIS* presents information regarding human health in the potentially affected environment, including radiation exposure and risks, as well as health effects studies. Section 3.2.6.3 summarizes the health effects studies performed for the region around LANL. Table 3–37 presents cancer incidence rates for the United States, New Mexico, and counties nearby LANL. In addition, information on environmental monitoring is provided in the environmental surveillance reports for LANL at http://www.lanl.gov/community-environment/environmental-stewardship/index.php.

Chapter 3, Section 3.2.11, describes minority and low-income populations near LANL. The analysis presented in Chapter 4, Section 4.1.2.1, shows the risks to the general population due to radiological air emissions from normal operations of the proposed surplus plutonium disposition facilities would contribute little to the cumulative health effects among the offsite population. The same is true for minority and low-income populations in the potentially affected area, including Native Americans. Section 4.1.6 analyzes the environmental justice impacts of the options for pit disassembly and conversion at LANL, and concludes that Native Americans and other minority and low-income populations living near LANL would not be exposed to elevated risks from the proposed activities compared to nonminority populations living in the same area and that the risks associated with these activities are small. No LCFs are expected among the offsite population, including minority and low-income populations, as a result of normal operations of the proposed surplus plutonium disposition facilities. For further discussion, refer to Section 2.6, Topic A, of this CRD.

This *SPD Supplemental EIS* includes an analysis for a special pathways receptor that was developed for the 2008 *LANL SWEIS* (DOE 2008) using the best information available to DOE to reflect exposures that could result from traditional living habits, including subsistence consumption of native vegetation (pinyon nuts and Indian Tea [Cota]), locally grown produce and farm products, groundwater,

come from cleanup from that. Area G is not even lined. It's not even lined. Municipal garbage dumps are lined. And that's on all areas with finger-like mesas that go into canyons that go into the Rio Grande, into the drinking water. Española Valley, we're directly downwind and downstream, and all the monitoring wells are down east more --

MR. BROWN: One more point.

MS. PUTKEY: Okay. Love. I love -- I have so much love for this world, and I hope the DOE can start acting more from love.

MR. BROWN: Thank you.

Robert Chavez. Is Robert still here?

UNIDENTIFIED SPEAKER: I think he left.

MR. BROWN: That concludes the number of folks who signed up to speak tonight. Again, I would like to thank everybody for their attendance and their participation. We are adjourned. Thank you.

(Hearing adjourned at 8:37 P.M.)

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surface water, fish (game and nongame), game animals, other foodstuffs, and incidental consumption of soils and sediments (on produce, in surface water, and ingestion of inhaled dust); absorption of contaminants in sediments through the skin; and inhalation of plant materials. These pathways are in addition to the meat, milk, produce, water, and sediment consumption reflected in the "offsite resident" pathway assumption. The analysis concludes that persons living near LANL who practice traditional living habits would receive a higher dose than the rest of the populations living in the same area, but the risks associated with the exposures from LANL would be small (see Chapter 4, Section 4.5.3.8.2).

1217-7 As described in Chapter 4 of this *SPD Supplemental EIS*, pit disassembly and conversion activities are expected to have minimal environmental impacts, not substantially contribute to cumulative impacts, and not interfere with cleanup and remediation activities at LANL. DOE intends to continue conducting the environmental restoration programs at LANL in parallel with its other missions. For further discussion, refer to Section 2.3, Topic C, of this CRD.

IN RE:
U.S.DEPARTMENT OF ENERGY
DRAFT SURPLUS PLUTONIUM DISPOSITION
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT
PUBLIC HEARING COMMENTS, SEPTEMBER 18, 2012

REPORTER'S CERTIFICATE

I, JANICE J. MURPHEY, RPR, NM CCR #135, DO HEREBY CERTIFY that on SEPTEMBER 18, 2012, the Proceedings in the above-captioned matter were taken before me, that I did report in stenographic shorthand the Proceedings set forth herein, and the foregoing pages are a true and correct transcription to the best of my ability.

I FURTHER CERTIFY that I am neither employed by nor related to nor contracted with (unless excepted by the rules) any of the parties or attorneys in this case, and that I have no interest whatsoever in the final disposition of this case in any court.

JANICE J. MURPHEY, RPR, CCR
New Mexico CCR #135
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JANICE J. MURPHEY, NM CCR 135, RPR

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