



Comments under the National Environmental Policy Act
on the
Draft Environmental Impact Statement for Plutonium Pit Production at
the Savannah River Site in South Carolina

June 2, 2020

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Dear SRS EIS NEPA Document Manager,

We respectfully submit these comments¹ for the National Nuclear Security Administration's (NNSA's) *DOE/EIS-0541 Draft Environmental Impact Statement for Plutonium Pit Production at the Savannah River Site in South Carolina*² (hereinafter "DEIS"). Through comprehensive research, public education, and effective citizen action, Nuclear Watch New Mexico seeks to promote safety and environmental protection at defense 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.

These comments incorporate by reference the comments submitted by Nuclear Watch and others regarding NNSA's Supplement Analysis of its 2008 Complex Transformation Programmatic Environmental Impact Statement.³ We believe they are relevant to connected issues which the agency seeks to segment contrary to statutory requirements under the National Environmental Policy Act.

¹ Nuclear Watch New Mexico's SRS DEIS comments are available online at <https://nukewatch.org/nwnm-srs-deis-comments/>

² NNSA's draft SRS EIS is available at <https://www.energy.gov/nepa/downloads/doe-eis-0541-draft-environmental-impact-statement>

³ These comments are available at <https://nukewatch.org/newsite/wp-content/uploads/2019/08/Nuclear-Watch-NM-CT-PEIS-SA-Comments-8-12-19.pdf> and <https://nukewatch.org/newsite/wp-content/uploads/2019/08/NRDC-CT-PEIS-Supp-Analysis-Comments.pdf>

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NNSA's Unseemly Rush

In the last month NNSA had three different major processes under the National Environmental Policy Act (NEPA) on new and/or upgraded nuclear weapons production facilities that required public comment. The public asked for extensions to the comment periods because of the COVID-19 pandemic. NNSA granted mere 15-day extensions for each. This smacks of being a carefully calibrated decision to give the least amount possible while still being able to claim that the agency gave something.

This is despite the fact that 14 House committee chairs and 22 Senators wrote to the Office of Management and Budget requesting that all public comment periods be indefinitely extended because of the COVID-19 pandemic. This further smacks of a double standard given that even in normal times NNSA and its parent Department of Energy routinely ask other government agencies for major time extensions when it comes to cleanup and independent oversight. For example, DOE routinely asks for time extensions to respond to nuclear safety recommendations by the independent Defense Nuclear Facilities Safety Board.⁴ The Los Alamos National Laboratory (LANL) asked the New Mexico Environment Department for more than 150 time extensions for legally required cleanup milestones (which NMED granted).

In contrast to these extensions routinely granted to DOE and NNSA, the agency told New Mexican Senators Tom Udall and Martin Heinrich that the expansion of plutonium pit production at the Los Alamos Lab is so vital to national security that the agency could not wait another 45 days for public comment on a Supplement Analysis to the 2008 LANL Site-Wide Environmental Impact Statement (SWEIS), even while northern New Mexico is impacted by the pandemic. NNSA claimed that “a two month extension of the comment period would have a severe adverse impact on the detailed planning and coordination of this effort” to expand plutonium pit production at LANL.⁵ That is laughable given NNSA's chronic track record of massive cost overruns and broken schedules.

For starters, the Department of Energy has been on the Government Accountability Office's “High Risk List” for project mismanagement for 27 consecutive years. Independent experts have found that most of NNSA's proposed major projects are canceled outright, but of the few who are not “we could find no successful historical major project that both cost more than \$700 million and achieved CD-4 [the Critical Decision to begin operations] in less than 16 years.”⁶ This is particularly relevant given that NNSA proposes to “repurpose” the MOX Fuel Fabrication Facility at the Savannah River Site (SRS) for pit production, after that canceled project wasted

⁴ For DOE's latest request, see Secretary Dan Brouillette to DNFSB Chairman Bruce Hamilton, April 27, 2020, <https://nukewatch.org/doe-secretary-brouillette-request-for-extension-to-respond-to-recommendation-2020/> The Safety Board has long reported on chronic nuclear safety problems at the Los Alamos National Laboratory (LANL), but DOE sought to kill the messenger by restricting Safety Board access to NNSA nuclear weapons facilities.

⁵ NNSA letter, April 6, 2020, <https://nukewatch.org/nnsa-to-nukewatch-15-day-extension/>

⁶ *Independent Assessment of the Two-Site Pit Production Decision: Executive Summary*, Institute for Independent Analysis, May 2019, <https://nukewatch.org/newsite/wp-content/uploads/2019/11/IDA-With-cover-page.pdf>

more than 7 billion taxpayer dollars. Similarly, a major new plutonium facility at LANL⁷ was cancelled in 2012 when its projected construction costs exploded ten-fold to \$6.5 billion.

Public comment was due on the Y-12 Supplement Analysis May 26, after another 15-day extension by NNSA. This too was a double standard given that construction of the Uranium Processing Facility was paused for ~3 years after NNSA completely blew its original budget estimate of \$6.5 billion. During that time NNSA formulated its UPF hybrid alternative while circumventing the NEPA process and shutting the public out. Therefore, it is hypocritical for NNSA to grant only a 15-day extension on that Supplement Analysis public comment period when it so frequently blows project budgets and schedules and routinely asks other government agencies for extensions.

Similarly, NNSA wasted more than a decade and some 7 billion taxpayer dollars attempting to build the MOX Fuel Fabrication Facility, which it now proposes to “repurpose” for plutonium pit production. Given that public comment benefits both the public and federal agencies (see below) it is unacceptable that NNSA grants only 15-day extensions for public comments during the COVID-19 pandemic. While NNSA pays lip service to following the intent of the National Environmental Policy Act, in reality it is ramming forth its agenda for new unneeded nuclear weapons while meeting the bare minimum of NEPA requirements.

The Tangible Value of Public Comments under NEPA

The lack of sufficient time for formal public comment can be detrimental to both the agency and the public given that public comment has time and again proved to be good for both. One dramatic illustration is that the now-Executive Director of Nuclear Watch New Mexico commented on the lack of wildfire prevention in a draft 1999 LANL Site-Wide Environmental Impact Statement (SWEIS). In response, the final LANL SWEIS included a detailed hypothetical wildfire that became all too real a half year later during the Cerro Grande Fire. That hypothetical scenario aided Lab leadership in their decision to order evacuation of all but essential personnel. Mitigation provisions in the final LANL SWEIS included fire prevention measures that helped to keep the Cerro Grande Fire a half-mile away from above ground plutonium-contaminated transuranic wastes stored at the Lab’s Area G, which could have been catastrophic had their drums ruptured due to high heat. Even LANL recognized that public comment helped to avert potential catastrophe, writing:

“It is a story of an EIS process, of helpful public comments, of a timely response ... then a great fire, called Cerro Grande, that proves the value of outsiders' ideas... When the Cerro Grande Fire swept down from the mountains this spring, these extra defensive steps, taken in response to the public comments, paid for themselves many times over. The savings were in the form of the harm to facilities that was reduced or avoided and reduced risk to the public that might have resulted.”⁸

That lesson on the value of public comment under NEPA can be extended to this SRS DEIS. NNSA would be wise to heed citizen warnings expressed in formal public comments.

⁷ The Chemistry and Metallurgy Research Replacement Project- Nuclear Facility

⁸ <https://hwbdocuments.env.nm.gov/Los%20Alamos%20National%20Labs/General/13435.pdf>

A Selected History of DOE/NNSA NEPA Compliance

Given the virtues of formal comments explained above, some of my personal history in DOE and NNSA NEPA processes may be some valuable counterpoint. My first involvement in NEPA litigation against the Department of Energy was in 1995 over the Dual-Axis Radiographic Hydrodynamic Testing Facility (DARHT) at the Los Alamos National Laboratory (LANL). DOE proposed to build DARHT, designed for explosive open-air hydrotests involving plutonium or surrogates, without an environmental impact statement, instead relying upon a Categorical Exclusion to NEPA.

In pre-litigation developments DOE agreed to complete the Stockpile Stewardship and Management programmatic environmental impact statement (PEIS) and an EIS for DARHT. But DOE refused to halt construction of DARHT, implausibly claiming that it would not prejudice the outcome of the EIS, hence we sued. Ultimately NM District Judge Edwin Mechem ruled in our favor, enjoining DOE from construction for 16 months until it completed an EIS.⁹

Some quotes from Judge Mechem's 1/26/95 Opinion and Preliminary Injunction are perhaps applicable to this DEIS (our commentary is italicized):

“The [LANL] site-wide EIS, begun in 1979 and completed in 1981, hardly qualifies as a currently valid assessment consistent with the purpose of NEPA.” At the time the 1981 LANL SWEIS was 14 years old. We note that the Complex Transformation Supplemental Programmatic Environmental Impact Statement (PEIS) is now 12 years old and that a new PEIS on expanded plutonium pit production should be prepared (see our extensive comments below).

“Bias toward one alternative or another may already exist as construction was allowed to start and progress without public input. Public Service, 825 F. Supp. At 1505 (NEPA process enables agency to review reasonable alternatives before its actions proceed so far that its decisions regarding the program become “cast in stone”).” We note that the existence of the partially constructed MOX Fuel Fabrication Facility will no doubt bias NNSA towards “repurposing” it for pit production.

“Case law has recognized the unique characteristics of environmental harm. NEPA is a purely procedural statute in that it sets forth procedures decision makers must follow, but it is substantive as well in that it demands that “a decisionmaker [sic] consider all significant environmental impacts before choosing a course of action. Sierra Club v. Marsh, 872 F. 2nd at 502.”

“Violations under NEPA are not purely procedural violations. The harm ensuing from a NEPA violation is intrinsic to the statute’s discrete objective. The harm at stake is a harm

⁹ *Los Alamos Study Group and Concerned Citizens for Nuclear Safety v. Hazel O’Leary, Secretary of Energy, and Department of Energy*, District of New Mexico, No. 94-1306-M Civil. Opinion 1/26/95, Preliminary Injunction 1/26/95, Opinion lifting injunction 4/16/96.

to the environment, but the harm consists of “the added risk to the environment” that occurs when government decision makers make up their minds without having before them an analysis of the likely effects of their decision upon the environment. *Sierra Club v. Marsh*, 872 F. 2nd at 500 (citing *Commonwealth of Mass. V. Watt*, 716 F.2nd 946 (1st Cir. 1983)). When a decision to which NEPA obligations attach is made without the informed environmental consideration that NEPA requires, the very harm that NEPA intends to prevent has been suffered.” *We again assert that a new nation-wide programmatic environmental impact statement on expanded plutonium pit production should be completed for “the informed environmental consideration that NEPA requires.”*

A tangible benefit from that litigation and resulting NEPA process was that DOE decided to contain all open-air explosive tests involving plutonium, thus reducing public risk.

My next involvement in DOE NEPA processes was with the 1998 LANL Site-Wide Environmental Impact Statement. DOE had dragged its feet on preparing a new SWEIS after the first 1979 SWEIS. One reason that compelled DOE to do so was because through a Freedom of Information Act request I obtained an internal Lab memo that explicitly stated that the 1979 LANL SWEIS was woefully obsolete for the purpose of “tiering” other NEPA processes off of it. The very positive benefit of the 1998 LANL SWEIS in helping to prevent an even more catastrophic wildfire is already discussed above.

During roughly the same period I initiated litigation over DOE’s failure to have ever completed a programmatic environmental impact statement on its national cleanup program, which the Natural Resources Defense Council took on as lead counsel. A 1997 settlement resulted in a \$6.25 million fund for citizen and tribal studies of DOE environmental management programs. But to this date DOE has never completed a PEIS for the largest cleanup program in human history even as projected “environmental liabilities” across the nuclear weapons complex outpace the money spent on cleanup. I remain of the opinion that DOE’s national cleanup program could have been more efficient, productive and a better steward of taxpayer’s money had there been a programmatic environmental impact statement.¹⁰

Throughout my career I have offered substantial formal comment on the Department of Energy’s various NEPA processes to reconfigure its nuclear weapons complex. This includes (but is not limited to) the 1992 Complex Reconfiguration proposal, 1993 Nonnuclear Consolidation Environmental Assessment, 1996 Stockpile Stewardship and Management PEIS, 2003 Modern Pit Facility SPEIS (which never went beyond draft), 2006 Complex 2030 PEIS (which never went beyond draft), the 2008 Complex Transformation SPEIS, 2008 LANL SWEIS, 2011 Y-12 SWEIS, 2018 LANL “Rad Lab” Environmental Assessment, 2018 Y-12 Supplement Analysis, 2020 LANL Supplement Analysis, 2020 SRS EIS for plutonium pit production, the 2020 Y-12 Supplement Analysis and now this SRS EIS. Finally, Nuclear Watch New Mexico is a co-plaintiff with the Oak Ridge Environmental Peace Alliance and the Natural Resources Defense Council in the existing litigation over the Uranium Processing Facility, which has compelled the last two Y-12 Supplement Analyses.

¹⁰ The latest poster child for DOE’s problem plagued cleanup programs is the Waste Treatment Facility at Hanford, which has climbed from an original cost estimate of ~\$3 billion to ~\$18 billion, with growing doubts that it will ever work.

I want to make a few overall points. First, DOE and/or NNSA have often had to be compelled by citizen action to comply with NEPA. Second, I have observed a consistent pattern by DOE and/or NNSA to improperly segment connected actions that should be properly analyzed in a programmatic environmental impact statement or site-wide environmental impact statement. One of my favorite examples is the 2018 LANL Environmental Assessment which NNSA used to sanction a 10-fold increase in the plutonium inventory at the Rad Lab for analytical chemistry and materials characterization in direct support of expanded pit production.¹¹ Yet throughout that Environmental Assessment NNSA studiously avoided the subject of expanded pit production, even omitting it as a potential future mission for LANL while listing others, even though expanded pit production was already a legislated requirement under the 2015 Defense Authorization Act.

In short, I cite my personal history above to explain and back up my conclusion that DOE and NNSA have often abused, obfuscated and improperly segmented NEPA processes, which continues to this day with NNSA's failure to undertake a new programmatic environmental impact statement and new site-wide environmental impact statements for Y-12 and LANL.¹² That pattern continues now now with this draft SRS environmental impact statement.

Although it would seemingly be outside the scope of this draft Y-12 Supplement Analysis and will fall on deaf ears, I want to state for the record that NNSA should complete a nation-wide programmatic environmental impact statement for nuclear weapons complex reconfiguration under the 2 trillion dollar nuclear weapons "modernization" program. That PEIS should capture both the Uranium Processing and Extended Life Program Facilities (Buildings 9215 and 9204-2E) and expanded plutonium pit production, which are essentially two sides of the same coin of resumed U.S. industrial-scale nuclear weapons production. That PEIS would be particularly apt now as our nation faces a real national security crisis in the COVID-19 pandemic. Instead the federal government is trashing international arms control treaties, fueling a new nuclear arms race and even contemplating a return to full-scale nuclear weapons testing.

The Need for a Programmatic Environmental Impact Statement Under NEPA

In its Notice of Intent for the SRS EIS the agency states:

NNSA also hereby provides information regarding its overall NEPA strategy related to fulfilling national requirements for pit production. NNSA will first conduct a programmatic review to assist in decisions and second conduct site- specific reviews. NNSA anticipates that it will prepare at least three documents including: A supplement analysis (SA) to the Final Complex Transformation Supplemental Programmatic EIS (Complex Transformation

¹¹ LANL's Rad Lab is next door to PF-4, the facility for expanded plutonium pit production and linked to it via underground tunnel.

¹² Including other NNSA sites such as the Pantex Plant, which hasn't had a new site-wide environmental impact statement since 1996.

SPEIS); a site-specific EIS for the proposal to produce pits at SRS; and site-specific documentation for the proposal to authorize expanding pit production at LANL.¹³

In the completed “supplement analysis (SA) to the [2008] Final Complex Transformation Supplemental Programmatic EIS (Complex Transformation SPEIS)” NNSA rejected a new or supplemental programmatic environmental impact statement, to which we strongly object.¹⁴

Concerning “site-specific documentation for the proposal to authorize expanding pit production at LANL” NNSA published a draft Supplement Analysis which it summarized the need for as follows:

“The Department of Energy (DOE) National Nuclear Security Administration (NNSA) has prepared a draft Supplement Analysis (SA; DOE/EIS-0380-SA-06) of the 2008 Site-wide Environmental Impact Statement (SWEIS) for Continued Operations of Los Alamos National Laboratory (LANL). NNSA is preparing the SA to determine whether, prior to proceeding with the action to produce plutonium pits at a rate of no fewer than 30 pits per year no later than during 2026, the existing 2008 SWEIS for Continued Operations of LANL should be supplemented, a new environmental impact statement prepared, or no further National Environmental Policy Act (NEPA) analysis is required. Resources needed for pit production at LANL include construction of additional infrastructure, expansion of the work force, waste management operations, and transportation. The draft SA is an important element of the overall NEPA strategy related to fulfilling national requirements for plutonium pit production. DOE announced this NEPA strategy on June 10, 2019 (84 FR 26849) [referring back to the SRS EIS Notice of Intent].”

The draft LANL Supplement Analysis went on to “preliminarily” conclude that NNSA will NOT prepare a new LANL site-wide environmental impact statement. We strongly object to that “preliminary” conclusion, which no doubt will become the final conclusion just as in the CT SPEIS Supplement Analysis.¹⁵ We assert that the 12-year old 2008 SWEIS is obsolete and a new one should be completed given another major forest fire (the 2011 Las Conchas Fire); climate change that will induce more wild fires; a chronic track record of nuclear safety incidences; PF-4's declining safety posture, seismic issues (including being located above unconsolidated volcanic ash) and proximity to the townsite; extensive chromium groundwater contamination; as much as 13 billion taxpayer dollars in construction program over the next ten years; etc.

However, even before the question of a new site-wide environmental impact statement (EIS) for Los Alamos Lab, we believe that NNSA is legally required to first complete a new programmatic environmental impact statement (PEIS) on its nation-wide plans for expanded plutonium pit production. This is necessary to 1) raise the production cap of 20 pits per year explicitly set by

¹³ *Notice of Intent to Prepare an Environmental Impact Statement for Plutonium Pit Production at the Savannah River Site*, Federal Register/ Vol. 84, No. 111 / Monday, June 10, 2019 / Notices 26849, <https://www.govinfo.gov/content/pkg/FR-2019-06-10/pdf/2019-12003.pdf>

¹⁴ See Nuclear Watch New Mexico's comprehensive comments on the draft Complex Transformation SPEIS Supplement Analysis, which we incorporate here, at <https://nukewatch.org/newsite/wp-content/uploads/2019/08/CT-PEIS-Supp.-Analysis-sample-comments.pdf>

¹⁵ See Nuclear Watch New Mexico's comprehensive comments on the draft LANL Supplement Analysis, which we incorporate here, at <https://nukewatch.org/newsite/wp-content/uploads/2020/05/lanl-sweis-sa-nukewatch-comments.pdf>

the 1997 Stockpile Stewardship and Management PEIS; and 2) because NNSA now proposes a second site, the Savannah River Site (SRS) in South Carolina, for redundant pit production, which is inherently a “programmatic” decision.

NNSA argues that it can rely upon an outdated 2008 Complex Transformation PEIS which considered various levels of expanded plutonium pit production at five specific NNSA candidate sites. However, that outdated document did not consider simultaneous production at two sites. This changed circumstance is justifiable cause alone for a new programmatic environmental impact statement.

When determining whether or not to prepare a PEIS, guidance must be sought in both DOE NEPA regulations and directives such as from the Council on Environmental Quality. The CEQ memo entitled *Effective Use of Programmatic NEPA Reviews*, December 2014, lays out when a PEIS shall be prepared. It states that the PEIS must be undertaken from the start of a proposal and for the public to be allowed to provide comments on the programmatic proposal, which NNSA has denied to the public.

The CEQ memo states:

Programmatic NEPA reviews address the general environmental issues relating to broad decisions, such as those establishing policies, plans, programs, or suite of projects, and can effectively frame the scope of subsequent site- and project-specific Federal actions. A well-crafted programmatic NEPA review provides the basis for decisions to approve such broad or high-level decisions such as identifying geographically bounded areas within which future proposed activities can be taken or identifying broad mitigation and conservation measures that can be applied to subsequent tiered reviews.... One advantage of preparing a programmatic NEPA review for repetitive agency activities is that the programmatic NEPA review can provide a starting point for analyzing direct, indirect, and cumulative impacts. Using programmatic NEPA reviews allows an agency to subsequently tier to this analysis, and analyze narrower, site- or proposal-specific issues... The planning process for the proposed action and the development of a programmatic NEPA review should start as early as practicable. By starting the planning process early, there should be sufficient time for establishing the reasonable scope of actions, alternatives, and impacts in the programmatic review, and identifying the decisions the programmatic review will support so that the level of analysis is clear from the start.¹⁶

We contend that it is exactly that process that NNSA should follow, specifically broad programmatic review followed by site specific analyses. It is simply wrong that the only full NEPA process that NNSA is undertaking is the site-specific SRS DEIS for expanded plutonium pit production which will cost taxpayers at least \$43 billion over the next 30 years.¹⁷

¹⁶ See

https://www.energy.gov/sites/prod/files/2016/05/f31/effective_use_of_programmatic_nepa_reviews_18dec2014.pdf

¹⁷ For that cost see *Plutonium Pit Production Engineering Assessment (EA) Results*, NNSA, May 2018, slide 8, adding Alternatives 1 (repurposing the MFFF) and 2c (PF-4 as a bridge) together, https://nukewatch.org/newsite/wp-content/uploads/2019/03/FINAL-Pu-Pit-Production-EA-Results-05.14.18_Unclassified.pdf

For the record, we enclose our previous remarks and outline of National Environmental Policy Act (NEPA) requirements from our May 17, 2019 letter addressed to the DOE Secretary and National Nuclear Security Administration (NNSA) Administrator, signed by Attorneys Nick Lawton of Meyer Glitzenstein & Eubanks LLP and Geoff Fettus of the Natural Resources Defense Council, representing the public interest groups NRDC, Nuclear Watch New Mexico, Tri-Valley CAREs and SRS Watch. See Attachment A.¹⁸

Nuclear Watch is pleased that NNSA correctly decided to prepare the relevant environmental impact statement for repurposing the MOX Fuel Fabrication Facility (MFFF) for plutonium pit production at the Savannah River Site (SRS). We are displeased with NNSA's "preliminary" conclusion to not do a new LANL Site-Wide Environmental Impact Statement. Judging from last year's similar "preliminary" conclusion for the Complex Transformation PEIS Supplement Analysis, we suspect that NNSA's "preliminary" decision to not do a new LANL SWEIS is a foregone conclusion as well.

However, in both cases for LANL and SRS we believe that NNSA's NEPA process is backwards, as the agency must first prepare a PEIS from which both a new LANL SWEIS and the SRS EIS are tiered. To further add to our argument, that PEIS is required under NEPA because:

- 1) It is needed to raise the plutonium pit production level from the 20 pits per year sanctioned by the 1996 Stockpile Stewardship and Management PEIS to 80 or more; and
- 2) A second site (SRS) is now proposed for simultaneous production, which is inherently a "programmatic" decision.

Outside of the National Environmental Policy Act process, a PEIS is also required by a 1998 court order requiring a PEIS when DOE begins to plan for the production of more than 80 plutonium pits per year.¹⁹ Because as discussed below, the NNSA's current approach is to produce "no fewer than 80 pits per year," the agency has clearly triggered the need for a new or supplemental PEIS under the terms of this court order. The Natural Resources Defense Council (NRDC) was lead counsel for the plaintiffs that secured that court order and will enforce it if necessary. Please see Attachment C for NRDC's comments.

Again, a new PEIS is required because NNSA proposes simultaneous pit production at two sites, which the Complex Transformation PEIS never considered. NNSA's new plan involves the production of at least 30 pits per year at the Los Alamos Lab and at least fifty pits per year at the Savannah River Site (SRS), which would be a completely new mission there. As previously explained to NNSA, this is inherently a "programmatic" decision, sufficient justification by itself for a new PEIS. See Attachment A (describing how the decision to produce plutonium pits at these two locations requires a programmatic analysis).

¹⁸ *The need to prepare a Programmatic Environmental Impact Statement in connection with plans to expand plutonium pit production at the Los Alamos National Laboratory in New Mexico and the Savannah River Site in South Carolina*; Nickolas Lawton, MGE, LLP and Geoffrey Fettus, NRDC; May 17, 2019; <https://nukewatch.org/newsite/wp-content/uploads/2019/05/Summary-Pit-Production.pdf>

¹⁹ *Natural Resources Defense Council v. Pena*, 20 F.Supp.2d 45, 50 (D.D.C. 1998), <https://law.justia.com/cases/federal/district-courts/FSupp2/20/45/2423390/>

NNSA plans to establish pit production at SRS by “repurposing” the failed MOX Fuel Fabrication Facility (MFFF). To use the Department of Energy’s own NEPA regulatory language, a new PEIS is required because the expansion of pit production at LANL and the repurposing of the MOX Facility at SRS are “systematic and connected agency decisions” that are clearly “connected,” “cumulative,” and “similar” actions, therefore “their environmental effects must be considered in a single impact statement.” See Attachment A. Accordingly, DOE’s own NEPA regulations require the preparation of a PEIS, as further explained below in an excerpt from Attachment A.

The draft Complex Transformation SA misleadingly suggested that NNSA previously analyzed “a pit production facility that would use the Mixed-Oxide Fuel Fabrication Facility (MFFF) and Pit Disassembly and Conversion Facility (PDCF) infrastructure” in the Complex Transformation PEIS. This suggestion that no further programmatic analysis of producing plutonium pits at SRS using a repurposed MFFF is highly misleading and fundamentally misrepresents what the Complex Transformation PEIS actually considered.

In reality, the Complex Transformation PEIS only cursorily mentioned the prospect of using the MFFF infrastructure, and plainly did not consider any impacts associated with the profoundly changed circumstances surrounding the MFFF—namely, the fact that it was fraught with construction fraud and abandoned in a partially completed state. Moreover, this alternative considered only producing plutonium pits at *one* facility. The passing reference to the prospect of using some MFFF infrastructure in the Complex Transformation PEIS is in no way a substitute for the rigorous analysis that is now required for the fundamentally distinct proposal to produce plutonium pits at multiple locations and in facilities that have been fraught with safety problems or were never designed for these activities.

Excerpt from our May 17, 2019 Letter on the Need for a PEIS

As our May 17, 2019 letter explained, NEPA requires agencies to consider multiple actions together in a single Programmatic EIS when those “actions are ‘connected,’ ‘cumulative,’ or ‘similar,’ such that their environmental effects are best considered in a single impact statement.” *American Bird Conservancy*, 516 F.3d at 1032 (quoting 40 C.F.R. § 1508.25(a)). Here, the expansion of plutonium pit production at LANL and the repurposing of the MOX Facility to produce plutonium pits at SRS plainly fall within the ambit of “connected,” “cumulative,” and “similar” actions within the meaning of NEPA, meaning that they must be considered together in a single programmatic EIS.

The expansion of plutonium pit production at LANL and the repurposing of the MOX Facility to produce plutonium pits at SRS are “connected” actions under NEPA. Connected actions “are closely related and therefore should be discussed in the same impact statement” because they “[a]re interdependent parts of a larger action and depend on the larger action for their justification.” 40 C.F.R. § 1508.25(a)(1). Both the proposed expansion of plutonium pit production at LANL and the repurposing of the incomplete MOX Facility to produce plutonium pits at SRS are interdependent parts of DOE and NNSA’s plan to fulfill the Trump Administration’s stated goal in its 2018 Nuclear Posture Review of producing at least 80 plutonium pits per year by 2030. *See* Dep’t of Defense, *Nuclear Posture Review*, at 64. Because the Administration cannot reach the Nuclear Posture Review goal without both proposed actions at LANL and SRS, and because both actions depend on the Nuclear Posture Review for their

justification, these actions are “connected” under NEPA and must be considered together in a single EIS.

Likewise, both projects are “similar” because “when viewed with other reasonably foreseeable or proposed agency actions” both “have similarities that provide a basis for evaluating their environmental consequences together.” 40 C.F.R. § 1508.25(a)(3). These similarities are clear. To begin with, both projects involve producing plutonium pits for nuclear weapons. Moreover, both projects are being proposed in locations where the safety of producing plutonium pits is highly questionable at best as LANL suffers from serious and ongoing deficiencies in the management of nuclear safety issues, while the MOX Facility was never designed for fabrication of plutonium pits, is still incomplete, and was the subject of fraudulent construction practices that leave the state and safety of the building highly uncertain. Finally, because both projects entail processing highly hazardous nuclear materials in facilities with serious safety concerns, both projects are likely to have serious and similar nuclear safety issues and environmental impacts. Accordingly, both actions are “similar” under NEPA.

Furthermore, both actions also satisfy the definition of “cumulative” actions, because they will “have cumulatively significant impacts.” 40 C.F.R. § 1508.25(a)(2). A 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.” *Id.* § 1508.7. Here, not only will the expansion of plutonium pit production at LANL and the repurposing of the incomplete MOX Facility to produce plutonium pits each have significant impacts in their own right, but each project will also likely have cumulative environmental impacts that should be taken into account in a single EIS. For example, because each site will be performing similar activities and working with similar materials, each site will likely generate wastes that DOE and NNSA will have to determine how to treat, store, or dispose of.

Accordingly, because the expansion of plutonium pit production at LANL and the repurposing of the MOX Facility at SRS are clearly “connected,” “cumulative,” and “similar” actions, “their environmental effects are best considered in a single impact statement,” *American Bird Conservancy*, 516 F.3d at 1032, and a PEIS is the legally and practically appropriate way to accomplish this.

Not surprisingly, therefore, DOE’s own regulations require the production of a PEIS under these circumstances. DOE’s regulations mandate that “[w]hen required to support a DOE programmatic decision (40 CFR 1508.18(b)(3)), DOE shall prepare a programmatic EIS.” 10 C.F.R. § 1021.330(a). In turn, a “DOE programmatic decision” includes the “[a]doption of programs, such as a group of concerted actions to implement a specific policy or plan; systematic and connected agency decisions allocating agency resources to implement a specific statutory program or executive directive.” 40 C.F.R. § 1508.18(b)(3). Here, both proposed actions at LANL and SRS are “systematic and connected agency decisions” undertaken to implement the specific “executive directive” in the 2018 Nuclear Posture Review to produce at least 80 plutonium pits per year by 2030. Accordingly, DOE’s regulations mandate the preparation of a PEIS.

– End of Excerpt -

Important New Information and Changed Circumstances

While the following list is by no means all inclusive, Nuclear Watch asserts that the following new information and changed circumstances since the 2008 Complex Transformation Programmatic Environmental Impact Statement must be considered in a new programmatic environmental impact statement on expanded plutonium pit production.

First, while the CT PEIS considered various levels of expanded plutonium pit production at five specific NNSA candidate sites, **it did not consider simultaneous production at two sites**. This changed circumstance alone requires a new programmatic environmental impact statement on expanded plutonium pit production because it radically changes the area and environmental impacts associated with plutonium pit production. For example, it logically increases the need for transportation of components or finished products and by creating two supply chains and waste streams instead of one.

The Institute for Defense Analysis Report: in May 2019 we obtained an unclassified executive summary of the Institute for Defense Analysis' critique on NNSA's plans for expanded plutonium pit production.²⁰ It concluded:

“Summary of Main Findings

1. Eventually achieving a production rate of 80 ppy [pits per year] is possible for all options considered by the EA [expanded pit production Engineering Assessment] but will be extremely challenging.
2. *No available option can be expected to provide 80 ppy by 2030.* DoD should evaluate how to best respond to this requirement shortfall.
3. Trying to increase production at PF-4 [at LANL] by installing additional equipment and operating a second shift is *very high risk*.
4. *Effort to identify and address risks is underway but is far from complete.*
5. Strategies identified by NNSA to shorten schedules will increase the risks of schedule slip, cost growth, and cancellation.” (Italicized emphasis added.)

In addition, the report stated:

“IDA examined past NNSA programs and could find no historical precedent to support starting initial operations (Critical Decision-4, or CD-4) by 2030, much less full rate production. Many similar projects (e.g., the Modern Pit Facility, Chemistry Metallurgy Research Replacement-Nuclear Facility, and Pit Disassembly and Conversion Facility) were eventually cancelled. Of the few major projects that were successfully completed, all experienced substantial cost growth and schedule slippage; we could find no successful historical major project that both cost more than \$700 million and achieved CD-4 in less than 16 years...”²¹

²⁰ Institute for Defense Analysis, March 2019, available at <https://nukewatch.org/newsite/wp-content/uploads/2019/07/IDA-ExecSum-UNC-March2019.pdf>

²¹ Ibid., p. vi.

These damning conclusions by independent experts buttress the need for full programmatic review of NNSA's plans for expanded plutonium pit production. NNSA is planning to throw bad money after bad money, wasting taxpayers' funds trying to achieve pit production goals at which it will most likely fail, at the MOX Fuel Fabrication Facility (MFFF), a facility that has already failed in its previous mission while wasting billions of taxpayer dollars.

Indeed, several findings from the IDA report strongly indicate why additional NEPA review is necessary in a new or supplemental PEIS—and, relatedly, why the Complex Transformation SA was entirely insufficient. For example, the IDA report reveals that efforts to identify and address risks associated with the proposal to produce plutonium pits at LANL and SRS were underway, but far from complete. These risks included risks to the environment, as risks associated with the failure of any aspect of this mission will entail environmental impacts, such as the production of hazardous waste. The assessment of risks to the environment, and the evaluation of alternatives that may mitigate such risks, is precisely the purpose of NEPA. Because NNSA is still evaluating such risks and determining how to address them, it was premature and reckless for the Complex Transformation SA to conclude that no further NEPA review was necessary for the expansion of pit production at SRS and LANL.

Given the strong unlikelihood of NNSA meeting its plutonium pit production goals by 2030, the agency should slow down and get the NEPA process right. Moreover, NEPA indisputably helps DOE make better decisions and conserve taxpayer dollars. A PEIS should be used to fully identify and begin to successfully address all program risks, including budget and schedule. Further, both the PEIS and the SRS-specific environmental impact statement should address the unlikelihood of NNSA's meeting its declared plutonium pit production schedule. Likewise, because the IDA report clearly reveals that any NNSA effort to meet a 2030 deadline will necessarily be a rush job, the PEIS (as well as any other NEPA document such as a final SA or an EIS for the SRS site) must address all risks associated with the hasty nature of the agency's proposed action.

Finally, before committing irretrievable resources to expanded plutonium pit production, a new programmatic environmental impact statement should address how the Department of Energy's Defense Programs (including NNSA nuclear weapons programs since 2000) have been on the Government Accountability Office's High Risk List for project mismanagement since its inception in 1992.²² While GAO acknowledges that NNSA has made some progress, the new PEIS should address how NNSA plans to completely get off that list through the hard work of reforming its capital acquisition program and instituting rigorous contractor accountability. This is particularly true given that NNSA plans to repurpose the MOX Facility, which has already squandered billions of taxpayer dollars.

²² HIGH-RISK SERIES Substantial Efforts Needed to Achieve Greater Progress on High-Risk Areas, Government Accountability Office, March 2019, p. 33, <https://www.gao.gov/assets/700/697245.pdf>. Of particular relevance is "Capacity: not met. In August 2018, a statutorily required internal review of NNSA's capacity identified unmet critical staffing needs, especially staffing to manage and oversee work on the agency's uranium and plutonium missions, which are expected to grow." P. 217. This does not bode well given the MOX program debacle.

Other NNSA Sites Involved in Expanded Plutonium Pit Production

Yet another reason why nation-wide programmatic review needed is because not only are SRS and LANL involved in plutonium pit production, but so are NNSA’s Kansas City National Security Complex,²³ Pantex Plant, Nevada National Security Site and the Sandia and Lawrence Livermore National Laboratories, as the 2019 Supplement Analysis to the 2008 Complex Transformation PEIS explicitly states. More extensive review of all the roles of all these sites in pit production is needed, initially in the PEIS which we repeatedly call for, and then the SRS EIS and a new LANL SWEIS.

This map from the Final Complex Transformation Supplemental Programmatic Environmental Impact Statement (CT SPEIS) graphically demonstrates how pit production mission is spread from coast to coast, and how the agency was aware of its programmatic nature in 2008.

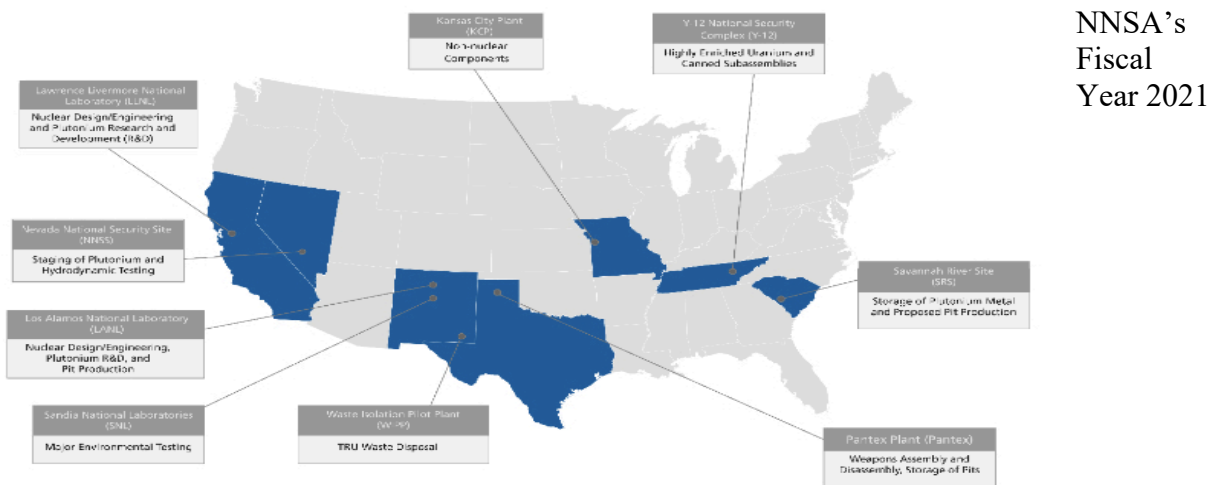


Figure 2-1. DOE/NNSA Sites Associated with Pit Production Mission

Congressional Budget Request with requested funding levels for specific sites underscores the programmatic nature of “Plutonium Modernization” across NNSA’s nuclear weapons complex. A PEIS involving review of the roles of each of these entities must be prepared, which would yield new information about the role of each site.

NNSA requested FY 2021 funding for expanded plutonium pit production by site also demonstrates how deeply involved other sites are:

Kansas City National Security Complex	\$37,993,000
Los Alamos National Laboratory	884,599,000
Lawrence Livermore National Laboratory	62,361,000
NNSA Albuquerque Office	364,000
Nevada National Security Site	14,500,000

²³ As another measure of the inadequacy of relying upon the 2008 Complex Transformation PEIS to avoid preparation of a new PEIS, it should be noted that the Kansas City National Security Complex did not even exist at that time.

Pantex Plant	30,409,000
Sandia National Laboratories	66,700,000
Savannah River Site	441,896,000
DOE Wash Headquarters	42,962,000
Total	\$1,581,784,000²⁴

As more evidence of the new interconnectedness of NNSA complex sites that work with plutonium, the draft LANL Supplement Analysis had a table that shows pit production shipments and new transportation risks. (LANL DSA Pg. 18)

Table 2-1. Types of Shipments, their origination, and their Final Destination to Support Pit Production at LANL

Type of Shipments	Origination	Destination
Existing Pits	Pantex	LANL
New Pits	LANL	Pantex
Plutonium Metal	NNSS, SRS and Pantex	LANL
Enriched Uranium	Y-12	LANL
Nonnuclear Parts	KCNSC	LANL
TRU waste	LANL	WIPP
LLW ^a	LANL	NNSS plus other locations
MLLW	LANL	NNSS
Material Testing	LANL	LLNL
Material Testing	LLNL	LANL

^a See (LANL 2019d, Tables 3-10, 3-13, and 3-16) for additional facilities LANL’s Chemical and LLW.

Even the Savannah River Site draft environmental impact statement (EIS) mentions “activities across the Nuclear Weapons Complex” thus demonstrating the need for a nation-wide programmatic environmental impact statement on expanded plutonium pit production, as follows:

“The Proposed Action also includes activities across the Nuclear Weapons Complex associated with transportation, waste management, and ancillary support (e.g., staging and testing) for the pit production mission at SRS.” (SRS DEIS S-7)

This is further buttressed by this table in the SRS DEIS (p. 2-12):

²⁴ DOE FY 2021 “Laboratory Tables” at <https://www.energy.gov/cfo/downloads/fy-2021-budget-justification>. Please note that Plutonium Modernization is slated to jump to over \$2 billion per year by FY 2023.

Table 2-3—Shipments that Support Pit Production at SRS

Shipment Type	Origin ⇒ Destination
Existing pits	Pantex ⇒ SRS
Plutonium	LANL and/or Pantex ⇒ SRS
Enriched uranium	Y-12 ⇒ SRS SRS ⇒ Y-12
Quality assurance sample	SRS ⇒ LANL or another DOE site
Beryllium	LANL or commercial manufacturer ⇒ SRS
Nonnuclear parts	KCNSC ⇒ SRS
New pits	SRS ⇒ Pantex
TRU waste	SRS ⇒ WIPP
LLW	Onsite disposal at SRS, or SRS ⇒ commercial facility, or SRS ⇒ NNSS (classified LLW)
MLLW	Offsite disposal or SRS ⇒ NNSS (classified MLLW)

KCNSC = Kansas City National Security Campus; LANL = Los Alamos National Laboratory; LLW = low-level radioactive waste; MLLW = mixed low-level radioactive waste; NNSS = Nevada National Security Site; SRPPF = Savannah River Pit Production Facility; SRS = Savannah River Site; TRU = transuranic; WIPP = Waste Isolation Project Plant; Y-12 = National Security Complex in Oak Ridge, Tennessee.

In short, all of the above and more demonstrate that a new or supplemental programmatic environmental impact statement on expanded plutonium pit production is required by the National Environmental Policy Act,

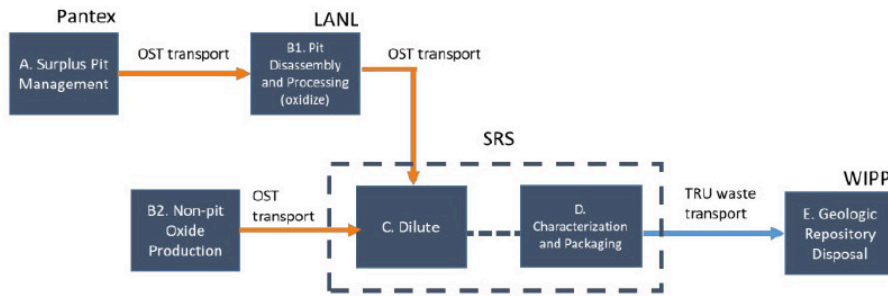
The National Academy of Sciences Recommendation for a PEIS

As yet another measure of why a new programmatic environmental impact statement on expanded plutonium pit production is needed, the National Academy of Sciences Surplus Plutonium Panel recently released a final report on disposing of surplus plutonium at the Waste Isolation Pilot Plant in southern New Mexico. The Panel noted:

“the involvement of several facilities at several sites ..., a schedule of decades requiring sustained support, and the environmental and programmatic significance of the changes therein.” The NAS report therefore concluded that “a PEIS... that considers all affected sites as a system is appropriate to address the intent and direction of the National Environmental Policy Act.”²⁵

We assert that all of this is equally true for expanded plutonium pit production. Moreover, nation-wide programmatic analysis is badly needed because these two different plutonium efforts (pit production and excess plutonium disposal) will intersect in some of NNSA’s crucial plutonium facilities and likely compete for processing space. The NAS study demonstrates this in the following:

²⁵ *Review of the Department of Energy's Plans for Disposal of Surplus Plutonium in the Waste Isolation Pilot Plant (2020)*, National Academy of Sciences, April 2020, page 9, <https://www.nap.edu/download/25593>



“FIGURE S-4 Simplified process diagram for DOE-NNSA’s dilute and dispose plan [of plutonium]. Four locations are shown: (A) Pantex where surplus plutonium pits, a total of 26.2 metric tons (MT), are stored; (B1) LANL (Los Alamos National Laboratory), where the pits are disassembled and the plutonium is oxidized; (C) and (D) SRS (Savannah River Site), where the oxidized plutonium is diluted with an inert adulterant, characterized, and packaged for transport; and (E) WIPP, where the DSP-TRU waste is emplaced. A total of 7.8 MT surplus non-pit plutonium is oxidized either at LANL or SRS (B2). Methods of transportation between the sites are indicated (Office of Secure Transportation [OST] shown with orange arrows, and TRU waste transport shown with a light blue arrow). SOURCE: Modified from SRNS, 2018f, fig. 2. Image provided by the Department of Energy.”²⁶

As the SRS DEIS documented, commenters on the scoping process said, “Pit production affects NNSA’s dilute and dispose program for surplus plutonium. Pit production and dilute and dispose are related and should be addressed in a national, programmatic NEPA analysis.” DEIS p. 1-14. The LANL facility “where the pits are disassembled and the plutonium is oxidized” is PF-4, which is also the pit production facility. We repeat here that “Pit production and dilute and dispose are related and should be addressed in a national, programmatic NEPA analysis.”

Purpose and Need?

A new programmatic environmental impact statement is also needed to examine the need for expanded plutonium pit production to begin with. We are aware that Congress has legislatively required expanded pit production, but no technical justification has ever been given.

Why is expanded plutonium pit production necessary when independent experts have concluded that plutonium pits last at least a century and more than 15,000 existing pits are already stored at the Pantex Plant near Amarillo, TX? Why isn’t the extensive reuse of existing pits analyzed as a credible alternative to new production of plutonium pits? Why is no future pit production scheduled to maintain the safety and reliability of the existing nuclear weapons stockpile? Why will future production instead be for heavily modified pits for speculative new design nuclear weapons that can’t be full scale tested because of the global testing moratorium, hence possibly lowering confidence in stockpile reliability?²⁷ Alternatively, could heavily modified pits prompt

²⁶ Ibid., page 4.

²⁷ We note that NNSA’s FY 2020 Congressional Budget Request had repeated references to future “W87-like” pits, pointing to the possibility that the legacy W87 pit design could be heavily modified or even in effect be a new design. “W87-like” has apparently been scrubbed out of NNSA’s FY 2021 Congressional Budget

the U.S. to return to nuclear weapons testing? All these questions should be addressed in a new programmatic environmental impact statement.

A new PEIS should analyze the impacts of diverting taxpayer dollars to new nuclear weapons facilities instead of cleaning up the massive environmental damage caused by past research and production. What are the long-term public health and environmental effects of leaving radioactive and chemical contaminants that can pollute precious water resources, while new, unnecessary, and costly nuclear facilities that will produce more contaminants are being built? This is amplified by DOE's plans to radically cut cleanup across the nation, for example by nearly half at LANL. Moreover, a reordering of national security priorities is in order, given that \$2 trillion in proposed nuclear weapons "modernization" will do nothing to protect us against our most imminent national security threat, the COVID-19 pandemic.

"Set Aside Experiments"

In the mid-1990's J. Carson Mark²⁸ told me that from the beginning LANL had set aside plutonium pits for the express purpose of studying how they age. I immediately filed a Freedom of Information Act (FOIA) request and quickly got a response from DOE acknowledging the existence of these "set aside" experiments, but that everything about them was classified. On a side note, Mark telling me that later prompted me to ask then-Senator Jeff Bingaman (D-NM) to require the 2006 JASON pit life study resulting in their 2006 conclusion that pits last at least a century.²⁹

The debate over plutonium pit aging has been going on for decades, with some NNSA and lab people disputing the accuracy of the 2006 JASON conclusion. Concerning the results of the set aside experiments, Mark exclaimed to me that, "the big news was no news!", that is plutonium pits do not functionally age in any time period of practical relevance to us. If indeed these set aside experiments exist, NNSA should generally disclose them and incorporate them into any ongoing studies about plutonium pit aging. The status, good or ill, of these legacy pits should directly inform the need for producing or not new pits. And if the existence of these set aside experiments is true, it speaks ill of NNSA and its predecessor DOE Defense Programs to have not disclosed them long ago.

Plutonium Pit Reuse

The draft SRS EIS specifically states that pit reuse is being considered, as follows:

"Implementing a moderate pit manufacturing capability now is a prudent approach to mitigate against age-related risk. For the foreseeable future, NNSA will rely on a combination of newly manufactured pits and judicious reuse of existing pits to modernize the U.S. nuclear stockpile. This approach enables NNSA to implement a moderately

Request as it refers to only W87 pits. Nevertheless, we believe future pits will be heavily modified from original designs, perhaps endangering stockpile reliability.

²⁸ Manhattan Project physicist and leader of LANL's Theoretical Division from 1947 to 1973

²⁹ See JASON Plutonium Pit Lifetime Report, November 28, 2006, <https://nukewatch.org/resources-and-information/nuclear-weapons-complex-documents/>

sized pit manufacturing capability of not less than 80 pits per year beginning during 2030.” (SRS DEIS page S-4)

In our view, it is inexplicable that the draft LANL SA did not affirm the pit reuse statement that to NNSA’s credit appeared in the draft SRS EIS. We note the existence of the Special Nuclear Material Component Requalification Facility³⁰ at the Pantex Plant, also the site for storage of at least 15,000 existing pits. The Plant itself has boasted how pit reuse is much less expensive and environmentally damaging than the production of new pits. We contend that pit reuse must be analyzed in detail as a more than credible alternative in what we believe is the required programmatic environmental impact statement. That in turn should help to determine the needed rate of production of new pits.

NNSA must also clarify if the first new pits are intended for a W87-1-like warhead and/or the newly proposed W93 warhead. For what other new nuclear weapons are pits “needed”? How many pits are needed for “refurbished” weapons? NNSA has made no case that refurbished, existing pits can’t be used. The option of “pit reuse” must be fully considered and analyzed.

NNSA’s Complex Transformation SA Did Not Meet NEPA’s Legal Standard

On June 28, 2019 NNSA published a Notice of Availability for a *Draft Supplement Analysis of the Complex Transformation Supplemental Programmatic Environmental Impact Statement* that the public can comment on. In that Draft Supplement Analysis NNSA stated:

“The purpose of this analysis is to determine, at a programmatic level: (1) if the potential impacts of the proposed action exceed those in the Complex Transformation SPEIS; and (2) if so, if the impacts would be considered significant in the context of NEPA (40 CFR 1508.27), which would require preparation of a supplement to the Complex Transformation SPEIS.”³¹

Nuclear Watch commends NNSA for having offered the Draft SA for public comment. However, we believe that the purpose of the Supplement Analysis as described above by NNSA (i.e., “proposed action exceed[ing] those in the Complex Transformation SPEIS”) was improperly limited in scope. What the law instead requires is:

“(a) DOE **shall** prepare a supplemental EIS if there are substantial changes to the proposal or significant new circumstances or information relevant to environmental concerns, as discussed in 40 CFR 1502.9(c)(1).”³²

In turn 40 CFR 1502.9(c)(1) mandates that:

³⁰ See, for example, <https://pantex.energy.gov/news/blog/day-life-pi>

³¹ *Draft Supplement Analysis of the Complex Transformation Supplemental Programmatic Environmental Impact Statement*, DOE/EIS-0236-S4-SA-02 June 2019, p. 26, <https://www.energy.gov/sites/prod/files/2019/06/f64/draft-supplement-analysis-eis-0236-s4-sa-02-complex-transformation-06-2019.pdf>.

³² 10 CFR § 1021.314 - *Supplemental environmental impact statements*, DOE NEPA Implementing Regulations, <https://www.law.cornell.edu/cfr/text/10/1021.314> (bolded emphasis added)

“(c) Agencies:

(1) **Shall** prepare supplements to either draft or final environmental impact statements if:

(i) The agency makes substantial changes in the proposed action that are relevant to environmental concerns; or

(ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.”³³

We believe that 10 CFR § 1021.314 and 40 CFR § 1502.9 apply to programmatic environmental impact statements as well, and that both conditions of “substantial changes in the proposed action” and “significant new circumstances or information relevant to environmental concerns” are more than sufficiently met. This is different from benchmarking the need to whether “the potential impacts of the proposed action exceed those in the Complex Transformation SPEIS.”

Therefore, we believe that the way that NNSA framed the Supplement Analysis as a question of whether NNSA’s new plutonium pit production proposal exceeds the risk boundaries of the Complex Transformation PEIS is not compliant with the National Environmental Policy Act. This further makes NNSA’s conclusion that a supplemental PEIS is not required grossly incorrect and legally deficient. In addition, as discussed below, the answer to whether the agency’s new proposal exceeds the risk boundaries of the Complex Transformation PEIS is plainly “yes.”

Nuclear Watch further asserts that because the Chemistry and Metallurgy Research Replacement Project (CMRR)-Nuclear Facility (NF) was not built, all analysis of pit production at LANL in the CT SPEIS is outdated and no longer has any current relevance. NNSA now proposes to cram all the operations previously planned for the CMRR-NF into the Lab’s newly constructed Radiological Laboratory Utility and Office Building (AKA “Rad Lab”) and nearly 50-years-old Plutonium Facility-4. Moreover, NNSA now proposes to use the MOX Fuel Fabrication Facility (MFFF), which was poorly built for a different mission and never completed.

“[T]o determine, at a programmatic level: (1) if the potential impacts of the proposed action exceed those in the Complex Transformation SPEIS” strongly implies that NNSA’s Supplement Analysis is an exercise in determining whether potential public risks are “bounded by” the analyses in the Complex Transformation PEIS. But “bounded by” is not an actual NEPA term. As DOE’s own literature states:

“Neither the Council on Environmental Quality (CEQ) NEPA implementing regulations (40 CFR Parts 1500-1508) nor the DOE NEPA regulations specifically address bounding analyses in NEPA documents... **bounding analyses should not be used where more accurate and detailed assessment is possible and would better serve the purposes of NEPA.**”³⁴

³³ 40 CFR § 1502.9 - *Draft, final, and supplemental statements*, Council on Environmental Quality, <https://www.law.cornell.edu/cfr/text/40/1502.9> (bolded emphasis added)

³⁴ *Mini-guidance Articles from Lessons Learned Quarterly Reports, December 1994 to September 2005*, p. 2-4, USDOE Office of NEPA Policy and Compliance, October 2005, <https://www.energy.gov/sites/prod/files/miniguideance-20110511.pdf> Bolded emphasis added.

Therefore, it was improper that NNSA hinged the outcome of the LANL Supplement Analysis on the bounding analysis of the 11-year-old Complex Transformation PEIS.

Further, the 2008 CT SPEIS only analyzed generic hypothetical facilities for future plutonium pit production, i.e. the Consolidated Plutonium Center (CPC) and the Consolidated Nuclear Production Center (CNPC). Neither of these were built, while in contrast NNSA now proposes upgrades to and/or repurposing of specific existing facilities (i.e., LANL's Rad Lab and PF-4 and SRS's MFFF). A new PEIS should analyze those upgrades and repurposing of real (not hypothetical) facilities as "interconnected" actions whose "environmental effects are best considered in a single impact statement" because "more accurate and detailed assessment is possible and would better serve the purposes of NEPA." We don't believe anything in NNSA's new proposal can be 'bounded' by the CT SPEIS.

Moreover, hinging the outcome on whether the boundaries of the CT SPEIS are exceeded or not hinders consideration of possible mitigation measures and leaves the relative differences in the impacts among the alternatives undiscernible. This too is contrary to stated DOE NEPA policy:

"Using Bounding Analyses in DOE NEPA Document

... DOE must ensure that the analysis is not so broad and all-encompassing as to mask the distinctions among alternatives, or to hinder consideration of mitigations... While the assumptions may be conservative and the impacts estimated may be substantially higher than those that would actually occur, the relative differences in the impacts among the alternatives should be discernible for the analysis to be useful in informing the choice among alternatives... **It is never appropriate to "bound" the environmental impacts of potential future actions (not yet proposed) and argue later that additional NEPA analysis is unnecessary because the impacts have been bounded by the original analysis.**"³⁵

In effect, this is what NNSA is doing, using analysis of hypothetical facilities in the 2008 Complex Transformation PEIS to claim in 2019 that no additional NEPA analysis is needed for expanded plutonium pit production at real specific facilities. This does not comport with DOE NEPA policy that "more accurate and detailed assessment is possible and would better serve the purposes of NEPA."

Additionally, even presuming that the agency's bounding approach to the draft SA had any logical merit or legal validity (which it does not), the fact remains that the agency's new proposal does plainly exceed the risks analyzed in the Complex Transformation PEIS. For example, the Complex Transformation PEIS projected that operations at LANL would take place in a new facility, whereas the agency now proposes essentially indefinite reliance on an antiquated facility that is approaching the end of its design life and that has a well-documented history of serious safety and reliability problems. Accordingly, the agency's new proposal is substantially riskier than anything considered in the Complex Transformation PEIS.

Likewise, the fact that the agency now proposes to produce plutonium pits at *two* locations simultaneously plainly has risks that exceed any analysis in the Complex Transformation PEIS, which only considered producing pits at *one* location. For example, there are risks associated

³⁵ Ibid., <https://www.energy.gov/sites/prod/files/miniguide-20110511.pdf>. Bolded emphasis added.

with transportation of components, products and waste, and with having two waste streams instead of one, that were never analyzed in the Complex Transformation PEIS. Accordingly, even if there was any merit to the agency's reliance on a bounding approach (which there is not), the risks associated with the agency's new proposal plainly do exceed anything previously considered.

NNSA's Proposed Configuration of Facilities Has Substantially Changed

The first substantial change in the configuration of facilities that NNSA proposes to use for expanded plutonium pit production is obvious - - the repurposing of the MOX Fuel Fabrication Facility (MFFF) for plutonium pit production. NNSA apparently thinks that it can adequately meet its NEPA obligation to analyze the repurposing of the MFFF for pit production through the SRS-specific environmental impact statement (EIS) that it has initiated. We contend that is not enough, again reiterating that 10 CFR § 1021.314 and 40 CFR § 1502.9 apply to programmatic environmental impact statements as well. We further contend that the very fact that a second site (SRS) is now involved some 1,500 miles from the existing plutonium pit production site (i.e., the Los Alamos Lab) inherently requires nation-wide programmatic review.

Indeed, the Complex Transformation PEIS Supplement Analysis itself confirmed that NNSA viewed this change as "significant" under NEPA. Again, NEPA's implementing regulations—which are binding on all federal agencies, 40 C.F.R. § 1500.3—clearly state that "[a]gencies . . . shall prepare supplements to either draft or final environmental impact statements if . . . [t]he agency makes substantial changes in the proposed action that are relevant to environmental concerns; or [t]here are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." *Id.* § 1502.9(c). Here, NNSA's own Complex Transformation PEIS Supplement Analysis stated that the "cancellation of the construction of the MFFF at SRS" is a "*significant change* that has occurred regarding plutonium disposition" since the Complex Transformation PEIS. NNSA's description of the MFFF cancellation as a "significant change" leaves no room to doubt that there has been a "substantial change" and a "significant new circumstance" within the meaning of NEPA's implementing regulations.

Indeed, confirming the significance of this changed circumstance, NNSA likewise states that in light of the cancellation of the MFFF, "DOE has made no official decisions regarding how the surplus plutonium will be dispositioned." The fact that the cancellation of the MFFF has left NNSA and DOE with no coherent plan regarding this important issue is a clear indication of how significant the cancellation and proposed repurposing of this facility is within the meaning of the National Environmental Policy Act.

But the repurposing of the MFFF is not the only major facility change. The Chemistry and Metallurgy Research Replacement Project (CMRR)-Nuclear Facility at LANL was integral to all alternatives of plutonium pit production that the 2008 Complex Transformation SPEIS considered. However, the CMRR-NF was canceled in 2012 which resulted in an expanded mission and equipage of the Radiological Laboratory Utility and Office Building (AKA "Rad Lab") and expanded upgrades to PF-4. We assert that this troika of proposed facility changes (i.e. MFFF repurposing, CMRR-NF cancellation and Rad Lab/PF-4 upgrades) plainly constitutes a significant changed circumstance as well as new information that demands new programmatic review in a new nation-wide programmatic environmental impact statement.

The Drivers for Expanded Pit Production Have Substantially Changed

The Complex Transformation PEIS Supplement Analysis stated:

“Since 2008, NNSA has emphasized the need to eventually produce 80 pits per year; the joint DoD-DOE white paper entitled, *National Security and Nuclear Weapons in the 21st Century*, cataloged the need and justification for pit production rates. In the decade plus since this paper was published, the drivers and the requirement for pit production have remained relatively unchanged through several administrations and changes in congressional leadership.” Supplement Analysis Ex. Summary.

Far from the drivers and the requirement for pit production remaining relatively unchanged as NNSA asserts, the main “drivers” have in fact radically changed in that they have been twice canceled. NNSA’s claim is then followed with only a vague justification that the third and latest “driver” that reputedly requires expanded pit production. Specifically, the 2008 DoD-DOE white paper *National Security and Nuclear Weapons in the 21st Century* stated that:

“[T]he Departments of Defense and Energy are pursuing an alternative to this strategy of indefinite life extension; namely, the gradual replacement of existing warheads with warheads of comparable capability that are less sensitive to manufacturing tolerances or to aging of materials. The generic concept is often referred to as the Reliable Replacement Warhead (RRW).”³⁶

The white paper goes on to expressly link the need for expanded plutonium pit production to the Reliable Replacement Warhead (RRW). But in the same year Congress declined to fund RRW, thus cancelling the first rationale for expanded plutonium pit production.

Following that, NNSA claimed that the need for expanded pit production was justified by a future “Interoperable Warhead” which the agency described in congressionally-required annual Stockpile Stewardship and Management Plans as the centerpiece of its “3+2” plan to transform the nuclear weapons stockpile and its supporting research and production complex. But NNSA quietly canceled the Interoperable Warhead in an obscure December 2018 report, eliminating the second concrete justification for expanded pit production. In that same report NNSA offered a weak justification for future expanded pit production for the Interoperable Warhead’s proposed successor (the W87-1) by stating:

“This campaign to establish a national pit manufacturing capability at required capacity must happen even if the W87-1 program must, for some unplanned reason, deploy with a reused pit. If that were to be the case, then the pit manufacturing campaign would provide new pits for the LEP or replacement program that follows the W87-1.”³⁷

³⁶ *National Security and Nuclear Weapons in the 21st Century*, p.18, <https://dod.defense.gov/Portals/1/Documents/pubs/nuclearweaponspolicy.pdf>

³⁷ W78 Replacement Program (W87-1): Cost Estimates and Use of Insensitive High Explosives Report to Congress, NNSA, December 2018, p. 6, <https://nukewatch.org/newsite/wp-content/uploads/2019/03/W78-Replacement-Program-Cost-Estimates-IHE-1.pdf>

Our point is that NNSA does not specify what that next Life Extension Program or replacement program is, thus has yet to offer a concrete justification for expanded plutonium pit production that it estimates will cost \$43 billion in taxpayer funds over 30 years.³⁸ Plainly, contrary to NNSA’s cursory claim that the “drivers” for pit production remain unchanged, the agency’s proposals for pit production and the justifications for pit production have shifted radically multiple times. In light of these profoundly changed circumstances, it is imperative that a supplemental PEIS clearly defines the specific need for expanded plutonium pit production.

The 2008 white paper *National Security and Nuclear Weapons in the 21st Century* also noted:

“Successive efforts at extending the service life of the current inventory of warheads will drive the warhead configurations further away from the original design baseline that was validated using underground nuclear test data. Repeated refurbishments will accrue technical changes that, over time, might inadvertently undermine reliability and performance.”³⁹

This is echoed in NNSA’s FY 2020 Congressional Budget Request:

“The stockpile is inherently moving away from the Underground Test (UGT) database through aggregate influences of aging, modern manufacturing techniques, modern materials, and evolving design philosophies.”⁴⁰

The Complex Transformation PEIS Supplement Analysis stated that NNSA “is responsible for meeting the national security requirements established by the President and the Congress to maintain and enhance the safety, reliability, and performance of the United States nuclear weapons stockpile.” SA Ex. Summary. A supplemental PEIS should analyze a curatorship-like Stockpile Stewardship Program that rigorously hews to the tested pedigree of the nuclear weapons stockpile, avoiding changes at every possible turn that could introduce uncertainties. This is very salient given that according to NNSA’s FY 2020 Congressional Budget Request future pits will not be exact replicas but instead will be “W87-like.” A supplemental PEIS should explain what that term means and explore to what extent any heavily modified pit designs could undermine confidence in safety and reliability, thereby possibly degrading national security and prompting a return to full-scale testing, which would have severe international proliferation consequences.

The Complex Transformation PEIS Supplement Analysis concluded that no further programmatic review was needed for the Pantex Plant as a supporting site for expanded plutonium pit production. SA p. 21. This is incorrect as the Pantex Plant is the site for nonintrusive requalification leading to reuse of existing pits in NNSA’s Life Extension Programs. We contend that a supplemental PEIS is required to consider the extensive reuse of

³⁸ Plutonium Pit Production Engineering Assessment (EA) Results, NNSA, May 2018, slide 10 (add Alt 1 and 2c together), https://nukewatch.org/newsite/wp-content/uploads/2019/03/FINAL-Pu-Pit-Production-EA-Results-05.14.18_Unclassified.pdf

³⁹ *National Security and Nuclear Weapons in the 21st Century*, p. 17, <https://dod.defense.gov/Portals/1/Documents/pubs/nuclearweaponspolicy.pdf>

⁴⁰ NNSA FY 20 Congressional Budget Request, p. 158, <https://www.energy.gov/sites/prod/files/2019/04/f62/doe-fy2020-budget-volume-1.pdf>

plutonium pits as a serious alternative to virgin pit production, an alternative that would be less expensive and less internationally provocative and environmentally damaging.

To put this more strongly, the extensive reuse of existing plutonium pits should be the third alternative in a new programmatic environmental impact statement transcending the binary choice of expanded plutonium pit production and a No Action Alternative to not expand pit production (which the government is clearly biased against). It is a reasonable, credible alternative that would save taxpayers money and cause less environmental harm compared to expanded plutonium pit production.

Changes in Environmental Conditions, Operations, and NEPA Process

Under Changes in Environmental Conditions, Operations, and NEPA Process, the NNSA's Supplement Analysis for the 2008 Complex Transformation PEIS stated:

“While there are differences in the natural environment at both sites [LANL and SRS] since the Complex Transformation SPEIS was prepared, the differences are not significant in terms of analyzing changes in environmental impacts at a programmatic level.”

To begin with, the Supplement Analysis for the 2008 Complex Transformation PEIS failed to provide sufficient details regarding the nature of the changed circumstances and any coherent justification for the NNSA's claim that these differences are ostensibly “not significant.” Instead, the SA provided only a “high-level summary” of environmental conditions and punted on any detailed analysis, stating that “[i]f NNSA decides to implement the proposed action, site-specific documents would be prepared and would provide a detailed analysis of any changes in the environmental conditions at LANL and SRS, as appropriate.”

This statement is effectively a concession of the inadequacy of the Supplement Analysis for the 2008 Complex Transformation PEIS. NEPA requires agencies to fully analyze environmental circumstances and to assess the significance of any environmental conditions and impacts *before making a decision*. See, e.g., 40 C.F.R. § 1501.2 (“Agencies shall integrate the NEPA process with other planning *at the earliest possible time* to ensure that planning and decisions reflect environmental values.”) (Emphasis added). In flagrant contravention of this fundamental NEPA principle, NNSA instead proposes to make its decision first and then consider environmental circumstances afterwards. Because NNSA simply concludes based solely on a “high-level summary” of environmental conditions, which it concedes must be supplemented, the Complex Transformation SA was plainly inadequate.

Moreover, the Supplement Analysis for the 2008 Complex Transformation PEIS' suggestion that changed environmental conditions are ostensibly “not significant” is plainly incorrect. Since 2008 LANL experienced the grave threat of another major wildfire, the 2011 Los Conchas Fire. After ignition, that crown fire raced 13 miles due east to the Lab's western boundary in 24 hours. Given climate change, global warming and increased aridity in the Southwest, the incidences of wildfire at or near LANL will likely only increase.

Concerning operations at LANL, the Complex Transformation PEIS did not consider the track record of chronic nuclear safety infractions at PF-4, which ultimately led to the cessation of

major plutonium operations for nearly four years. Indeed, the Supplement Analysis for the 2008 Complex Transformation PEIS' claimed that at both LANL and SRS "Potential impacts from some accidents, such as criticality accidents, would not change, as these accidents are not dependent on the number of pits produced." That categorical statement seems to defy simple logic.

As the Defense Nuclear Facilities Safety Board (DNFSB) noted in its required 2018 annual report to Congress:

"Nuclear Criticality Safety at Los Alamos National Laboratory (LANL)—Based on an evaluation of the LANL nuclear criticality safety program, the Board in its November 28, 2018, letter to the Secretary of Energy, identified the following related to this vitally important safety program: (1) lack of concrete milestones in corrective action initiatives for weaknesses in the program; (2) inadequate staffing in the nuclear criticality safety division; (3) inadequate documentation for daily work activities with the potential to impact nuclear criticality safety; (4) instances of poor operational quality in implementing nuclear criticality safety requirements; and (5) repetitive, ineffective corrective actions for weaknesses in the program."⁴¹

We contend that a supplemental PEIS is needed to analyze the occupational and public risks of repeated, chronic nuclear criticality safety incidences at LANL and how to resolve them. By extension this applies to any future pit production at SRS as well. We argue that a genuine, comprehensive nuclear safety regime needs to be instituted at a programmatic level that must be considered in programmatic environmental impact statement.

The Supplement Analysis for the 2008 Complex Transformation PEIS considered the Waste Isolation Pilot Plant (WIPP) as a supporting site for expanded plutonium pit production since production would increase transuranic waste disposal at WIPP. The SA noted that available capacity has decreased since the time the Complex Transformation SPEIS was prepared but concludes that the impacts of increased pit production on TRU disposal at WIPP are not significant. However, this contention of insignificance is plainly premature and lacks any rational basis. Indeed, the SA also stated that in light of the "significant change" of cancelling construction of the MFFF at SRS, NNSA is evaluating the possibility of instead disposing of surplus plutonium at WIPP. Accordingly, the changes proposed at LANL and SRS plainly have an important impact on WIPP, and the fact that NNSA concedes that cancelling the MFFF is a "significant change" plainly reveals that the impact on the WIPP will be commensurately "significant."

We contend that programmatic review is required to consider and analyze all the possible future competing demands on WIPP. These include future expanded pit production, 34 tons or more of existing "excess" plutonium and potential attempts by DOE to "reinterpret" or downgrade some high-level radioactive wastes, likely another topic of legal dispute in another forum. It should also be noted that the Supplement Analysis for the 2008 Complex Transformation PEIS' claim of current remaining capacity of 108,048 cubic meters at WIPP could be reduced by 30% if the

⁴¹ Defense Nuclear Facilities Safety Board 29th Annual Report to Congress, April 2019, p. ii, <https://www.dnfsb.gov/sites/default/files/document/17791/2018%20Annual%20Report%20to%20Congress%20%5B2019-100-017%5D.pdf>

current challenge by citizen groups (including Nuclear Watch NM) to DOE's recalculation of disposed TRU waste is successful. Finally, a new PEIS must guarantee that all future transuranic waste packaging and shipping will be safe, given that LANL sent an improperly prepared waste drum to WIPP that ruptured, exploded, and closed that facility for nearly three years, costing the American taxpayer some \$3 billion.

Under "Cumulative Impacts" the Supplement Analysis for the 2008 Complex Transformation PEIS concluded that "The potential cumulative transportation impacts [of the Yucca Mountain Repository] would be reduced from that presented in the Complex Transformation SPEIS." Omitted from any consideration in the SA was the current application submitted by the Holtec Corporation to the Nuclear Regulatory Commission for "Consolidated Interim Storage" in New Mexico of up to 170,000 metric tons of past and future spent nuclear fuel. The cumulative impacts of this proposal could substantially exceed that of Yucca Mountain since the requested total inventory is far greater than that proposed for Yucca Mountain. Moreover, the lethal spent nuclear fuel would have to be moved again once a permanent repository is ever completed. A supplemental PEIS should consider the cumulative impacts of proposed Consolidated Interim Storage of high level wastes.

Also, under "Cumulative Impacts" the Supplement Analysis for the 2008 Complex Transformation PEIS noted that there have been numerous changes to NNSA's Plutonium Disposition Plan, including the cancellation of the MOX program and the repurposing of the MOX Fuel Fabrication Facility for plutonium pit production. As a consequence, LANL would likely be involved in oxidizing plutonium as part of the proposed "dilute and dispose" process to dispose of excess plutonium at WIPP. This however cries out for programmatic review at the highest level since that plutonium oxidizing can only take place at LANL's PF-4, the already overcrowded facility slated to produce at least 30 pits per year, with a long track record of nuclear safety infractions. It is not clear that there is even enough floor space in PF-4 for oxidation of up to 2.5 tons of plutonium annually if expanded pit production is implemented, and reportedly preparations for expanded oxidizing is on hold until pit production requirements are better known. But this is the very reason why a programmatic environmental impact statement is required, to help sort out possible competing priorities between different programs.

The 1998 Court Order Requiring a Supplemental PEIS

In addition to the clear need for a PEIS under NEPA and its implementing regulations, DOE is currently subject to a court order that mandates the preparation of a PEIS under the current circumstances. That order establishes the following requirement:

Prior to taking any action that would commit DOE resources to detailed engineering design, testing, procurement, or installment of pit production capability for a capacity in excess of the level that has been analyzed in the SSM PEIS (the capacity analyzed in the SSM PEIS is the fabrication at LANL of 50 pits per year under routine conditions, and 80 pits per year under multiple shift operations), DOE shall prepare and circulate a Supplemental PEIS, in accordance with DOE NEPA regulation 10 C.F.R. § 1021.314, analyzing the reasonably foreseeable environmental impacts of and alternatives to operating such an enhanced capacity, and issue a Record of Decision based thereon.⁴²

⁴² *Natural Resources Defense Council v. Pena*, 20 F.Supp.2d 45, 50 (D.D.C. 1998),

Because DOE and NNSA are currently devoting resources to designing a pit production capability of *at least* 80 pits per year, including a plan to produce pits at SRS, this order clearly requires the agencies to undertake a Supplemental PEIS.

In contrast, NNSA’s June 2019 *Draft Supplement Analysis of the Complex Transformation Supplemental Programmatic Environmental Impact Statement* concluded:

“Therefore, as Head of Defense Programs and pursuant to NNSA’s Administrative Procedure and DOE’s National Environmental Policy Act Implementing Procedures (10 CFR 1021.314(c)), I have determined that no further NEPA documentation is required at a programmatic level, and NNSA may amend the existing Complex Transformation SPEIS ROD.” Complex Transformation Final SA p. 67.

We believe NNSA’s final determination to not prepare a supplemental PEIS is legally insufficient under NEPA because of all the reasons stated above. Additionally, NNSA cannot evade the clear requirement of this court order. First, it is indisputable that NNSA is planning on producing more than 80 pits per year.⁴³ Second, we believe this requirement pre-empts NNSA apparent plan to avoid a supplemental PEIS by amending the Record of Decision (ROD) for the 2008 Complex Transformation PEIS. This is because the court order clearly refers to the 1996 Stockpile Stewardship and Management PEIS, whose Record of Decision relocated the plutonium pit production mission to LANL while explicitly limiting it to no more than 20 pits per year.⁴⁴

NNSA Must Begin the PEIS Now

Until NNSA fully complies with NEPA through the preparation of a programmatic environmental impact statement on expanded plutonium pit production, Nuclear Watch believes that any irreversible or irretrievable commitment of resources to either the expansion of pit production at LANL or to the repurposing of the MOX Facility at SRS is unlawful. Accordingly, to properly address all of the issues mentioned above, Nuclear Watch New Mexico insists that NNSA 1) begin the required PEIS right away for the expansion of plutonium pit production at LANL and the repurposing of the MOX Facility for plutonium pit production at SRS, and 2) suspend the site-specific NEPA processes at both LANL and SRS until that PEIS is completed. Following that, full site-specific NEPA processes at both sites should be completed that are “tiered” off the PEIS.

<https://law.justia.com/cases/federal/district-courts/FSupp2/20/45/2423390/>

⁴³ See for example the May 10, 2018 *Joint Statement from Ellen M. Lord and Lisa E. Gordon-Hagerty on Recapitalization of Plutonium Pit Production* that first announced expansion of pit production, to wit: “This two-prong approach – with **at least** 50 pits per year produced at Savannah River and **at least** 30 pits per year at Los Alamos – is the best way to manage the cost, schedule, and risk of such a vital undertaking.” (Bolded emphasis added.) <https://www.energy.gov/nnsa/articles/joint-statement-ellen-m-lord-and-lisa-e-gordon-hagerty-recapitalization-plutonium-pit>

⁴⁴ Although the court order uses the phrase “at LANL,” there can be no legitimate dispute that the NNSA’s proposed action plainly exceeds the terms described in the court order. The plan to produce at least 80 pits at multiple sites is plainly different and has greater impacts than producing up to at most 80 pits solely at LANL.

DOE Is Systematically Degrading Safety

The long track record of chronic nuclear criticality incidences at LANL has become publicly known primarily through the reporting of the Defense Nuclear Facilities Safety Board (DNFSB). This has obvious relevance to any future plutonium pit production at SRS. In what is arguably an attempt to kill the messenger DOE issued its Order 140.1 *Interface with the Defense Nuclear Facilities Safety Board* to replace its prior directive on interface with the Board, DOE Manual 140.1-1B.

As the Board itself observed:

“...DOE Order 140.1, *Interface with the Defense Nuclear Facilities Safety Board*, issued in May 2018, threatens to undermine the Board’s ability to execute its statutory mission under the Atomic Energy Act. DOE Order 140.1 improperly attempts to diminish the Board’s statutory mandate in four principal ways, all of which are inconsistent with the text of the Atomic Energy Act:

- The Order contains a narrow definition of “Public Health and Safety,” which only includes individuals located outside of DOE site boundaries (i.e., excluding onsite individuals and workers);
- The Order provides exemptions allowing DOE and contractors to not provide access to facilities that DOE determines do not have the potential to adversely affect public health and safety, which could limit Board oversight at many defense nuclear facilities;
- The Order lacks a clear provision to provide the Board with ready access to such information, facilities, and personnel as the Board considers necessary to carry out its responsibilities; and
- The Order provides an allowance for DOE to deny Board requests for relevant deliberative and pre-decisional information.”⁴⁵

The last point in particular strikes at the heart of potential risks that the public may be exposed to by expanded plutonium pit production at both LANL and SRS. The Safety Board is the only independent entity that can review and comment on NNSA facility planning before those plans are made final. The DOE attempt to bar the DNFSB from ostensibly “deliberative and pre-decisional information”—apparently designated as such unilaterally by DOE without any prospect for appeal or review—could directly lead to pit production facilities lacking the safety provisions and requirements that would make the public safer.

DOE/NNSA’s degradation of safety even as it plans to ramp up plutonium pit production appears to be systematic. As the Safety Board noted:

“DOE has begun the process to revise 10 CFR Part 830, *Nuclear Safety Management*, which has served as the cornerstone of its regulatory framework to ensure adequate protection of public health and safety... Overall, the Board is concerned that the proposed revision to 10 CFR Part 830 will make it more difficult for the Department to exercise consistent oversight across the complex and loosens requirements upon which DOE and the public rely to ensure adequate protection of public health and safety. The Board identified concerns with DOE’s proposal to remove the requirement for DOE to annually

⁴⁵ Ibid., p. 2.

review and approve changes to documented safety analyses. The Board found that DOE's proposed change, if implemented, created a potential for the safety basis and facility operations to drift outside the envelope approved by DOE"⁴⁶

This is again directly relevant to the risks posed to the public by plutonium pit production at both LANL and SRS. LANL's PF-4 has long had a bad track record of insufficient and /or outdated safety bases and the removal of the requirement to annually review and approve changes could directly threaten the public. In short, a new PEIS is needed to fully review the risks posed by plutonium pit production to the public by apparent systemic attempts by DOE to degrade institutional safety and independent review of safety.

Savannah River Site Specific Issues

The Impacts of Producing Pits Instead of Remediating Must be Analyzed

The focus at SRS must remain on cleaning up Cold War nuclear and chemical waste - the king of jobs and the budget at SRS. The focus should not be on a questionable, ill-conceived pit production mission that could help encourage a new nuclear arms race while producing yet more radioactive and toxic wastes and potentially siphon money away from cleanup to help pay for expanded pit production.

Shouldn't past pollution be remedied before new wastes are heaped on top of the old? This fundamental question is not fully answered in the DEIS. Indeed, pit production could distract from the main mission of the Savannah River Site (and its largest source of federal funding), namely cleaning up tens of millions of gallons of radioactive waste products left over from past production of plutonium and nuclear weapons materials at the Site.

Other Alternative Missions for SRS Must Be Considered

National security will be best served with a plutonium immobilization program to place the plutonium already at SRS into the vitrification process at SRS's Defense Waste Processing Facility. This immobilization process utilizes the intense, long-lived radioactivity of the tank waste as a security barrier for the junk weapons-grade plutonium, thus satisfying both waste remediation and non-proliferation goals.

Plutonium immobilization is the best option for national security and for SRS. Plutonium immobilization is the most efficient and cost-conscious way to solve both the radioactive waste and the plutonium security problems. Plutonium immobilization is the preferred use for the partially completed MOX plutonium fuel factory. A plutonium immobilization program will be a long-term federally funded program, bringing millions of dollars into the economy, employing South Carolinians and Georgians, and ultimately protecting the low country environment while aiding global security. We urge NNSA/DOE to provide the necessary leadership to get the plutonium immobilization option restored and funded by including it as a credible alternative in the EIS.

⁴⁶ Ibid., p. 29.

SRS Site-Wide Environmental Impact Statement

We are unable to find any site-wide environmental impact statement (SWEIS) for the Savannah River Site that the Department of Energy has prepared in the last few decades, if ever. If that absence is true it would violate DOE NEPA Implementing regulations, as follows:

(c) As a matter of policy when not otherwise required, DOE shall prepare site-wide EISs for certain large, multiple-facility DOE sites; DOE may prepare EISs or EAs for other sites to assess the impacts of all or selected functions at those sites.⁴⁷

We assume there is no dispute that the Savannah River Site is a “large, multiple-facility DOE site.” It therefore follows that DOE and NNSA must prepare an SRS SWEIS from which this DEIS should be “tiered.”

Plutonium Limit in South Carolina

The State of South Carolina has litigated against DOE to compel the Department to remove plutonium out-of-state from SRS. As one of South Carolina’s leading newspapers editorialized just yesterday:

South Carolina’s congressional delegation and state officials, including Gov. Henry McMaster and the Legislature, must demand guarantees that SRS won’t end up with more plutonium than it already has, and that pit production won’t result in a net gain of hard-to-dispose-of nuclear waste.⁴⁸

We concur. Toward that end we assert that NNSA should disclose in each of the necessary NEPA processes what the net gain or loss in plutonium will be at the Savannah River Site. Further, those documents should generally disclose where plutonium from SRS will go to.⁴⁹ We believe the legally required sequence of NEPA review is a programmatic environmental impact statement followed by a site-wide environmental impact statement followed by a mission-specific environmental impact statement “tiered” off of those preceding NEPA documents.

⁴⁷ Department of Energy PART 1021—National Environmental Policy Act Implementing Procedures, § 1021.330 *Programmatic (including site-wide) NEPA documents* (underlined emphasis added indicating that it is a legal requirement), <https://www.energy.gov/sites/prod/files/10CFRPart1021.pdf>

⁴⁸ *Editorial: SC must make sure SRS pit production comes with conditions*, The Post and Courier, June 1, 2020, https://www.postandcourier.com/opinion/editorials/editorial-sc-must-make-sure-srs-pit-production-comes-with-conditions/article_aa95402a-9c2c-11ea-b0d7-e7b99150aced.html

⁴⁹ We understand that specific details of plutonium transport cannot be disclosed because of legitimate security concerns. That said, DOE and NNSA could avoid a lot of headaches if it generally informs states of where NNSA’s plutonium inventory is going to reside. We are of course referring to the ongoing conflict between NNSA and the State of Nevada over a half-ton of plutonium secretly shipped there. That conflict will now likely be exacerbated by news reports of possible resumed nuclear weapons testing at the Nevada National Security Site.

Pit Production Rates

This DEIS purports to analyze production rates of 50, 80, or 125 pits per year. What are NNSA's intentions? What the public is being told is "at least 50 pits per year." However, we well recall how in the middle 2000's NNSA wanted production of 125 new pits per year for the new-design Reliable Replacement Warhead (RRW). We believe that the RRW and the W87-1 designs are fundamentally the same and that once pit production is established that NNSA may seek to gradually ramp production up to 125 pits per year. So again, what are NNSA's intentions?

According to public documents from NNSA, the Government Accountability Office and other agencies, this new W87-1 nuclear weapon design will involve a novel plutonium pit, unlike anything in the stockpile or in storage. This is elective, a choice, not a proven necessity. NNSA must analyze an alternative scenario in which the agency foregoes new-design pits, in large part to NOT introduce uncertainties into a reliable, already extensively tested stockpile. How many newly produced pits would be needed in 2030 (the due date for both the new bomb plant and the W87-1 warhead First Production Unit) if not for new design pits? Why isn't any future production for existing pits? Is that because none is needed to maintain their safety and reliability?

Related, the problems with pit production at LANL was well known, which is probably one strong reason DoD has insisted on redundant production at a second site. A nation-wide PEIS should analyze a possible scenario in which LANL fails in whole or part to ramp up to production of at least 30 pits per year. What are the consequences for SRS? Is this why the SRS DEIS includes cursory analysis of 125 pits per year?

Conversely, what if SRS fails to ramp to at least 50 pits per year? This is certainly not out of the question given the spectacular failure of the ~\$7 billion MOX Fuel Fabrication Facility. These considerations should be analyzed in a nation-wide programmatic environmental impact statement on expanded plutonium pit production.

The Impacts of a Production Surge Must be Analyzed

The DEIS states:

"NNSA's Proposed Action (described in detail in Chapter 2 of this SRS Pit Production EIS) is to repurpose the Mixed-Oxide Fuel Fabrication Facility (MFFF) to produce a minimum of 50 war reserve pits per year at SRS and to develop the ability to implement a short-term surge capacity to enable NNSA to meet the requirements of producing pits at a rate of not less than 80 war reserve pits per year beginning during 2030 for the nuclear weapons stockpile." DEIS p. 1-6

A surge is different from a planned built-in capacity. A rapid surge from 50 to 80 pits could cause more safety accidents in the short-term than having a steady established standing capacity of 80 pits.

Dilute and Dispose

The DEIS states:

“The current design of the SRPPF includes excess HC-2 space that NNSA could use to support other missions, including surplus plutonium disposition. The SRPPF would be designed to include a pit disassembly capability (see Section 2.1.2 of this EIS), and excess space could be used for equipment for other processing steps. Therefore, SRPPF space and capabilities could be used to support the dilute and dispose process for plutonium disposition, or other NNSA missions. NNSA evaluated the impacts of installing and operating equipment to prepare plutonium for disposal at WIPP in the SPD SEIS (NNSA 2015). For purposes of the cumulative impacts analysis in Chapter 5 of this SRS Pit Production EIS, NNSA assumes the WIPP Disposal Alternative data from the SPD SEIS represents impacts at least as great as those that could result from installing and operating the necessary equipment in the SRPPF. That equipment would include pit disassembly, furnaces for conversion of plutonium metal to oxide, gloveboxes for dilution operations, and associated systems and equipment.” SRS DEIS p. 2-19.

“The SRPPF would be designed to include a pit disassembly capability (see Section 2.1.2 of this SRS Pit Production EIS), and excess space could be used for equipment for other processing steps. Therefore, SRPPF space and capabilities could be used to support the dilute and dispose process for plutonium disposition, or other NNSA missions.” SRS DEIS p. 5-3.

This is a lot of “coulds” typical of NNSA’s NEPA behavior of vague analysis that create much weasel room for whatever the agency wants to do in the future. This should be explicitly clarified in a nation-wide PEIS that analyzes the interface and possible conflicts between plutonium pit production and plutonium waste disposition and disposal programs.

Wrought Plutonium Pit Manufacturing at SRS?

The draft EIS on the SRS Plutonium Bomb Plant states that a wrought process is being looked at for pit production in addition to casting with molten plutonium, as follows:

“Wrought Production Process (Sensitivity Analysis #2). The wrought process is a potential manufacturing alternative to casting that could be used in the SRPPF. If implemented, some gloveboxes would be modified to support the wrought process to supplement, not replace, the casting process. In the wrought process, plutonium metal is annealed in a furnace and fed to a rolling mill to produce a flat sheet. Because the wrought process could be used in the SRPPF, this EIS includes a sensitivity analysis of that process. That sensitivity analysis, which is included in Chapter 4 of this EIS, identifies and characterizes any notable changes in the potential environmental impacts between the casting (see Chapter 2, Section 2.1.2.3 of the EIS) and wrought processes.” (SRS DEIS p. S-15)

The wrought process was not mentioned in the recent draft LANL Supplement Analysis for plutonium pit production. If it is being considered for LANL than NNSA should so state. If so,

then analysis of the resulting waste streams at LANL must be analyzed given that the wrought process is generally understood to produce greater amounts of radioactive and toxic wastes.

Further, does analysis of the wrought process in this DEIS indicate that NNSA does not have full confidence in the reliability of plutonium pits manufactured using near-net casting? After all, near-net plutonium casting for pits is a relatively new technology while the wrought process is the tried and true (but messy) method used for many thousands of pits produced at the Rocky Flats Plant.

Health Hazards to Workers and the Public Must Be More Fully Considered

Industrial scale plutonium pit production last took place at the Rocky Flats Plant near Denver, CO. It was shut down in 1989 following a raid by the FBI environmental crimes unit and the EPA. An accounting of the notorious Rocky Flats experience is lacking in the DEIS and must be included in the final EIS.

Plutonium fires at Rocky Flats created airborne pollution for miles around the site, reaching nearby towns and even the City of Denver. The full impacts of a plutonium fire at the Savannah River Site must be included in the final EIS.

The analysis must include site workers, first responders, and communities near the Savannah River Site, including Barnwell, SC and Shell Bluff, GA. The residents of these communities are primarily low-income and historically disadvantaged people of color. What is the plan to safeguard them? What about workers?

The DEIS also lacks other information needed to appropriately assess risks. The process for producing pits at the Savannah River Pits must be better defined in a final SWEIS. Similarly, a thorough discussion of the specific technology to be used to purify plutonium for new pit production must be included in a final SWEIS, with a full accounting of its potential health impacts.

NNSA's Response to Scoping Comments Must Be Expanded

This DEIS states that all public scoping comments were considered in preparing this Draft EIS, but how were they answered and where are the comments addressed? The DEIS described the virtual hearing and the comment process:

“An independent moderator facilitated the scoping meeting to direct and clarify discussions and comments. A court reporter was also present to provide a transcript of the proceedings and record formal comments. Forty-four people spoke at the scoping meeting. NNSA received 161 unique documents with scoping comments, as well as more than 300 postcards that were part of a campaign supporting the pit mission at SRS. NNSA considered all comments received during the scoping process for this EIS, including comments received after the close of the comment period. Comments were systematically reviewed by NNSA. Where possible, comments on similar or related topics were grouped under comment issue categories as a means of summarizing the comments. The comment issue categories were used to identify specific issues. Table 1-1

provides a summary of the comments received during the public scoping process. Comments were considered in preparing this Draft EIS.” DEIS Pg. 1-13

Please explain why this is out of scope:

“Investigations into possible fraud, waste, abuse and mismanagement at MOX debacle needed before pit production pursued by NNSA.”

Intentional Destructive Acts

The DEIS’s total consideration of Intentional Destructive Acts consists of:

“4.11.1.4 Intentional Destructive Acts

The Complex Transformation SPEIS includes a classified appendix that analyzes the potential impacts of intentional destructive acts (e.g., sabotage, terrorism). The conclusion in the classified appendix can be summarized as follows: “Depending on the malevolent, terrorist, or intentional destructive acts, impacts would be similar to, or exceed, accident impacts analyzed in the SPEIS” (NNSA 2008a). In preparing this SRS Pit Production EIS, NNSA reviewed the classified appendix that was prepared for the Complex Transformation SPEIS to address intentional destructive acts. Based on that review, NNSA concluded that the classified appendix analysis is reasonable and adequate to represent the Proposed Action in this EIS and does not need to be revised (NNSA 2019b).” DEIS, p. 4-59, repeated at S-22 and A-14.

First, it is strange that the classified appendix concluded that the potential impacts of Intentional Destructive Acts could exceed the “accident impacts analyzed in the SPEIS” and then NNSA “concluded that the classified appendix analysis is reasonable and adequate to represent the Proposed Action in this EIS and does not need to be revised.” As previously discussed in these comments, we do not agree with NNSA’s “bounding” of accident analyses by using old NEPA processes to justify not having to complete new NEPA processes. But here there is not even any bounding where Intentional Destructive Acts could exceed accident analyses.

We understand why analysis of Intentional Destructive Acts needs to remain classified, but this begs the question of whether any real analysis was done to begin with, and how NNSA could find this “reasonable and adequate.” It calls into question the adequacy of the Complex Transformation SPEIS, and even more so how this SRS DEIS can rely upon the Complex Transformation SPEIS. We reiterate the need for a new programmatic environmental impact statement for expanded plutonium pit production that among many other things properly analyses possible Intentional Destructive Acts.

Finally, the lack of adequate analysis of Intentional Destructive Acts violates declared DOE NEPA policy, as in the following:

“In light of two recent decisions by the United States Court of Appeals for the Ninth Circuit, DOE National Environmental Policy Act (NEPA) documents, including environmental impact statements (EISs) and environmental assessments (EAs), should explicitly address potential environmental consequences of intentional destructive acts (i.e., acts of sabotage or terrorism).”

...
“Each EIS and EA should explicitly consider whether the accident scenarios are truly bounding of intentional destructive acts. Regardless of whether additional analysis is necessary, each EIS and EA should contain a section demonstrating explicit consideration of sabotage and terrorism.”⁵⁰

Was the widely-recognized growing threat of cyber terrorism analyzed? We suspect not. Moreover, the email⁵¹ that the DEIS cites as justification that everything is okay is not made public, and hence explains or justifies nothing.

We assert that this DEIS is not “truly bounding of intentional destructive acts,” which should first be addressed in a new programmatic environmental impact statement followed by an SRS SWEIS for potential site-specific impacts. This is no academic exercise in the post-9.11 world, made even more relevant today as our nation faces the triple threat of the worst pandemic since 1918, the worst economic conditions since 1930 and the most social unrest since 1968. Terrorism and/or sabotage could happen with potentially very serious consequences. Apparently this DEIS has not adequately analyzed that.

Alleged Construction Deficiencies at the MOX Fuel Fabrication Facility

We reproduce this section from our previously submitted scoping comments as this DEIS does not appear to substantively address our concerns on this subject:

There are numerous allegations over shoddy and potentially illegal activities related to the installation of various components in the MOX plant. These allegations pertain not only to the faulty HVAC system, which may have to be demolished in its entirety, but also to many other installations. If any part of the HVAC system is proposed for reuse there must then be full documentation that it meets nuclear quality control standards for both the components, including gaskets and hangers, and their installation.

The draft EIS must seriously analyze the as-built quality of the MOX Facility and demonstrate that it indeed can be “repurposed” for expanded plutonium pit production. The draft EIS must include a full review of MOX construction, inspections and certification of components. This includes the HVAC system and wall penetrations. The certification of components that may be considered for reuse in the repurposed MOX Fuel Fabrication Facility must be demonstrated to meet nuclear quality control requirements. The extent of problems with construction of the MOX Facility may well preclude its use for pit production.

All of this is underscored by the fact that the U.S. government has filed a false claims lawsuit against the MOX Facility contractor. As the Department of Justice announced:

⁵⁰ Memo: *Need to Consider Intentional Destructive Acts in NEPA Documents*, DOE Office of NEPA Policy and Compliance, December 1, 2006,

https://www.energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/G-DOE-intentdestructacts.pdf

⁵¹ NNSA (National Nuclear Security Administration) 2019b. Email reference for intentional destructive acts. G. Pyles, NNSA Plutonium Program Office (NA-191), to J. Rivers, dated October 29, 2019.

... the United States has filed suit against CB&I AREVA MOX Services LLC (MOX Services) and Wise Services Inc. under the False Claims Act and the Anti-Kickback Act in connection with a contract between MOX Services and the National Nuclear Security Administration relating to the design and operation of the MOX Fuel Fabrication Facility (MFFF) at the NNSA Savannah River Site in Aiken, South Carolina... “Government contractors who line their bank accounts by receiving kickbacks or submitting fraudulent claims undermine the public's trust in government programs and operations,” said Assistant Attorney General Jody Hunt of the Department of Justice’s Civil Division. “We will continue to vigorously pursue those who misuse taxpayer funds.”... “The Department of Energy Office of Inspector General remains committed to ensuring the integrity of the Department’s contractors and subcontractors,” said Teri L. Donaldson, Department of Energy Inspector General. “We take allegations of false claims, overbilling, and kickbacks very seriously and will aggressively investigate these matters to protect the Department and the American taxpayers.”⁵²

DOE and NNSA should demonstrate that professed zeal for protecting the American taxpayer through full investigations into fraud, waste, abuse and mismanagement before repurposing the MOX Facility, and report on it in the draft SRS EIS. Most importantly, the draft SRS EIS should objectively evaluate whether the MOX Fuel Fabrication Facility can realistically be repurposed for expanded plutonium pit production to begin with. A detailed plan for repurposing the MFFF for pit production must be analyzed in the SRS EIS (as complete as possible given probable classification barriers).

Cost Is Important and Must Be Analyzed

Cost analysis is important, especially given the ~7 billion dollars that taxpayers lost in the MOX Fuel Fabrication Facility, which NNSA now proposes to “repurpose” as the Savannah River Plutonium Processing Facility. How many missed construction deadlines and budget overruns would NNSA tolerate before cancelling this new project? How much would construction cost? How much would operation of the pit facility cost? What is the estimated life-cycle cost of the pit facility? There should be investigations into fraud, waste, abuse, and mismanagement associated with the mixed-oxide program both before and during its termination (especially given the governments False Claims lawsuit against the MFFF contractor).

So, where is a detailed, updated cost analysis of the SRS pit plant, with per year spending needs into the future? NNSA has said a new cost analysis would be out around the time of a Critical Decision-1 but that analysis is needed before any NEPA document on the SRS pit plant is finalized. Please provide the new cost reports(s). Per DOE history, cost estimates will inevitably climb, correct?

The DOE budget request for Fiscal Year 2021 reveals that the pit facility at SRS could cost almost \$5 billion by 2030. But pursuit of a rushed, two-pronged approach, especially at a site that has failed in its pit production mission - Los Alamos - and a site that still has zero pit-production experience – SRS - could magnify risks of two production sites while negating the prospect for extension pit requalification at the Pantex Plant.

⁵² *United States Files False Claims Act Lawsuit in Connection with MOX Fuel Fabrication Facility Contract*, Department of Justice, February 14, 2019, <https://www.justice.gov/opa/pr/united-states-files-false-claims-act-lawsuit-connection-mox-fuel-fabrication-facility>

Please explain how maximizing costs on a fast-track schedule utilizing two sites, one a poorly functioning site and the other a site with no pit experience, would “improve the resiliency, flexibility, and redundancy of the Nuclear Security Enterprise” and be the best way to manage costs and risks. The exaggerated claims have been made but have not been substantiated.

Isn't there a real risk of dual-point failure with two rushed facilities that will stretch NNSA to the limits when the agency already is cursed with a long track record of failed projects?

Seismic Concerns

The DEIS states:

The only known faults capable of producing an earthquake within a 200-mile radius of SRS are within the Charleston seismic zone, approximately 70 miles southeast of SRS (NRC 2005a, p. 3- 4). Many SRS investigations and an extensive literature review have been used to reach the conclusion that there are no known capable or active faults within a 200-mile radius of the site that influence the seismicity of the region, with the exception of the blind, poorly constrained faults associated with the Charleston seismic zone (CB&I AREVA 2015, p. 1-285). DEIS p. 3-8

We caution NNSA on its reliance on “no known capable or active faults within a 200-mile radius of the site that influence the seismicity of the region.” We quote our eminent seismic expert Dr. David Jackson in recent formal comments for NNSA’s Y-12 Supplement Analysis:

NNSA’s Inappropriate Focus on “Capable Faults”

Neither the 2018 SA nor the NNSA’s earlier 2016 SA acknowledge important new seismological observations showing that earthquakes— even very large ones—can and do occur in areas where no prior large earthquakes have been known to occur. Instead, the 2016 and 2018 SAs appear to carry over the analysis in NNSA’s 2011 Environmental Impact Statement, which focused principally on “capable faults,” arbitrarily defined as having surface movement within the past 35,000 years or movement of a recurring nature within the past 500,000 years. However, it is increasingly evident that large earthquakes can occur in the absence of such a fault. For example, in 2011 a disastrous earthquake (magnitude 6.1) occurred in Christchurch, New Zealand in a location where there were no capable faults within 20 kilometers. That earthquake caused serious damage to the city and indeed the entire country of New Zealand. Similarly, in 2012 a record-breaking magnitude 8.6 earthquake in the Pacific Ocean west of Sumatra struck where there was no capable fault, in spite of extensive sub-sea geological studies there. The recent Ridgecrest earthquake in California (2019, magnitude 7.1) and the Tonopah Nevada earthquake (2020, magnitude 6.5) both occurred away from previously discovered faults, even though the areas had been examined thoroughly by expert geologists.⁵³

⁵³ Prof. David D. Jackson, May 26, 2020, <https://nukewatch.org/new-and-updated-item/david-jackson-discussion-of-seismic-risks-at-the-y-12-national-security-complex-and-formal-comments-to-nnsa-regarding-april-2020-draft-supplemental-analysis-for-the-site/>

Further, NNSA requires Probabilistic Seismic Hazard Analyses (PSHAs) for its major nuclear facilities, yet a PSHA for the MFFF/SRPPF is not mentioned in this DEIS. This DEIS cites the use of 2014 United States Geological Service data. However, NNSA concedes that PSHAs are more detailed than USGS studies, as in the following:

“Although data from the USGS National Seismic Hazards Maps are used in the development of PSHAs, the USGS maps are not a substitute for a PSHA... By incorporating PSHA studies in critical facility design criteria, a more conservative approach to seismic hazard mitigation, is implemented into LANL high-risk structure design. To ensure that seismic risk is mitigated at PF-4, structural upgrades at PF-4 are ongoing to reduce risks posed by a seismic event and to meet DOE seismic code requirements.”⁵⁴

NNSA must have a new PSHA in hand before continuing with this SRS DEIS.

We note how seismic concerns played a major role in causing massive cost overruns involving billions of taxpayer dollars and related complete redesigns of both the Chemistry and Metallurgy Research Replacement Project at the Los Alamos National Laboratory and the Uranium Processing Facility (UPF) at the Y-12 Site. Nuclear Watch urges the NNSA to avoid repeating these failures by fully incorporating seismic safety provisions into the repurposing of the MOX Fuel Fabrication Facility (MFFF) for plutonium pit production. We think the Complex Transformation PEIS seismic assessment of SRS to be far too complacent, stating “The Atlantic Coastal Plain tectonic province in which SRS is located is characterized by generally low seismic activity that is expected to remain subdued (DOE 2004a).”⁵⁵ That should have been corrected in this draft SRS EIS.

In particular, we advise paying close attention to any SRS-related seismic concerns expressed by the Defense Nuclear Facilities Safety Board (DNFSB). Further, NNSA should provide the Safety Board ready access to pre-decisional blueprints, data sheets, etc., relevant to repurposing MFFF, contrary to the apparent intent of DOE Order 140.1 (see our earlier comment section *DOE Is Systematically Degrading Safety*).

We note that the Savannah River Site is not immune from seismic concerns, as it is located some 100 miles from the site of the 1886 6.9–7.3 Mw Charleston, SC earthquake that had little or no preceding historic seismic activity. It was the most damaging earthquake ever to occur in the Southeastern United States and ranks among the most powerful ever in eastern North America. In Aiken County, chimney tops fell, millpond dams failed, and trains were derailed.

This DEIS states:

“Local seismicity associated with the SRS and surrounding region is characterized by occasional small shallow events associated with strain release near small-scale faults, intrusive bodies, and the edges of metamorphic geologic formations (WSRC 2000, p.

⁵⁴ LANL draft Supplement Analysis, NNSA, March 2020, p. 48,

<https://www.energy.gov/nepa/downloads/doeis-0380-sa-06-draft-supplement-analysis>

⁵⁵ October 2008 Final Complex Transformation SPEIS, Chapter 4, Affected Environment 4.8.6.3 Seismology, p. 4-353.

125). Six earthquakes recorded by the USGS with Richter magnitudes between 2.0 and 3.0 and Modified Mercalli Intensities of III or less have occurred on or near SRS during recent years (1985, 2001, 2006, 2009, 2011, and 2015) with focal depths ranging between approximately 0.4 and 6.2 miles (USGS 2019a). The 2001 earthquake was the closest seismic event to F Area, with a local magnitude of 2.6 and a focal depth of 1.7 miles. Its epicenter was approximately 3 miles north of F Area. Earthquakes of this magnitude are generally not felt but do register on seismic instruments and typically would result in little to no structural damage at SRS. Earthquakes capable of producing structural damage are not likely to originate in the vicinity of SRS (NNSA 2015, p. 3-8).” DEIS p. 3-9.

We question the veracity of that. As we stated in our SRS EIS scoping comments, the 2014 US Geological Survey Seismic Hazard Map⁵⁶ shows that South Carolina is among the sixteen states that have the highest risk for experiencing earthquakes. Since the mid-1980s, there have been no fewer than 11 earthquakes whose epicenters were on the Savannah River Site. Two had a magnitude of 2.6, the highest recorded, occurring in 1985 and 2001. From October 2001 to March 2002, there were eight earthquakes.⁵⁷ Moreover, there was a magnitude 4.1 earthquake near SRS on Valentine’s Day, 2014.⁵⁸

In short, the SRS EIS should fully analyze seismic concerns and possible mitigation strategies to lower public risks from future plutonium pit production. The DNFSB has postulated high doses to the public in the event that the plutonium pit production facility (known as “PF-4”) at LANL was seriously damaged by a seismic event. While the seismic risks are no doubt lower at SRS, and the neighboring population further way, they should nevertheless be fully explored in the SRS EIS.

Wildfire Risks

We reproduce this section from our previously submitted scoping comments as this DEIS does not appear to substantively address our concerns on this subject:

The risk of wildfires will likely increase with climate change and global warming. We note the risks posed by the current wildfires at the Idaho National Laboratory and the Hanford nuclear reservation in Washington State. In April-May 2000 and June 2011 very dangerous crown fires threatened the Los Alamos National Laboratory (indeed the Lab and townsite were fully evacuated except for essential personnel during the 2000 Cerro Grande Fire). In November 2018 the Woolsey Fire nearly completely burned the Santa Susanna Field Laboratory, causing deep public mistrust over resulting airborne contaminants.

As one source puts it:

The contaminated ground surface at Savannah River Site (SRS) is a result of the decades of work that has been performed maintaining the country's nuclear stockpile and

⁵⁶ Seismic Hazard Maps and Site-Specific Data, USGS, <https://earthquake.usgs.gov/hazards/hazmaps/>

⁵⁷ This seismic information is from *Savannah River Site monitors activity Quake shakes Aiken County*, Dede Biles, September 18, 2014, https://www.aikenstandard.com/news/savannah-river-site-monitors-activity-quake-shakes-aiken-county/article_e15ca9b8-2aa7-57e0-8d67-baf84abd66a5.html

⁵⁸ <http://www.dnr.sc.gov/geology/RecentEarthquakes.htm>

performing research and development on nuclear materials. The volatilization of radionuclides during wildfire results in airborne particles that are dispersed within the smoke plume and may result in doses to downwind firefighters and the public. To better understand the risk that these smoke plumes present, we have characterized four regions at SRS in terms of their fuel characteristics and radiological contamination on the ground. Combined with general meteorological conditions describing typical and extreme burn conditions, we have simulated potential fires in these regions and predicted the potential radiological dose that could be received by firefighting personnel and the public surrounding the SRS. In all cases, the predicted cumulative dose was a small percent of the US Department of Energy regulatory limit (0.25 mSv). These predictions were conservative and assumed that firefighters would be exposed for the duration of their shift and the public would be exposed for the entire day over the duration of the burn. Realistically, firefighters routinely rotate off the fire front during their shift and the public would likely remain indoors much of the day. However, we show that even under worst-case conditions the regulatory limits are not exceeded. We can infer that the risks associated with wildfires would not be expected to cause cumulative doses above the level of concern to either responding personnel or the offsite public.

That conclusion needs to be reconfirmed in the SRS EIS given the addition of the plutonium pit production mission. Further, Nuclear Watch stresses the point that NEPA helps DOE and NNSA make better decisions, even during extreme wildfire emergencies. As previously stated in these comments, the now-Executive Director of Nuclear Watch New Mexico commented on the lack of wildfire prevention in a draft 1999 LANL Site-Wide Environmental Impact Statement (SWEIS). In response, the final LANL SWEIS included a detailed hypothetical wildfire that became all too real a half year later during the Cerro Grande Fire. That hypothetical scenario aided Lab leadership in their decision to order evacuation of all but essential personnel. Mitigation provisions in the final LANL SWEIS included fire prevention measures that helped to keep the Cerro Grande Fire a half-mile away from above ground plutonium-contaminated transuranic wastes stored at the Lab's Area G, which could have been catastrophic had their drums ruptured due to high heat.

The Impacts of Climate Change Must Be Analyzed in Depth

NNSA must look at the impacts of climate change on the Savannah River Site as a whole in a site-wide environmental impact statement, and not just the effects of the Savannah River Plutonium Processing Facility project on climate change. Rising oceans, larger hurricanes, and stronger tornadoes are examples of what can be expected in the next 50 years. The DEIS look at climate change is cursory:

“Under the Proposed Action, the estimated total combined greenhouses gas emissions would be approximately 0.00044 percent of the total U.S. greenhouse gas emissions (6.457 billion metric tons of carbon dioxide equivalent in 2017). Therefore, the potential cumulative impacts to global climate change from the Proposed Action would be negligible.

As part of this EIS, NNSA also considered the potential impacts to the SRPPF complex from the potential future climate change. Because of its location outside of existing floodplains and its construction to protect against external events (including weather-

related events) to maintain confinement, it is highly unlikely that future climate change would have a significant impact on the proposed SRPPF.” DEIS Pg. 5-7

WIPP Forever Is Not A Given

NNSA must analyze the possibility of not having the Waste Isolation Pilot Plant (WIPP) for disposal of radioactive transuranic (TRU) wastes from plutonium pit bomb production. The draft EIS assumes WIPP capacity for pit TRU waste and states that “approximately 5,350 cubic meters of TRU waste could be generated over the life of the project (i.e., 50 years) at LANL, assuming a production rate of 30 pits per year. The available capacity of WIPP would accommodate the conservatively estimated TRU waste that could be generated over the next 50 years.” (DEIS p. 2-25)

According to the DEID, the projected SRS pit plant life is 50 years and WIPP would be expected to operate at least until 2080. (Pit start date in 2030 + 50 years.) In reality, WIPP is a long way from being able to accept TRU until 2080. Currently, the date for WIPP to stop taking TRU is 2024, and a permit renewal process may take up to a year to extend that end date. Public comment will play a large part on when or if the end date gets extended. And the final decision is up to the New Mexico Environment Department, so extending WIPP’s life is not a given.

NNSA must analyze plans for what to do without WIPP. The agency seems unclear how long WIPP needs to be open:

“WIPP was originally planned for an operational life of 25 years, followed by closure and post closure phases. In August 2019, DOE released, for stakeholder review and comment, a draft Carlsbad Field Office Strategic Plan based on maintaining WIPP TRU waste disposal operations active through 2050 as needed to support identified TRU waste inventory.” (DEIS p. 3-54)

A strategic plan, even one that had stakeholder review, is not a NEPA document. And 2050 would be less than halfway through NNSA’s expanded pit production plans, so would another strategic plan be in order? Please explain in detail how long WIPP needs to be open to accept pit production wastes from SRS and how NNSA plans to ensure that WIPP will remain open.

Then there is the matter of an accident shutting WIPP down for indefinite periods, as happened for nearly three years after an improperly prepared radioactive waste drum from LANL ruptured on Valentine’s Day 2014. The SRS EIS should analyze how possible future accidents at WIPP could seriously interrupt needed radioactive waste disposal, especially given the well-known concerns of the State of South Carolina.

Expanded Pit Production Will Likely Exceed WIPP Capacity

Under this proposed action, significant quantities of TRU waste could be generated at SRS and shipped to WIPP for disposal. It is estimated that approximately 31,350 cubic meters of TRU waste could be generated over the life of the project (i.e., 50 years) at SRS, assuming a production rate of 50 pits per year. That works out to 627 cubic meters per year. In addition,

“approximately 5,350 cubic meters of TRU waste could be generated over the life of the project (i.e., 50 years) at LANL, assuming a production rate of 30 pits per year.” (DEIS p. 2-25)

This DEIS claims that the available capacity of WIPP would accommodate the conservatively estimated TRU waste that could be generated over the next 50 years. But this DEIS fails to give the exact amount of TRU waste that would be generated annually at LANL to produce 30 pits. The estimate given for LANL is 5350 cubic meters over 50 years. That works out to 107 cubic meters per year,⁵⁹ which seems low even considering the removal of americium-241 (see below).

NNSA must explain in detail the amount of TRU waste generated annually at LANL for the manufacture of 30 pits. Previous estimates give the annual amount of TRU generated at LANL for the 50/80 pit option to be 575 cubic yards (440 cubic meters) per year.⁶⁰ The exact estimate of TRU to be generated by LANL annually is never given in this document. Nor is the estimated annual TRU amount generated at SRS (1044 cubic meters) given in this DEIS. This is where NNSA should be very clear on the amounts but is not.

The Final Supplement Analysis of the Complex Transformation SPEIS from December 2019 must be relied on to shed some light:

“Based on current estimates, producing 30 pits per year at LANL and 50 pits per year at SRS could generate a maximum of 1,151 m³ of TRU waste annually (consisting of 107 m³ at LANL and 1,044 m³ at SRS) (see Table 2-2 and Table 2-4 of this SA, noting that quantities shown in those Tables are expressed in cubic yards and are converted to cubic meters in this paragraph). The combined TRU waste (1,151 m³) generated over 50 years would be 57,550 m³, which would account for 53 percent of the projected available capacity at WIPP. In addition, use of WIPP capacity for national security missions such as pit production would be given priority in the allocation process.”⁶¹

Here’s Table 5-4 from the DEIS:

⁵⁹ Final SA to the Complex Transformation SPEIS, p. 65

⁶⁰ Ibid., Table 2-2

⁶¹ Ibid., p. 65

Table 5-4—Cumulative Transuranic Waste (both contact- and remote-handled) Generation at SRS

Activity	TRU Waste (m ³)
Past TRU Waste Disposed of at WIPP as of August 3, 2019^a	68,425
Present and Projected TRU Waste Needing Disposal	
TRU waste projected from INL (EM TRU waste) ^b	19,954
TRU waste projected from SRS Pit Production (50 pits per year): 50-year projection ^c	31,350
TRU waste projected from LANL Plutonium Pit Production (30 pits per year): 50-year projection ^d	5,350
TRU waste estimates for other DOE/NNSA sites (through 2030) ^{b,e}	41,920
Total of Present and Reasonably Foreseeable Future Actions	98,574
Total Past, Present, and Reasonably Foreseeable Future Actions	166,999
Land Withdrawal Act TRU waste volume of record^f	175,564

- a. Volume represents WIPP Land Withdrawal Act total volume of record. Information obtained from <https://wipp.energy.gov/shipment-information.asp> on August 3, 2019.
- b. Source: DOE 2018c, Tables 3-1 and 3-2.
- c. Source: Annual waste volumes from Chapter 4, Section 4.9 of this EIS, multiplied by years of operation (50 years). The values used are the bounding estimates; see Section 4.9.2.
- d. Source: Annual waste volumes from NNSA 2019a, Table 2-2, multiplied by years of operation (50 years).
- e. TRU waste volume was reduced to remove INL waste and MFFF waste estimates.
- f. Source: DOE 2018b, p. 9.

Table 5-4 shows that “Total Past, Present, and Reasonably Foreseeable Future Actions” is estimated at 166,999 cubic meters, which is just 8,565 cubic meters shy of the WIPP Land Withdrawal Act maximum of 175,564 cubic meters of TRU.

Waste from any surge from either site is not given. But one can see that any year when LANL hits 50/80 pits in a year, NNSA would be looking at 306 cubic meters over the 107 cubic meters for 30 pits in a year. It would only take 28 years to bust the TRU volume cap at WIPP.

Surges to 80 pits per year at SRS would generate 1,672 cubic meters of TRU. When compared to the TRU waste generated for 50 pits (1,044 cubic meters) gives 628 more cubic meters, so the WIPP limit would be broken in 14 years. The combined TRU waste (1,978 m³) generated over 50 years would be 98,900 m³, which would account for 92 percent of the projected available capacity at WIPP.⁶²

There are other problems with Table 5-4. The “Past TRU Waste Disposed of at WIPP as of August 3, 2019” uses an amount that is in dispute. The DEIS states: “As shown in Table 5-4, the available capacity of WIPP would accommodate the conservatively estimated TRU waste that could be generated over the next 50 years.” (DEIS p. 5-12) However, the DEIS does not address Southwest Research and Information Center and Nuclear Watch New Mexico 2019 comments regarding the fact that those capacity efforts are not “bounding” or “conservative” because outer container volumes are not used, as in the WIPP permit and historical practice. Indeed, the cited reference - <https://www.wipp.energy.gov/general/GenerateWippStatusReport.pdf> - shows that as of May 23, 2020, that TRU waste volume is 97,858.46 cubic meters. Using that volume and using outer container volume to calculate the SRS pit production waste would result in WIPP’s

⁶² Ibid.

legal capacity being exceeded by about 50 percent. [As a small detail, footnote “e” exists as a footnote but is missing in the table.]

The larger than expected difference in the amount of TRU generated at LANL and SRS is explained:

“As shown in Table 5-4, the available capacity of WIPP would accommodate the conservatively estimated TRU waste that could be generated over the next 50 years. Table 5-4 also demonstrates that TRU waste generation estimates from pit production vary between LANL and the proposed SRPPF. There are several factors that contribute to this difference. The annual generation estimates for the SRPPF use bounding values (as explained in Section 4.9.2), while the LANL projections are expected values that are based on implementation of the aqueous recovery process. Second, the waste stream at SRPPF would include americium-241, which limits the amount of waste that can be packaged for disposal because of its radioactivity. The americium-241 in the LANL process is recovered as a byproduct.” (DEIS p. 5-12)

But where does the americium go after it is recovered? Does the use of the word “byproduct” imply that it is sold or reused? What other wastes are created during this process?

NNSA Must Clarify the Number of Estimated Annual TRU Shipments From SRS

The estimated shipments of TRU waste is not clear in this DEIS. NNSA gives an average of 5.44 cubic meters per TRU shipment over the history of shipments to WIPP:

“Since WIPP began receiving waste, there have been roughly 12,500 waste shipments to the site (NWP 2019). Considering the disposed volume of 2.4 million cubic feet (68,425 cubic meters), WIPP has received an average of about 192 cubic feet (5.44 cubic meters) of TRU waste per shipment.” (DEIS p. 3-54)

Reminder – the 68,425 cubic meters amount is still pending, but we will use that amount here. NNSA gives more history of SRS shipments to WIPP:

“Since WIPP opened in 2001, SRS has made more than 1,650 shipments to WIPP, and all remaining legacy TRU waste at SRS is packaged and ready for shipment (SRNS 2019b). SRS sent nine shipments of TRU waste to WIPP in 2017.” (DEIS p. 3-53)

NNSA almost gives the estimated number of shipments, but mixes it in with plutonium disposition TRU waste:

“Over the five-year period from FY 2011 through FY 2015, TRU waste generated by SRS programs and tracked by the SRS solid waste management organization averaged about 1,020 cubic yards (780 cubic meters) per year (Humphries 2016, p. 14). With packaging of legacy TRU waste complete, production of TRU waste at SRS is now estimated at approximately 460 cubic yards (350 cubic meters) per year (SRNS 2020). These projections include TRU wastes from surplus plutonium disposition from SRS and reflect a time frame when the proposed SRPPF would become operational (e.g., estimated 2026).” (DEIS p. 3-53)

So, the above statement is unclear and confusing. The packaging of legacy TRU is complete, but is there still legacy TRU to ship to WIPP? It looks like the 350 cubic meter amount includes plutonium disposition and pit production TRU. The pit production TRU waste starts in 2026 but when does the plutonium disposition TRU waste end? Do both go for 50 years?

As an alternative way to look at it, 31,350 cubic meters of TRU wastes estimated for 50 years of pit production at SRS (from Table 5-4 above) divided by 50 years equals 627 cubic meters of TRU wastes generated per year. This conflicts with the 350 cubic meter estimate above and does not include any plutonium disposition TRU wastes.

Or another way to look at it is to take the 31,350 cubic meters and divide it by 5.44 cubic meters of TRU waste per shipment, which equals 5,763 pit production TRU shipments to WIPP over 50 years. That would be an average of 115 shipments per year, which is far below the 780 cubic meters shipped annually over the five-year period from FY 2011 through FY 2015 mentioned above.

At any rate, the numbers don't add up. NNSA must leave no doubt what the estimates for this important project are. And there is no reason for the public to have to go to an earlier document to find the estimate for TRU generated by manufacturing 50 pits annually at SRS.

Miscellaneous Specifics

What plutonium pit radiographic capabilities, if any, will the repurposed MOX Fuel Fabrication Facility have?

In general, expanded plutonium pit production will likely prompt the need for increased hydrotests. Are there any plans for hydrotesting at SRS?

All analyses in the EIS must address the risk to the most vulnerable, that is pregnant female farmer, fetuses, children and the elderly, rather than the standard, less vulnerable "Reference Man."

DOE should dedicate funding to local and state governments for independent environmental monitoring, with the right of review of that monitoring by the potentially affected public.

SRS must not be considered for expanded plutonium pit production only because the MFFF already exists. The issue of jobs or contracts must not drive the establishment of plutonium pit production at SRS, but that appears to be a main motivator for DOE and local politicians. Those issues should have no bearing on a national security program of this sort. Making this project into a parochial jobs project is also part of DOE's recipe for failure.

All cited reference documents should be made immediately accessible online.

Conclusion

DOE and NNSA have a long history of abusing, obfuscating and improperly segmenting NEPA processes, which continues to this day with this Savannah River Site Environmental Impact Statement process. We believe that NNSA is legally required to first complete a new programmatic environmental impact statement on its nation-wide plans for expanded plutonium pit production. That should then be followed by new site-wide environmental impact statements for both SRS and the Los Alamos National Laboratory (which apparently has never been prepared for SRS). Both site-wide environmental impact statements can and should incorporate proposed plutonium pit production missions, but by no means be limited to that (instead, they should be truly site-wide).

A new nation-wide programmatic environmental impact statement (PEIS) for expanded plutonium pit production is necessary:

- 1) To raise the production limit,
- 2) Because two sites are now involved, and
- 3) To analyze the interface and possible conflicts with plutonium waste disposition and disposal programs.

A new PEIS is also necessary to analyze credible alternatives to expanded pit production such as pit reuse, the true need for expanded pit production (is it to maintain existing safety and reliability or is it for speculative new nuclear weapons?) and whether future modified pits could lower confidence in stockpile reliability.

In addition to site-specific analysis of the proposed expanded plutonium pit production missions, the new site-wide environmental impact statements are required to properly analyze seismic risks, potential Intentional Destructive Acts and all other potential site-specific impacts.

- End of Comments -

These comments on NNSA's *Draft Supplement Analysis of the 2008 Site-Wide Environmental Impact Statement for the Continued Operation of Los Alamos National Laboratory (LANL) for Plutonium Operations* respectfully submitted,

Jay Coghlan
Executive Director

Scott Kovac
Research Director

Attachment A

***The need to prepare a Programmatic Environmental Impact Statement
in connection with plans to expand plutonium pit production at the
Los Alamos National Laboratory and the Savannah River Site***

**Nickolas Lawton, MGE, LLP and Geoffrey Fettus, NRDC
to DOE Secretary and NNSA Administrator
May 17, 2019**

<https://nukewatch.org/newsite/wp-content/uploads/2019/05/Summary-Pit-Production.pdf>

Attachment B

Comments on NNSA's Draft Supplement Analysis of the 2008 Complex Transformation PEIS

**Jay Coghlan and Scott Kovac
Nuclear Watch New Mexico
August 12, 2019**

<https://nukewatch.org/newsite/wp-content/uploads/2019/08/Nuclear-Watch-NM-CT-PEIS-SA-Comments-8-12-19.pdf>

Attachment C

Comments on NNSA's Draft Supplement Analysis of the 2008 Complex Transformation PEIS

**Geoffrey Fettus, Senior Attorney, Natural Resources Defense Council
August 9, 2019**

<https://nukewatch.org/newsite/wp-content/uploads/2019/08/NRDC-CT-PEIS-Supp-Analysis-Comments.pdf>