



July 7, 2017

Defense Nuclear Facilities Safety Board
625 Indiana Ave NW #700
Washington, DC 20004

Via email to hearing@dnfsb.gov

Re: Understanding the Safety Posture of the Plutonium Facility at Los Alamos National Laboratory Comments

Dear Safety Board Members:

Thank you for this opportunity to comment on nuclear safety issues at the Los Alamos National Laboratory (LANL). Thank you as well for holding the June 7 public hearing in Santa Fe on these same matters. As you clearly saw, these issues are of great public interest in northern New Mexico.

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.

We work on current budget, environmental, and operational issues of nuclear weapons facilities, primarily the Los Alamos National Laboratory (LANL). We have publicly and vocally pressed the Lab to finally change its mission away from nuclear weapons programs and move more toward critically needed programs, such as nonproliferation efforts, other new national security priorities (for example, port security), pure science and energy efficiency programs and cleanup. Through detailed budget analyses, we hope to demonstrate that LANL can move towards these real national security issues and still contribute to the economy of northern New Mexico.

We support safe, monitored storage of radioactive wastes as a matter of national security and environmental protection. However, this should not be interpreted as support for more nuclear weapons, pit production, nuclear power, or the generation of more nuclear wastes. In our view, the best way to deal with the environmental impacts of nuclear waste is to not produce it to begin with.

General Points

To begin these comments, one of the authors clearly recalls senior DOE officials in public hearings in the first half of the 1990's claiming that lessons were learned from the deeply troubled history of the Rocky Flats Plant and that reestablished plutonium pit production at

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LANL would always be safe. Instead, we have had a long history of woefully neglected and out-of-date safety bases and numerous near misses in nuclear criticality safety incidents, as recently documented in an outstanding series of articles by the Center for Public Integrity (<https://www.google.com/search?q=Center+for+Public+Integrity+Nuclear+Negligence&ie=utf-8&oe=utf-8>).>

Moreover, although not directly related to nuclear criticality issues, these concerns over nuclear safety at LANL are further amplified by the apparently incompetent management of Los Alamos National Security, LLC (LANS). This led to the forced three-year closure of the multi-billion dollar Waste Isolation Pilot Plant (WIPP), caused by an improperly prepared LANL radioactive waste drum. This is further underscored by the fact that, as the Board well knows, LANL is planning to quadruple plutonium pit production.

Concerning pit production, much was made at the June 7 hearing of the fact that mission drives Materials at Risk. The clear inference is that expanded pit production will indeed create a larger inventory of Materials at Risk, in turn increasing occupational and public risks. While we fully understand that “mission” is not under the purview of the DNFSB, we do hope to persuade the Board that if the mission is not fully justified, then the question and granular details of nuclear safety should be pursued even more diligently.

First, as a baseline, plutonium pit production is not needed to maintain the existing stockpile. Our evidence for this is that none has been scheduled since LANL finished the production run of W88 pits that was stopped at the Rocky Flats Plant by the 1989 FBI raid investigating environmental crimes.

Future pit production is all about future new-design nuclear weapons. As the Board knows, LANL is now tooling up to produce W87 plutonium pits for the Interoperable Warhead, which the labs propose to replace the Air Force’s W78 ICBM warhead and the Navy’s W88 warhead. However, the Navy doesn’t want it, as was made clear by a 2012 Navy memo leaked to Nuclear Watch <https://www.nukewatch.org/importantdocs/resources/Navy-Memo-W87W88.pdf>.

Moreover, the Navy is going to want the Interoperable Warhead even less now that a \$3 billion “alteration” is beginning for the W88 that will “refresh” its conventional high explosives and give it a new arming, fuzing and firing set that will likely give it new military capabilities. Even Ernest Moniz has admitted to Nuclear Watch that Navy support for the IW is “mixed”, which we think is quite a concession for an ex-DOE Secretary. Further, government sources tell us that Air Force support for the Interoperable Warhead is mixed as well.

To add to this, LANL is NOT going to produce exact replicas of the W87 pit, but rather “W87-like” pits. Government sources tell us this may involve intrusive modifications to the pit, such as a plunger of some type that could insert itself into the pit when a self-aware nuclear weapon senses that it is being diverted in an authorized manner. To be clear, Nuclear Watch is strongly in support of policy and technical means of preventing the unauthorized use of nuclear weapons, but there are many ways of doing that. Our concern here is that major modifications to the pit may undermine confidence in its reliability when it cannot be full-scale tested, or alternatively would have serious international proliferation repercussions if full-scale tested. As a supreme irony, the Interoperable Warhead, which we believe is exorbitantly expensive make-work by and

for the nuclear weapons labs, could diminish our national security by degrading confidence in stockpile reliability.

For example, upon our questioning, Moniz asserted that the new tools under the Stockpile Stewardship Program would allow the National Nuclear Security Administration (NNSA) to certify the reliability of the Interoperable Warhead. We are not so sanguine about that, and it leads us to question how bloody far the nuclear weapons labs will take new designs before the Pentagon balks (after all, there are plans for an IW-1, IW-2 and IW-3).

But to sum up our point here, while again we understand that “mission” is not under the purview of the Safety Board, the risks of expanded plutonium pit production should be reviewed all the more stringently if indeed expanded plutonium pit production is unnecessary to begin with, or even worse could lead to erosion of confidence in stockpile reliability. And this is on top of LANL’s already deeply troubled history of nuclear safety.

Another issue area that the Board should look at is future disposal of increased transuranic wastes generated by expanded plutonium pit production. Although the Department of Energy has managed to reopen the Waste Isolation Pilot Plant, operations there are going to remain constrained until at least 2021, if and when a new ventilation shaft is supposed to be installed.

We were somewhat acquainted with the former DOE nuclear safety officer turned whistleblower at LANL, the late Chris Steele, whom we admired greatly. We specifically recall his interview in *Vanity Fair* where he observed that LANL was still claiming credit for its PF-4 fire suppression system even after the total collapse of the building following a serious seismic event. We also note the Center for Public Integrity’s articles that reported that some 20 experts at LANL quit *en masse* in protest over lax nuclear safety procedures. Our point here is the Safety Board must insist upon more than adequate staffing of nuclear safety experts at LANL.

Specific points

Any expanded pit production schedule must prioritize health and safety over any hypothesized need for pits.

The expansion of pit production at Los Alamos is driven by the Strategic Forces Subcommittee of the House Armed Services Committee, which made a point of delinking expanded production from the actual needs of the stockpile in the 2015 National Defense Authorization Act. The law stipulated that “timelines for creating certain capacities for production of plutonium pits and other nuclear weapons components must be driven by the requirement to hedge against technical and geopolitical risk and not solely by the requirements of life extension programs [for existing nuclear weapons],” which gives expanded plutonium pit production a blank check. While deeming it a “national security priority”, Congress required the Los Alamos Lab to “demonstrate the capability to produce war reserve plutonium pits at a rate sufficient to produce 80 pits per year” by 2027.

A certification mandate similar to Section 3112 of the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009 should be considered. Los Alamos National Laboratory should NOT receive any funds for construction for any expanded pit production at PF-4 until the Board certifies that all safety design concerns are met.

In 2009, Congress mandated the DNFSB to certify that seismic and ventilation design concerns were met at the proposed CMRR-NF. A similar mandate could be put into effect for the seismic and ventilation design concerns at PF-4.

122 STAT. 4754 PUBLIC LAW 110-417—OCT. 14, 2008

Certifications.

Time period. 50 USC 2444.

SEC. 3112. LIMITATION ON FUNDING FOR PROJECT 04-D-125 CHEMISTRY AND METALLURGY RESEARCH REPLACEMENT FACILITY PROJECT, LOS ALAMOS NATIONAL LABORATORY, LOS ALAMOS, NEW MEXICO.

Of the amounts appropriated pursuant to an authorization of appropriations in this Act or otherwise made available for fiscal year 2009 for Project 04-D-125 Chemistry and Metallurgy Research Replacement (in this section referred to as “CMRR”) facility project, Los Alamos National Laboratory, Los Alamos, New Mexico, not more than \$50,200,000 may be made available until—

(1) the Administrator for Nuclear Security and the Defense Nuclear Facilities Safety Board have each submitted a certification to the congressional defense committees stating that the concerns raised by the Defense Nuclear Facilities Safety Board regarding the design of CMRR safety class systems (including ventilation systems) and seismic issues have been resolved; and

(2) a period of 15 days has elapsed after both certifications under paragraph (1) have been submitted.

Last Person Out – Close the Door

We should have this hearing again in 2026 when all new buildings and remodels of existing buildings are complete. The Safety Board should insist that an active confinement ventilation system must be in place and working.

LANL, NNSA, and the Board have been discussing ‘active’ vs. ‘passive’ confinement of nuclear materials at PF-4 in the event of a fire, seismic or some other accident event since at least 2005. Basically, an active system would automatically turn off exhaust fans and close doors in the event of a fire. A passive system would rely on workers to remember to do these chores while evacuating a burning nuclear facility.

The Board has stated its preference many times in the past:

Los Alamos Report for Week Ending *July 15, 2005*

Plutonium Facility (TA-55): In April, NNSA rejected the Interim Technical Safety Requirements (ITSRs) submitted by LANL for TA-55. The intent of the ITSRs is to consolidate the best available control set for TA-55 operations pending completion of the final Documented Safety Analysis upgrade (site rep weekly, 4/22/05). NNSA and LANL also indicated that the ITSRs would capture the safety-class control strategy for addressing passive confinement vulnerabilities identified last December. ***The Board has clearly stated its position (re: Board letter 5/31/05) that a reasonable upgrade of the existing active confinement ventilation system is the preferred safety-class alternative.***

Los Alamos Report for Week Ending *December 9, 2005*

Plutonium Facility (TA-55): ...The ITSRs include compensatory measures for ***TA-55's dominant nuclear safety issue, which is the still-open question on effectiveness of the***

passive confinement strategy in the event of a major accident (site rep weekly 9/23/05). It's likely that final resolution will involve some combination of confinement ventilation, fire suppression, containerization, glove-box upgrades, material-at-risk limits, and specific administrative controls.

Los Alamos Report for Week Ending **November 25, 2016**

Plutonium Facility–Infrastructure: Last month, the NNSA's Office of Recapitalization approved the analysis of alternatives for phase III of the TA-55 Reinvestment Project (TRP III). The decision endorsed moving forward with a full fire alarm system replacement with the addition of a second alarm panel for the non-nuclear facilities. ***This action solidifies the fact that TRP III will not include an upgrade to a safety class active confinement ventilation system*** or support separation of the non-nuclear facilities from the firewater loop. Both of these sub-projects are identified in the TA-55 Project Execution Strategy as required to help further reduce the mitigated offsite consequences from seismically-induced events. Both sub-projects are also identified in the approved safety basis as planned improvements, as well as listed as compensatory measures associated with acknowledged vulnerabilities in the existing safety systems. The path forward for these sub-projects is currently unclear.

Los Alamos Report for Week Ending **December 30, 2016**

NNSA's decisions on the scope for Phase III of the TA-55 Reinvestment Project translated into the loss of line item funding for Plutonium Facility to upgrade the active confinement ventilation system to safety class and eliminate non-seismically qualified loads from the safety class fire water loop. These sub-projects were key elements of NNSA's previous strategy to mitigate the consequences of a post seismic fire to well below the DOE Evaluation Guideline. The situation is further exacerbated by the recently acknowledged seismic fragility issues with the fire suppression system, as well as LANL's planned reliance on executing these line items to counter system aging, vulnerability, and obsolescence issues.

Los Alamos Report for Week Ending **January 6, 2017**

Plutonium Facility Infrastructure: ... Notable out-year activities include: determination of a path forward to remediate seismic interaction issues (2 over 1), particularly with the fire suppression system; completion of seismic evaluations for safety significant systems, structures, and components in order to complete the project to ***identify the totality of seismic vulnerabilities that began in 2008***; modifications to achieve 2-hour fire barrier status for certain walls; removal of non-seismic loads from the safety class firewater loop; ***and an active confinement ventilation system.***

<https://www.dnfsb.gov/documents/reports/resident-inspector-weekly-reports>

Don't make any pits until ALL safety programs are approved and operational and until the vault and all the gloveboxes are de-inventoried.

The inventory of SNM at PF-4 is too high to allow any pit production. LANL is receiving funding to de-inventory because this job must be done.

Strategic Materials Sustainment

Continue de-inventory of LANL's Chemistry and Metallurgy Research (CMR) and PF-4 vault facilities to support the transition to plutonium production.

Pg. 72, Vol 1, FY 2018 Congressional Budget Justification

Material Recycle and Recovery (MRR) and Storage

At LANL, MRR provides funding for the Chemistry and Metallurgy Research (CMR) de-inventory effort, the Confinement Vessel Disposition project, Weapons Engineering Tritium Facility (WETF) de-inventory and the PF-4 vault de-inventory in order to consolidate and disposition excess materials, provide required capability for Defense Program's needs, and reduce nuclear safety risk and personnel radiological exposure.

Pg. 110, Vol 1, FY 2018 Congressional Budget Justification

Planned FY 2018 Recapitalization Projects - As of May 2017

PF-4 Fire Wall Upgrades 7,000

PF-4 Fire Water Loop Component Replacements 7,395

Pg. 248, Vol1, FY 2018 Congressional Budget Justification

We should have this hearing again in 2026 when all new buildings and remodels of existing buildings are complete.

There are other important facilities that must be completed before pit production resumes. Expanded pit production must not start until all proposed new facilities are in place because otherwise unsafe old buildings would be used.

PF-4 Equipment Installation Phase 1 (PEI1) Subproject (04-D-125-05): Maximizes use of PF-4 by decommissioning and decontaminating (D&D) old gloveboxes and equipment, reconfiguring and reusing existing gloveboxes, consolidating and relocating existing capabilities, and installing new gloveboxes and equipment for AC/MC capabilities. PEI1 will establish the AC and MC capabilities that utilize larger amount of nuclear materials. CD-3A for PEI1 was approved on March 18, 2015. CD-3B for long lead procurements was approved on December 22, 2015. PEI1 CD-2/3 approval was received on October 31, 2016 with the Performance Baseline established at \$394M. CD-4 ***completion is scheduled for April 30, 2022.***

Pg. 392, Vol1, FY 2018 Congressional Budget Justification

PF-4 Equipment Installation Phase 2 (PEI2) Subproject (04-D-125-06): Maximize use of PF-4 by consolidating and relocating existing capabilities, replacing existing equipment, installing gloveboxes and equipment and D&D of existing laboratory space for AC/MC capabilities. PEI2 will establish enduring AC and MC capabilities for supporting NNSA actinide-based missions. Specific capabilities in PEI2 scope include, but are not limited to the following:

- o Physical Properties
- o Small Sample Fabrication and Preparation
- o Mechanical Testing
- o Sample Preparation
- o Surface Science

PF-4 Equipment Installation Phase 2 (PEI2) Subproject (04-D-125-06)
Complete in 2026

Pg. 406, Vol 1, FY 2018 Congressional Budget Justification

The two new radioactive waste facilities, the Transuranic Liquid Waste Treatment Facility Upgrade Project and the Radioactive Liquid Waste Facility, must be complete and working before any pits are made.

Transuranic Liquid Waste (TLW) Treatment Facility Upgrade Project

Complete 2022-23

This project will design, construct, and start-up a new facility to treat transuranic liquid waste generated at the Plutonium Facility (PF-4) at the Los Alamos National Laboratory, the only facility in the nation capable of producing pits for the enduring nuclear stockpile. Approval of the performance baseline will be granted upon the validation of the final design by external reviewers and approval of the Preliminary Documented Safety Analysis by the safety basis approval authority.

Justification

The existing degraded and outdated treatment facility systems pose elevated risk to workers, public, and environment. Continuous workarounds are required to keep systems running and excessive corrosion threatens system availability. The replacement is needed to remediate significant deficiencies associated with the existing RLW treatment capabilities that pose a threat to the long-term availability of this function.

Pg. 339, Vol 1, FY 2018 Congressional Budget Justification

Radioactive Liquid Waste Facility

Planned to be complete 2018-19

The replacement is needed to remediate significant deficiencies associated with the existing RLW treatment capabilities that pose a threat to the long-term availability of this function. The replacement is ultimately aimed at providing an RLW treatment capability that is safe, reliable, and effective for the next 50 years in support of primary missions at LANL.

Significant portions of the RLW system are almost 50 years old and their reliability is significantly diminished. The transuranic storage tank failure demonstrated the inability of RLW components to remain in service beyond their design life and exemplified the high cost of repair. The existing treatment facility is in need of significant upgrades in order to comply with current codes and standards including International Building Code, seismic design/construction codes and the National Electric Code (NEC). Operations and safety reviews have highlighted the need for enhanced seismic conformance for the existing facility. Continuous workarounds are required to keep systems running and excessive corrosion threatens system availability. Degraded and outdated facility systems pose elevated risk to workers.

Pg. 325, Vol 1, FY 2018 Congressional Budget Justification

Additional waste storage at TA-55 must not be allowed. LANL has requested to increase hazardous and radioactive waste storage limits at PF-4. Why add more waste when one of the biggest safety problems at PF-4 is that it needs to be de-inventoried?

LANL plans to increase the waste storage capacity at PF-4 by 60%, as follows:

Los Alamos National Laboratory (LANL) is proposing to increase the storage of hazardous and radioactive waste. Public comments were sought for a proposed hazardous waste Permit Modification Request (PMR) to store more mixed transuranic (TRU) waste at Tech Area-55. The PMR proposes to add three hazardous waste storage units – one outside and two inside of

Plutonium Facility-4. The reason given was because TRU waste shipments from LANL are not expected to resume until September 2017. And it was stated that the number of shipments available to LANL would not meet projected generation rates until the new ventilation is completed at WIPP, which is currently forecasted for 2020. Projected waste shipment estimates are much less than historic practices at WIPP because that facility is struggling to reopen fully. With the TA-55 current inventory and projected waste generation rate of one shipment per week, it will take years to dispose LANL's TRU and mixed transuranic (MTRU) waste inventory.

A large number of the TRU waste inventory at TA-55 includes Pipe Overpack Containers (POCs) containing combustibles that exceed new limits. According to the new criteria, updated in July 2016, POCs containing combustible material above the new limits are not accepted at WIPP. Apparently, new testing on the POC "integrity" led to this ban. There were 300 of these non-compliant, combustible POCs sitting around waiting to be re-packaged. This was half of this type of container that is in inventory at TA-55. And LANL did not want to move the non-compliant POCs down to their new TRU waste storage, TA-63, because that would be "ineffective." So LANL plans to store, at its nuclear bomb component production facility, containers with combustibles that are too dangerous to ship to WIPP, a 2100-foot deep geological repository.

It is claimed that the addition of the three proposed units would result in an only a 2% increase in the Facility's storage capacity. By "Facility" they mean all of LANL's 38 square miles and dozens of Tech Areas. This is an important distinction, because a more than 25% increase in stored waste requires a Class 3 Permit Modification Request, which requires much more public participation. When compared to just the waste storage capacity of TA-55, the proposed additional increase is more like 60%. (Total LANL regulated storage capacity = 5.1 million gallons. TA-55 = 159,000 gal. Proposed additional request = 94,500 gal.)

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Respectfully submitted,

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