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Faulty Radioactive Liquid Waste Valves Raise Crucial Plutonium Pit Production and Safety Board Issues

Santa Fe, NM – On May 3, 2019 the Defense Nuclear Facilities Safety Board reported:

Radiological Laboratory Utility Office Building (RLUOB): Last Wednesday, facility operations personnel entered a service room and noticed a leak emanating from a valve on the radioactive liquid waste (RLW) system. Upon subsequent visual inspection by a radiological control technician, RLUOB engineers believe that this valve, and 6 similar valves, may be constructed of carbon steel. The RLW system handles radioactive liquid waste streams from chemistry operations that include nitric and hydrochloric acids—carbon steel valves would be incompatible with these solutions. The suspect valves are also in contact with stainless steel piping, which would create another corrosion mechanism. RLUOB management plans to drain the affected piping sections and develop a work package to replace all of the suspect valves. They will also confirm the valve materials and if shown to be incorrect, investigate the cause of this failure in the design, procurement, and installation processes. The valves were installed in 2013 as part of a modification to add straining and sampling capabilities that were not included in the original design.¹ [Please note that DNFSB reports are posted a few weeks later than dated.]

This immediately raises two crucial issues: 1) the National Nuclear Security Administration's (NNSA's) plans for expanded plutonium pit production; and 2) the current attempt by the Department of Energy to restrict Safety Board access to its nuclear weapons facilities.

Plutonium pits are the fissile cores or “triggers” of modern thermonuclear weapons. On May 10, 2018 the NNSA and Defense Department jointly announced that production would be expanded to at least 80 pits per year by 2030, with at least 30 pits per year produced at the Los Alamos National Laboratory (LANL) and at least 50 pits per year at the Savannah River Site in South Carolina. An FBI raid investigating environmental crimes abruptly stopped plutonium pit production at the Rocky Flats Plant near Denver in 1989. In 1996 production was relocated to LANL but was explicitly capped at 20 pits per year.

The programmatic driver for expanded pit production is not to maintain the safety and reliability of the existing nuclear weapons stockpile. Instead, it was for a new nuclear warhead called the “Interoperable Warhead,” designed to work on both Air Force and Navy missiles. Nor were the new pits to be exact replicas of existing pits, leading to possible reliability issues that could increase pressures to resume nuclear weapons testing.

However, NNSA cancelled that new warhead in December 2018 because the Navy never wanted it. Instead, NNSA plans to build essentially the same new nuclear weapons design for just the Air Force alone, now dubbed the W87-1. But NNSA has also said that if for some reason it can't use new plutonium pits in the W87-1 then it would need new pits for the next “Life Extension

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Program” which it doesn’t name or specify.² The point is that NNSA has yet to concretely justify its plans for expanded plutonium pit production, which will cost taxpayers at least \$43 billion over 30 years.³ In addition, a recent independent study concluded that NNSA’s plans for expanded plutonium pit production are potentially achievable but “will be extremely challenging,” are not possible by 2030, and are at “very high risk” at the Los Alamos Lab.⁴

The Radiological Laboratory Utility Office Building (AKA the “Rad Lab”) was originally built in 2011 for \$200 million and equipped with glove boxes, etc. for another \$200 million. “Radiological” is a NNSA term denoting a level of nuclear risk lower than a Hazard Category-1, 2 or 3.⁵ The Rad Lab’s primary mission is to provide analytical chemistry and materials characterization of plutonium in direct support of expanded pit production at PF-4, LANL’s main plutonium facility. In 2012 NNSA cancelled a Hazard Category-2 “Nuclear Facility” at LANL whose estimated costs exploded ten-fold to \$6.5 billion, largely because of serious seismic concerns expressed by the Safety Board.

As a substitute for the Nuclear Facility necessary for expanded plutonium pit production at LANL, NNSA decided to retrofit the Rad Lab as a Hazard Category-3 nuclear facility with \$600 million worth of additional gloveboxes, etc., and upgrade PF-4 with \$1.4 billion of the same. At the same time, the Department of Energy (NNSA’s parent organization) is controversially seeking to restrict Safety Board to Hazard Category-3 nuclear facilities, which targets the Rad Lab.⁶ If DOE is successful, this would have prevented the Safety Board from reporting on the Rad Lab’s leaking liquid radioactive waste valves to begin with. The seriousness of this issue is underscored by LANL’s long track record of nuclear safety incidences, for which the Safety Board has been the main source of public information. For example, the Safety Board’s reports led to a three-years stop to major plutonium operations at PF-4 because of nuclear safety problems that have yet to be fully resolved.

Jay Coghlan, Nuclear Watch New Mexico Director, commented, “Remember this is the gang that couldn’t get it straight between organic and inorganic cat litter, sending a radioactive waste drum that ruptured and closed the Waste Isolation Pilot Plant for three years, costing the American taxpayer three billion dollars to reopen. Now we learn that they don’t know elementary plumbing for liquid radioactive wastes lines, and we’re supposed to trust them while they unjustifiably expand plutonium pit production? There should be no expanded pit production until nuclear safety is fully assured by an independent, unrestricted Safety Board, and our congressional delegation should be the first to demand that.”

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¹ Available at

<https://www.dnfsb.gov/sites/default/files/document/18101/Los%20Alamos%20Week%20Ending%20May%202019.pdf>

² See <https://nukewatch.org/newsite/wp-content/uploads/2019/03/W78-Replacement-Program-Cost-Estimates-IHE-1.pdf>, p. 6

³ For costs, see https://nukewatch.org/newsite/wp-content/uploads/2019/03/FINAL-Pu-Pit-Production-EA-Results-05.14.18_Unclassified.pdf, p. 10. NNSA chose to combine Alt 1 and Alt 2c (i.e. pit production and both LANL and the Savannah River Site).

⁴ See Summary of Main Findings in the executive summary of the March 2019 Institute for Defense Analysis report on the NNSA’s plans for expanded plutonium pit production at <https://nukewatch.org/newsite/wp-content/uploads/2019/05/NGOS-demand-NEPA-for-pit-production.pdf>

⁵ Hazard Category-1 is the highest category, typically reserved for a nuclear reactor.

⁶ See DOE Order 140.1, *Interface with the Defense Nuclear Facilities Safety Board*