



# Los Alamos Study Group

*Nuclear Disarmament • Environmental Protection • Social Justice • Economic Sustainability*

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## **Comments for the Defense Nuclear Facilities Safety Board's (DNFSB's) November 16, 2022 hearing record**

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Thank you for the opportunity to offer these additional remarks regarding safety issues at Los Alamos National Laboratory (LANL). These remarks supplement and in many places repeat those provided informally at length to the DNFSB on November 14, and formally but in very brief form on November 16.

First, I would like to say that the DNFSB is a superior federal agency in its unfailing professionalism, technical competence, and the graciousness with which its business is conducted. Many agencies of government badly need good advice but don't want it. In contrast, the DNFSB knows and conducts its business very well, yet solicits public comment with full sincerity.

We can only hope that DNFSB's oversight capacity, and hence staffing, continue to grow to at least match "the exponentially increasing workload and unyielding schedule demands"<sup>1</sup> at the National Nuclear Security Administration (NNSA). We hope that the new staff members DNFSB needs can be brought on board and acculturated at a time in the agency's history when they can learn from the current and highly-accomplished staff and Board.

Second, more DNFSB eyes are needed at LANL, as LANL's plutonium missions continue to dramatically grow. This growth is frequently compared to "adding a whole new national laboratory at LANL" and DNFSB staffing and attention should grow correspondingly. Plutonium modernization is the largest program in NNSA's history and the largest part of it is at LANL. High-hazard nuclear production is a new mission at LANL. It is not a good fit to LANL's culture, its suite of crowded legacy facilities, its location, and both its existing staff and prospects for new staff. NNSA hopes these challenges can be overcome. Previous efforts to do so have failed.

Third, the DNFSB should not take as a given that LANL will have a significant stockpile pit production mission. It may not. Assuming the pit mission is cast in stone strongly risks "sandbagging" DNFSB into accepting what should not be accepted, for the sake of a mission and a schedule which are portrayed as immutable. They aren't. LANL has [failed](#) at this mission four times already and a fifth failure appears to be in process. In our judgment the U.S. nuclear deterrent would be [not one iota worse off](#) if it failed again. As Dr. Hruby said, early pit production is a "hedge," not a necessity.<sup>2</sup> LANL pit production certainly does not rise to the level of need that would occasion sacrifice of safety – which would almost certainly lead to harmful events that would pause or end production at LANL, not speed it up. An "heroic mode" of production is not needed or justified, however much it may unconsciously tempt NNSA managers and eager-to-please contractors.

As you know, and as Dr. Verdon [signaled](#) early this year, LANL is likely to miss its pit production deadlines.<sup>3</sup> Now Congress has re-opened the question of NNSA's pit production strategy and deadlines, requesting new deadlines and alternatives from the Department of Defense in the FY2023 National Defense Authorization Act

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<sup>1</sup> p. 4, [NNSA, "Evolving the Nuclear Security Enterprise: A Report of the Enhanced Mission Delivery Initiative," Sept. 2022.](#) As it is clear from this initiative, NNSA seeks to streamline

<sup>2</sup> See also "[LANL pit production is incapable of meaningfully contributing to production requirements](#)," Apr 11, 2022.

<sup>3</sup> See p. A-3, 4 in [LANL Plutonium Operations FY22-FY28 Program Management Plan](#), Sept. 2021.

(NDAA) ([Joint Explanatory Statement](#), p. 432). There is time enough for safety. There always is. Rushing, as the Institute for Defense Analysis said in 2019, will lead to delays (note 5).

Fourth, and related to this, many outside parties do not understand that there is no external regulator of safety at defense nuclear facilities. The DNFSB advises. It does not regulate. There are standards of operation that flow from 10 CFR 830 and related DOE orders and technical standards but in our observation compliance with these is often in the eye of the beholder, and no external enforcement mechanism exists.

Thus it is that operations at older facilities that were built under less stringent requirements are held to *de facto* looser standards. This is the case at PF-4, where a large number of hardware inadequacies are not allowed to get in the way of programs which, in NNSA's eyes, cannot be gapped. These inadequacies may include the basic question of whether the building itself will remain standing in the event of a design basis earthquake, or whether a design basis accident will result in committed offsite doses to the public exceeding – potentially far exceeding – the Department of Energy's (DOE's) 25 rem exposure guideline. The risks to the thousands of co-located workers nearby – and the collective hazard from that risk -- may also be greater than the DOE 100-rem (at 100 meters) guideline. In calculating that hazard, the DNFSB should assume that collocated workers leave their buildings, some of which have structures which are not PC-3 rated, to say the least.

LANL estimates there will be an *additional* 3,000 staff located in the western portion of the Pajarito Corridor within the next 10 years.<sup>4</sup> More needs to be known about the hazard there. Until more is known we are not comfortable with the overall hazard, any more than with the potential greater-than-25 rem public dose at the Elk Ridge Trailer Park, 3,000 ft. away, or in the San Ildefonso Sacred Area.

A more realistic leak path factor could lead to potential doses exceeding 25 rem in the main part of the Los Alamos town site, 2,000 ft. beyond the trailer park as the wind blows.

Notwithstanding these possible public exposures, our main concerns remain with workers and the less catastrophic accidents which can and sometimes have harmed them. Over the course of a lifetime's employment, "small" risks add up, in any line of work.

Needless to say, a serious accident at PF-4 would eliminate, or pause for a long time, not just pit production but pit surveillance, heat source and surplus plutonium activities, many pit aging studies, and many other programs in the western Pajarito Corridor.

In late 2019, permanent shutdown of pit production due to (an) accident(s) was privately estimated by a senior federal official to be the most likely outcome at LANL, in a conversation with me. That view is also held by one of the most knowledgeable and experienced federal observers of the situation. It is also the view of Trish and I.

NNSA, Triad, and Congress are already tolerating risks, in other words, which they should not tolerate. The DNFSB is being asked to minimize risk within parameters that inherently bring too much risk. These parameters include but are not limited to the following negatively synergistic factors:

- A crowded facility where construction workers, guards, scientists, equipment installers, production technicians, and others are all working in close proximity;
- A relatively untrained and changing workforce;
- Day-and-night (24/7) work as a baseline condition;
- Legacy structures, support facilities, and equipment (e.g. fire alarm system), some of which does not meet even commercial standards;

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<sup>4</sup> LANL "[Campus Master Plan](#)," so-called, p. 10-5.

- Anticipated growth not just in pit production but also in surplus plutonium oxidation and heat source plutonium missions;
- The lack of qualified, on-site facility representatives, as was discussed at the 11/15 hearing.
- Anticipated increases in Material at Risk (MAR) and material throughputs;
- Increased prioritization of mission over what is termed “excessive” safety across the NNSA complex; and
- Lack of contractor accountability as a policy, embodied in LANL’s new 5-year contract extension.

Examples of inappropriate risk tolerance at LANL abound. They include continued operation of the CMR Building, outdoor storage of TRU, to pick just two. We have discussed others with the Board over the years.

We simply have no faith that the evolving production mission at LANL can or will be handled safely. Neither NNSA nor LANL are demonstrating, as far as we can see, the sobriety and caution which would indicate that the safety of the situation across LANL’s nuclear facilities is and will remain well in hand. It is our observation that safety is perilously close to being a second-order priority at LANL, in comparison to mission.

Fifth, a great part of the risk we see comes from the supposed need to increase steady pit production at LANL beyond approximately 10 pits per year (ppy), a level which could be done with a single production shift (and a maintenance shift). The two production shifts required to reach and sustain a 20 ppy production level lead to permanent 24/7 operations, which to our knowledge no NNSA or external study supports as advisable. Quite the reverse – three studies say it is highly inadvisable, for safety reasons.<sup>5</sup>

Sixth, DNFSB should request a fully-resourced schedule for completing the safety improvements it has requested at LANL, in all LANL’s nuclear facilities, by an early date certain. The upcoming congressional budget request is a natural place for such information. DNFSB has frequently noted that NNSA often does not provide schedules for the “fixes” needed, let alone resourced schedules. When it does, these schedules often slip.

DNFSB should seek to make this comprehensive, resourced schedule, and any other important requirements, the subject of binding report language in fiscal year (FY) 2023 legislation, or, failing that, in FY24 legislation.

DNFSB should seek to make its concurrence regarding the schedule for completion of required safety improvements supporting pit production in legacy facilities a part of binding appropriations report language.

Congress has requested, but to our knowledge not received, a fully-resourced, dynamic Integrated Master Schedule (IMS) for pit production. The essential safety improvements at LANL DNFSB would like to see should be in that schedule.

Seventh, this presupposes that DNFSB has a list of what you deem to be essential safety improvements at LANL. We gather that the recent hearing and associated field trip will enable DNFSB to refine and solidify such a list.

Eighth, LANL suffers from a severe employee attraction and retention program. This problem, we hear, is magnified for high-hazard nuclear work. We also hear from parties at LANL that some of the new radiation safety technicians are very “green.” Coupled with retirements, the complexity of the situation, and other factors listed above, the stage is set for “normal accidents.” High-reliability operations, as is required in the nuclear Navy and in the civilian nuclear power industry, is for the moment out of reach. This bodes ill for LANL production.

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<sup>5</sup> These are the [Pit Production Analysis of Alternatives \(AoA\)](#), Oct 2017, the [Pu Pit Production Engineering Assessment \(EA\)](#), Rev 2, Parsons, Apr 20, 2018, and the [Independent Assessment of the Plutonium Strategy of the NNSA](#), Institute for Defense Analyses, Mar 2019. Two years later, the [NNSA Assessment of Pit Production at LANL](#), Office of Cost Estimating & Program Evaluation (CEPE, May 2021) was still only lukewarm about the LANL pit production plan, despite 3 years of official commitment to it by then (“[NNSA lukewarm about plan to produce plutonium pits at LANL](#),” Dec 23, 2021).

Having accepting a high-hazard industrial nuclear mission, LANL must abandon its usual litany of excuses for its historically inferior conduct of operations.

Ninth, PF-4 and its systems are aging. Some systems can be upgraded and/or replaced, but the improvements will not be comprehensive, critical components will face obsolescence, and new problems will arise as new programs, processes, and equipment are brought on line by new people. The upshot is that PF-4 will need continual maintenance at a greater intensity than it did historically, or that a new facility would, leading to continued space conflicts and risks. Even with intensified maintenance and improvement, PF-4 will eventually age out, a process that will sooner or later be marked by either a declining safety envelope or declining mission activity and associated MAR limits.

The “modules” to which NNSA and DNFSB referred in Exhibit 14 may never be built, for reasons analyzed by the Government Accountability Office (GAO) (see [Congressional auditors flay Los Alamos plutonium plans](#), Aug 10, 2016). “Modules” were further disparaged in two NNSA studies of pit production (note 5). Our own “real estate” analysis shows that the additional square footage of Hazard Category II space that could be provided by “modules” in TA-55 would not make a significant addition to that available in PF-4. We also note that working and support space in these “modules” would be at a premium, i.e. cramped; all planned “modules” would need to be built in a continuous series of construction projects, or in parallel, due to the interference with ongoing program work at TA-55. We further note that placing these workspaces underground is primarily for the purpose of minimizing public exposure in the event of accidents; being underground does nothing for the workers involved. In fact LANL’s safety strategy for its proposed modules was found to be “non-conservative” in NNSA’s Engineering Analysis ([p. xv](#)). Without going more deeply into the matter than is warranted here, the entire engineering rationale for modules relies on not requiring safety-class systems in and for them, relying instead on their below-grade location to provide safety for collocated workers and the public.

Dr. Hruby’s predecessor General (ret.) Frank Klotz did not PF-4 was suitable for enduring pit production at any production rate, and issued an order in June 2017 to that overall effect ([Analysis of Alternatives](#), pp. 2, 47-48). As NNSA concluded (p. 2): “...after a new 80 WR ppy capability is established [elsewhere, in the facility options provided as a result of the AoA analysis; see [slide 9](#)], PF-4 can return to the research and development mission for which it was built.” At that time, NNSA did not believe it was prudent or cost-effective to split production between two sites.

By 2020, despite NNSA’s subsequent change of direction, NNSA’s [review](#) of LANL’s pit production plans continues to sound a warning about the overall adequacy of PF-4, underscoring our third point above:

PF-4 is a Hazard Category (HC)-2/Security Category (CAT)-I facility that will exceed its planned lifetime of 50 years, during 2024. In 1978 PF-4 had ample design and physical floor space to perform required missions in a safe environment. Increasingly stringent nuclear safety requirements and regulations limit LANL’s ability to further increase plutonium operations in the existing PF-4 space.

Tenth, it has become obvious to us that decisions regarding the mission “push” we see, not just at LANL, are typically made by very small groups of people who are not fully responsible to anyone outside a narrow chain of command. The situation is being exacerbated by NNSA’s [new management approach](#). Recently, federal officials described what they described as a “do-loop,” or political and bureaucratic short-circuit, between NNSA officials, contractors, and pork-barrel politicians which is bypassing all other parties, including the White House.

Eleventh, NNSA has [said](#) (p. 3) that cost constraints do not exist, or at least not in the same form as in the recent past. NNSA is no longer “cost-constrained.” We have also heard this in other versions from senior NNSA officials. There is no fiscal excuse, in other words, to make safety secondary. Dr. Hruby’s comment in the hearing

that the resources weren't there for safety improvements can only be true to the extent NNSA has not asked for them.

Twelfth, as noted above, the pit production schedule is changing. LANL's new pits are [not needed](#) (pp. 34-36) NNSA's *initial* production of W87-1 warheads, which will use reused W87-0 pits (. It is not enough to "get the maximum safety, *despite not meeting normal safety requirements, given the immutable schedule and our unwillingness to spend money on an old facility.*" The schedule is not "mission-critical" except in a tautological sense.

By the mid-2030s, Savannah River Site (SRS) pit production will be capable of producing all 80 ppy. The LANL pit production mission overall, as opposed to its training and technology development mission, is not "mission-critical."

Lesser safety – e.g. NNSA's new proposal for passive confinement at PF-4 rather than to upgrade PF-4 with an active confinement ventilation (ACV) system – appears to be "grandfathered in" at LANL, in NNSA's plans for LANL. We are outraged.

If PF-4 were a ship, it would be in dry dock for repairs.

Thirteenth, to bring that last point into its own heading, PF-4 needs an ACV. There are a number of reasons, of which the DNFSB is likely quite aware. We are quite skeptical that LANL – or anyone – can "model" accidents adequately. There are way too many variables, some of which are behavioral. Overall, LANL appears to be relying on "paper safety," changing only its analysis and its bureaucratic lobbying, not actual hardware or program plans.

Fourteenth, we did not hear when exactly LANL would be fully *implementing* its future, better, documented safety analysis (DSA). A DSA is just a piece of paper. We did not hear when or if and do not know when or if, LANL will ever achieve compliance with DOE safety standards, such as they are.

These conclude our comments at this time. Thank you for the opportunity to make them.