

Los Alamos Study Group

To: All interested parties
Date: February 20, 1994
From: Greg Mello

Re: Reconfiguration of the U.S. nuclear weapons complex:
Proposed construction of weapons production and
associated waste disposal facilities at Los Alamos

Summary

A variety of evidence, some recent, suggests that the Department of Energy (DOE) is undertaking the de facto reconfiguration and consolidation of a variety of nuclear weapons functions at Los Alamos National Laboratory (LANL), outside the formal reconfiguration programmatic environmental impact statement (R-PEIS) process. These tasks include plutonium processing and manufacture and, with them, a variety of related stockpile support functions. Detonator manufacture, neutron tube loading, beryllium manufacture, calorimeter manufacture, and stainless steel pit support manufacturing are already being moved to Los Alamos. Los Alamos also hopes to inherit some or all of Y-12's uranium and lithium roles, Livermore's plutonium roles, and to construct tritium facilities for weapons reservoir filling, which, together with the above functions, will give LANL the capability to prototype entire warheads and to manufacture the nuclear components of warheads as they are needed for the stockpile. These roles complement LANL's existing weapons research, development, and testing functions.

Meanwhile, LANL's plutonium storage capacity is being expanded and further expansion is planned in the near future. Large new facilities for plutonium manufacture and processing have been proposed in the past, but may not be needed if the stockpile is small enough, especially if existing capabilities in the Chemistry and Metallurgy Research (CMR) Building can be upgraded to supplement those at Technical Area (TA)-55, LANL's primary plutonium facility, which was called the Plutonium Processing Facility when it was built in the late 1970's.

Supporting all this are a variety of waste minimization and waste treatment and disposal proposals which will, we are told, soon allow LANL to manufacture warheads without the generation of transuranic (TRU) waste and hence without the necessity for offsite disposal of wastes. The existing low-level waste (LLW) dump (Area G) is to be greatly expanded, and a new low-level mixed waste (LLMW) dump with a capacity of 475,000 cubic yards--over twice the size of the Waste Isolation Pilot Plant (WIPP)--is now in design. In addition, a 20-year old radioactive waste incinerator, designed to burn both TRU waste and LLW, both straight radioactive and mixed, and both from LANL and elsewhere in the complex, will be

applying for a Resource Conservation and Recovery Act (RCRA) permit soon. Also planned are a mixed waste treatment facility, a TRU waste treatment facility, a high-explosives waste treatment facility, and a large new radioactive liquid waste treatment facility. All these facilities, if permitted and built, will allow LANL to operate as a self-contained full-service nuclear weapons "park" with legal on-site disposal of all radioactive waste streams--what the LANL Public Affairs Officer has (in a candid moment) referred to as "the Jiffy-Lube of the nuclear weapons industry."

Paul Cunningham, the Director of Nuclear Materials Operations at LANL, told us last summer that he and others at TA-55 see no realistic alternative to the complex consolidating largely around Sandia, Los Alamos, and the Nevada Test Site in the coming decades, once the stockpile reaches a lower equilibrium size and Pantex is no longer needed.

LANL official spokespersons have repeatedly stated that production roles would damage the Laboratory's scientific mission and are therefore not desired by LANL management. Perhaps they doth protest too much.

More Details

For some time, many of us in New Mexico have been concerned about the possible construction of new weapons production facilities at Los Alamos National Laboratory. This concern has arisen from a variety of sources, too many to summarize here. Here are a few highlights:

- o LANL continues to portray its weapons manufacturing capabilities, and its plutonium processing and machining proficiencies in particular, as purely for research and development (R&D), and not for production. As early as 1981, however, the publication Los Alamos Science proudly stated that 1500 kg of plutonium had been processed that year for the weapons programs. Subsequent years' issues spoke of the improvements and automation that was added to the processes. 1500 kg is enough Pu for perhaps 300 weapons.

- o The design throughput capacity for TA-55 was published on December 8, 1994 by the Albuquerque Journal in a story written by John Fleck. In 1978, that capacity was 100 kg/mo for pit casting and machining, or roughly 20 weapons/month. LANL has said that TA-55 has been reconfigured, and newer stricter exposure standards (i.e. 2 rads/yr instead of 5 rads/yr) would limit pit production to less than this.

- o In 1989 the National Research Council wrote in its report The Nuclear Weapons Complex: Management for Health, Safety, and the Environment

The Plutonium Facility at LANL..., operating for the most part on a one-shift, 5-day schedule, can process almost half as much plutonium as Rocky Flats can...and turn out a purer product...Although there may be resistance at LANL to converting Building TA-55 into a full-scale production facility, an administrative solution should be possible.

o On November 6, 1990, the Ahearne Committee (the DOE Secretary's Committee on Nuclear Facility Safety) reported to Admiral Watkins that LANL's plutonium-processing capability and expertise "are a significant but under-utilized asset to DOE...We recommend that serious consideration be given to how the capabilities at TA-55 could be used to provide greater benefits to the complex." It was in January of 1990 that Rocky Flats stopped shipping pits.

o The Secretary of Energy's Advisory Board (SEAB) Task Force on the Laboratories found in January 1992 that

When the production levels get sufficiently small the traditional roles of development and production become diffuse. Therefore, the Defense Laboratories must be considered as one element of the total manufacturing, dismantling, and disposal process and their role needs to be integrated into a streamlined process that is highly effective.

This conclusion was strengthened in their final report, which contains the statement that "as the nuclear weapons development and manufacture cycles coalesce due to reduced weapon needs, the Defense laboratories may take on the future production responsibilities" (p. 10, emphasis added).

o The DOE's Draft Protocol for the Lead Laboratory Plan, distributed by Howard Cantor on August 14, 1992, gave to Los Alamos lead responsibility for oversight of 6 out of 11 nuclear weapons functions throughout the complex, including tritium, uranium, and lithium technologies, plutonium recovery and storage, and nuclear subassemblies. (One of these "nuclear subassemblies" is Pu-238 thermal batteries, of which LANL has manufactured thousands for the stockpile.) Sandia, also primarily in New Mexico, was given oversight of non-nuclear components and overall assembly, while Lawrence Livermore National Laboratory (LLNL) was given oversight of plutonium pit manufacture, case materials (described as uranium), and high explosives. As the Plan said,

The lead laboratory approach increases the scope of the laboratories' functions and responsibilities into areas that were previously the purview of the production elements. As a result, the role and relationships of the laboratories and other production complex participants

will change.

o In August 1992, reports from DOE's Plutonium Strategy Task Force were made public. These reports suggest limited production at LANL as the best mid-term option for the complex (if the options involving production at Rocky Flats are, with hindsight, omitted). The Task Force's conclusions were subsequently confirmed by Leo Duffy (Alb. Journal 8/19/92).

o Plutonium storage capacity at LANL has been described in the press as 60 tons (Alb. Journal 8/17/92), although that figure is disputed as greatly excessive by LANL personnel. It seems that the modern underground plutonium vault at TA-55 has never operated properly, and leaks from LANL say a circa \$17 million upgrade is now in progress. An environmental assessment is currently in the works for a (another?) "nuclear material storage facility."

On December 7, 1993, Secretary O'Leary released some figures on plutonium disposition; LANL at that time was storing 2.6 metric tons of weapons-grade plutonium. This is actual storage, rather than capacity.

o On January 22, 1993, the 120-page Los Alamos Strategic Plan was released for internal use only. This document maps out a detailed strategy whereby LANL would obtain for itself a growing share of the dwindling nuclear weapons pie by capturing many programs from other facilities. These activities include:

- fabrication of plutonium pits,
- manufacture of uranium components,
- manufacture of lithium secondary components,
- full-scale fire-testing of new plutonium pit designs,
- development and industrial demonstration of a variety of plutonium and uranium processing technologies,
- development of tritium manufacturing techniques as well as an upgraded facility to load tritium into weapons,
- manufacture of detonators for weapons,
- fabrication of beryllium weapons components, and
- manufacturing of complete prototype warheads.

While elements of these plans had been made public before, what was new in this document was the sweep and specificity of LANL's ambitions, along with the assignment of responsibilities to carry out these plans. It is obvious that this plan, which was developed in an intensive process lasting many months and requiring tremendous amounts of management time, reflects a serious commitment of resources. Twenty-four large defense-programs construction projects, with design dates ranging from 1993 to 1998, are listed to support this consolidation, along with 9 new waste management projects and a variety of infrastructure projects. These projects are not all the same as those shown in the publicly-available LANL Institutional Plans, and include:

- Materials Science Laboratory*
- Dual-Axis Radiographic Hydrotest Facility (DARHT)*
- High-Explosive Materials Test Facility*
- Test Transition/Safeguards Facilities*
- DARHT Second Axis*
- Weapon Explosives Safety Test Facility*
- High-Energy Radiographic Facility*
- Weapons Component Testing and Development Laboratory*
- Explosive Pulsed-Power Facility*
- Materials Science Initiatives Laboratory*
- Chemistry-Metallurgy Research (CMR) Building Upgrades
- Nuclear Materials Storage Facility
- Radiographic Facility, TA-55
- Integration and Consolidation of Livermore Plutonium R&D
- Sigma [Complex]/CMR Uranium R&D Upgrades
- LiH/LiD Component R&D Facility
- Tritium Laboratory
- Special Nuclear Materials Storage and Processing Facilities
- Non-Nuclear Consolidation, five subprojects
- Complex 21 Modeling Laboratory
- Nuclear Safeguards Technology Laboratory
- Special Electronics Shop
- Nonproliferation and Arms Control Center
- Energetic Materials Pilot Plant

(* indicates the project was identified by LANL as important for nuclear weapons research, development, and testing, or "RD&T;" see p. 8)

For the record, the nine WM projects are:

- ES&H improvements
- Mixed Waste Receiving and Storage Facility
- Air Exhaust Modifications, TA-53
- Mixed Waste Storage and Disposal Facility
- High-Explosives Wastewater Treatment Facility
- Sanitary Landfill
- Radioactive Liquid Waste Treatment Facility
- Transuranic Waste Treatment Facility
- Accelerator Produced Tritium/Accelerator Transmutation of Waste (ATW) R&D Facility

Also of some interest is the proposed Space Nuclear Fuels Users Facility (shown under "civilian technologies R&D facilities").

It is important to know that the CMR Building is a giant, 500,000 square foot laboratory/production complex that handles everything from plutonium to uranium to spent nuclear fuel. It is old and dangerous.

o On September 15, 1993, Bruce Twining, Manager of the Albuquerque Field Office (AL), wrote a memo to Don Pearman, Acting

Assoc. Dep. Sec. for Field Management, describing options for NEPA compliance at LANL. As Twining put it,

...many new projects under the auspices of DP [Defense Programs] are planned [for LANL] over the next several years as an adjunct to current missions and operations. Additionally, a large number of new projects and facilities will be required to support continuing waste operations programs...LANL is a high priority among AL sites for updated NEPA documentation because of the very large number of new actions planned over the next few years, and its focus under most reconfiguration alternatives and consolidation strategies.

Twining went on to list some of these new programs. He began with the following Defense Programs (DP)-funded environmental assessments (EAs) now in progress:

- TRU Waste Compactor and Drum Storage Building
- Uranium Oxide Reduction
- High Vacuum/Atmospheric Furnace Installation
- Decontamination Oven
- HE Material Test Facility (*?)
- Metal Sphere Project
- Isotope Separator Building
- Deactivate, Disassemble, and Decontaminate Bldg. 86, TA-33
- Accelerator Prototype Laboratory
- Weapons Component Testing Facility (*?)
- Low-Level Waste Drum Staging Bldg at the Weapons Engineering Tritium Facility (WETF), TA-16
- Fire Protection Improvement Program
- CMR Building Upgrades, Revised Plan
- Fire Resistant Pit Project*
- Nuclear Material Storage Facility

As can be seen, some of these items were mentioned in the Strategic Plan. It is not completely clear what all of these projects actually are; the projects marked with an asterix (*) appear to support RD&T functions (see discussion on p. 8).

In addition to these EAs in progress, LANL's FY1993 Technical Task Plans for Stockpile Support include the following (this list does not, Twining says, include any RD&T projects, or any projects which are to begin after 1995):

- Uranium Technology - Re-establishment and growth of the highly enriched uranium recovery and technology program, centered around the initial startup of the Uranium Line for Special Separation Science, research and development of optimum processes for the line, with equipment and glovebox additions to the line as capability is tested and selected. Re-establishment of uranium casting and machining capability

and replacement of outdated equipment/facility.

--Surveillance - Pit surveillance (transfer from the Rocky Flats Plant) pit refabrication - development/enhancement of capability to maintain the technology base to build pits.

--Pit Disassembly Technology - Development, installation, startup of a process line to demonstrate innovative technologies for site return processing (pit disassembly, plutonium consolidation, americium removal, and non-destructive assay). Refurbishment, operation of the Special Recovery Line.

Nuclear Material Storage - Vault upgrade at TA-55.

Chloride Based Processing and Pyrochemistry - Consolidation and upgrade of processes and equipment in TA-55 in support of current inventory and future facility design.

Nitrate Based Processing - Test/demonstration of new recovery technologies; workoff of vault inventories and hard to recover and special residues; development/test/installation of computer-aided process control and automation of recovery operations.

As can be seen, the projects described in the Twining memo implement some--many--of the hopes expressed in the LANL 1993 Strategic Plan.

o The [Livermore] Valley Times reported on January 31, 1994 that DOE is delaying its reconfiguration PEIS, due to budget declines and public comment. More emphasis is to be placed on the modify-in-place and no-action alternatives. In the July 1993 Notice of Intent which began the R-PEIS scoping process, LANL is shown as a possible site for six out of twelve nuclear manufacturing jobs under those alternatives. It is rumored that the R-PEIS is being re-scoped in a way that omits nuclear weapons production alternatives from the process, focussing the R-PEIS on dismantlement and disposition issues.

o LANL is an attractive site for weapons consolidation also because of its relative isolation (to which some have added "from white people" or perhaps "from white people with money"), the unwavering and undiscerning support available from the New Mexico congressional delegation, LANL's large size (43 sq. mi.), the semi-arid climate with its supposed acceptability for shallow land burial of radwaste, quiescent state regulators, and the inability of anyone in the circles of power to imagine what else LANL could do given its isolation, contamination, and history.

Implications for Livermore

The future of LANL's competitor, Lawrence Livermore, is uncertain. It could well remain part of the enduring RD&T/production complex or it could possibly become something else. The existing management has aggressively fought off incipient attempts by Congress and the Secretary of Energy to remission it away from nuclear weapons so far, although at least one senior member of the Director's office believes that it is only a matter of time before missions involving plutonium and tritium are taken away from Livermore as an inevitable consequence of suburbanization.

Implications for Weapons Development and Testing

Most of this memo has concerned itself with weapons manufacturing, rather than R&D, facilities. On pp. 5 and 6, construction projects and EAs that are desired by LANL to support the on-going work of weapons RD&T are shown by an asterix (*). Other RD&T projects, both funded (like the Dual-Axis Radiographic Hydrotest Facility or "DARHT") and proposed, can be found in LANL's Institutional Plan. The most up-to-date description of LANL's weapon development and testing program is that sketched in Los Alamos Science, 1993 edition. These documents are available from LANL Public Affairs at 505-665-5000.

Under the misleading rubric of "stockpile stewardship," LANL hopes to continue developing weapons--such as new designs with fire-resistant pits as well as special-purpose new warheads--using a variety of surrogate testing and modelling programs that allow designers to study and predict all the relevant phenomena involved. These new designs can then be put "on the shelf" (LANL's phrase) until either production or underground proof-testing, or both. "Production" could mean either larger runs or very limited editions--an example of what is called "agile manufacturing" in the civilian industry. New weapons prototyping and limited production at LANL could, I believe, take place with very limited or no oversight by Congress. In sum, RD&T and weapons production are now, as the SEAB Task Force noted, more intimately connected than ever.

Conclusions

The above facts suggest that LANL is a central part of a quiet reconfiguration of the weapons complex that is taking place outside public scrutiny and largely outside the NEPA process.

The new missions coming to LANL almost certainly will, at a minimum, maintain the flow of radioactive and hazardous waste now being buried and stored on the mesas and have the potential for greatly increasing that flow, to the lasting detriment of the land and its present and future inhabitants. These new missions also could decrease the amount of land that might eventually be returned to the Pueblos and the public and delay the timing of that return.