



Los Alamos Study Group

Nuclear Disarmament • Environmental Protection • Social Justice • Economic Sustainability

For a House member: considerations in warhead core (“pit”) production policy

Updated January 12, 2023 / Greg Mello / 505-577-8563 / gmello@lasg.org

We are unsure why you and your colleagues are supporting a crash program in early-to-need pit production, minimizing pit reuse while promoting MIRVs for the Sentinel system and building two separate pit factories, one of which is unsafe, wholly inadequate, uncosted, and non-enduring. No formal study supports these wasteful, risky policies.

- The previous (statutory) schedule for pit production cannot be met at either SRS¹ or LANL^{2,3}. The FY23 NDAA directs the Nuclear Weapons Council and NNSA to provide a new schedule and a plan, with alternatives, to support 80 pit per year (ppy) production and the associated warhead programs.⁴
- DoD, STRATCOM, and the NWC will need to realize that prior to full production at SRPPF, only a very limited number of pits, at most, will be available. Optimistically assuming steady, uninterrupted production at LANL of 30 WR ppy starting in 2028, and none at SRPP, roughly 200 pits might be available by 2032,⁵ in the very best case. LANL production is likely to be unreliable, however, assuming it is possible at all.
- LANL will not be able to change pit types from the W87 pits now programmed easily or quickly. It would be unwise to attempt this. So all the pits produced until the SRPPF is in production will be committed to the W87-1. NNSA now says SRPPF will not be ready to produce 50 ppy until at least 2036 [see note 4].
- Therefore, there will be no new pits for the W93 or any other non-W87 warhead built in at least the first half of the 2030s, unless pit reuse is specified for all W87-1 warheads built during this period.
- These LANL pits will be fantastically expensive, tripling or quadrupling the price of W87-1 warheads over the same warhead with re-used pits – or warheads using pits made at SRPPF once the latter is built and operational.⁶
- As much as we would like to postpone (which may happen, perforce), downsize, or eliminate the Sentinel system, there are other less-bad options for Sentinel warheads. There are enough W87-0 pits to populate the entire proposed Sentinel missile fleet with W87-1 warheads if desired, if the MIRV option is foregone. These pits are approximately 35 years old now and will not exceed 80 years old until about 2067. Pit reuse is perfectly feasible for a W87-1 LEP that concludes in 2037. Or else simply use all W87-0 warheads, again without MIRVing. Sufficient numbers are available. It is safe, modern, and sufficiently accurate. This would require a new-design RV and the associated extensive flight tests.
- As the Institute for Defense Analyses noted in 2019,⁷ “[t]rying to increase production at [LANL’s main plutonium facility] PF-4 by installing additional equipment and operating a second shift is very high risk.” Unfortunately, this is the current plan. This plan is also extremely expensive [see note 6], whether or not success is possible. Nearly all the value of LANL’s pit production capability, whatever that might be after billions are invested, can be captured by using PF-4 and associated facilities to a) demonstrate technology, b) train production staff, and c) continue its other programs. Beyond this mission, fiscal waste and program risk dominate, threatening not just pit production but also other plutonium programs. With this approach:
 - The LAP4 project could be rebaselined and truncated, saving \$1-2 billion;
 - A staff reduction of 2,000 people from current plans would be possible. Most of these have not yet been hired; attrition would obviate layoffs. Roughly \$7 billion over 10 years could be saved.

- Several prospective construction line items and other capital investments could be eliminated or downsized, saving anywhere from several billion on up to \$10-20 billion by avoiding augmentation and/or replacement of PF-4.
 - Safer, single-shift operation would be possible, with attendant smaller impacts on transportation, housing, services, resources, and waste management, which in turn impact all other LANL programs.
 - Finally, the resulting clear focus on pit technology demonstration, pit capability sustainment, and training, would have less negative impact on other PF-4 missions and on the SRPPF project.
- Costs are much higher than previously realized at both main sites, especially at LANL (from “\$3 billion” (B) in 2017 to >\$14 B through FY28, not including the major new facilities needed⁸) but also SRS (now ~\$14 B through FY33⁹). There are as-yet-unrevealed and understated technical and safety problems at LANL.
 - Planned pit production capacities at LANL and SRS have never been clarified. We believe the baseline capacity of SRPPF could easily and cheaply be 80 ppy (i.e. 100 ppy on average) if it is not that already. We believe the baseline plan at SRS includes more than one production line. That capacity and flexibility would be cost-effective and would add more resilience than LANL production ever could.
 - The expected longevities and operational and safety statuses of key LANL facilities, needed replacements and augmentations, needed support facilities, and other required infrastructure, and the program risks related to these issues, have never been satisfactorily clarified.¹⁰
 - To start and maintain reliable pit production at LANL at any level, an *open-ended* series of major facility investments and replacements will be needed, at unknown but large cost. These include:
 - CMRR, TLWF, TRPIII (already included in NNSA’s pit budget and our cost analysis¹¹)
 - Five additional pit support facilities with FY23, 24, 25,26, and 27 start dates, ~\$50 M each
 - Sigma Building replacement¹²
 - Radiography facility replacement¹³
 - PF-4 replacement/augmentation and any associated PIDAS changes¹⁴
 - Security facilities¹⁵
 - Site-wide infrastructure investments to support this and other program expansions
 - (This list is incomplete; other investments and references to be added as time allows)
 - We believe that by some time in the 2030s the U.S. will have one pit factory. The burden of maintaining two operating factories will be too great. There will be no net value, and much cost and risk, in maintaining LANL as a production site, as opposed to as an R&D and training site.
 - Underscoring this, the dynamic of resource limitations, persistent energy-related inflation, debt service, climate-related emergencies, rising mandatory spending, and competing federal priorities related to social stability will test the present relative lack of accountability in NNSA Weapon Activities spending – including in pit production.
 - That one factory will be at SRS, because there are no circumstances under which LANL can produce enough pits to support more than a small fraction of today’s arsenal.¹⁶ If a decision were made right now to dramatically slash the U.S. arsenal, and to accelerate the above investment campaign at LANL, and to accept the risks inherent in LANL production, investment in SRS pit production might be avoided. Such a decision, as well as its execution, are unrealistic for the foreseeable future. As for expansion at LANL, site limitations as well as transportation, housing, and regional water supply capacity have already been reached.
 - By definition, spare capacity at SRS does not need to be continuously used. In contrast, “surging” at LANL will be nearly impossible, given that two production shifts are needed to reach even 20 ppy, assuming that level is even possible, or sustainable once reached. We doubt the latter.
 - To our knowledge, no NNSA or contractor study supports splitting production between two sites, or supports using 24/7 operation of PF-4 as a baseline. Yet this is the current plan.

¹ From [Los Alamos warhead "pit" production preparations begin dangerous 24/7 work in struggle to meet deadlines; STRATCOM: "unlimited money" would not be enough to meet 2030 deadline](#), Mar 10, 2022:

In May of 2021, NNSA finally admitted --again-- that it could not meet the 2030 deadline ("[SRS Pit Plant Might be Five Years Later Than Hoped, NNSA Administrator-Designate Tells Senators](#)," *NSDM*, Dan Leone, May 28, 2021). Congress and NNSA have been ignoring, and in some respects still are ignoring, NNSA's 2017 conclusion that achieving production of at least 80 ppy could not be done prior to 2033 at the very earliest ([p. 2](#)), which in effect became 2034 because NNSA and Congress delayed initiating work on the SRS facility for a year.

The IDA [told](#) (p. vii) DoD, NNSA, and Congress the same thing in 2019: the 80 ppy, 2030 deadline was impossible. (See further references and discussion at slide 9 [here](#)).

Despite all this, as late as April or May 2021 NNSA was telling the Nuclear Weapons Council (NWC) that it *could* meet the 2030 deadline, as was reported to us.

This week [Mar 10, 2022], STRATCOM Commander Adm. Charles Richard [laid any remaining uncertainty to rest](#): "We have crossed one of those points of no return that I referred to previously, in that we now know we will not get 80 pits per year by 2030, as is statutorily required, and even unlimited money at this point will not buy that back," Richard said.

"So there is active work underway inside the Nuclear Weapons Council to understand exactly how much of a delay we are going to have, how much of it can be addressed by funding," he said. "We're not mitigating this problem. We have shot all the mitigation to get us to this point, the fourth time the nation has tried to recapitalize its production infrastructure. Now the question becomes, how much damage have we done? And what are the consequences of that? And we're working to better understand that."

(See [video](#) at 29:53.)

² [Nuclear Warhead Agency Admits Los Alamos Likely to Miss Interim Warhead Core Deadlines; Review of value, cost, of Los Alamos factory needed](#), Feb 12, 2022

³ "[Los Alamos Plutonium Operations FY22-28 Program Management Plan](#)," LA-CP-21-20831, Sept. 2021, redacted, pp. A-3,4:

Over the 20-month COVID-impacting period (February 2020 through September 2021). the 10-oit capital equipment installation portfolio executed just over 7 months combined planned work [redacted]. This 14-15 month impact directly impacts the ability to reliably produce [redacted] as well as corresponding shifts out to 30 WR pit targets in 2026 and beyond. Pre-COVID, success probabilities (p') for the key war reserve pit deliverables have been notionally between High, $p \geq 60 < 80\%$. Post-COVID, added time is needed for 10-pit equipment installations to retain a $\geq 80\%$ p'. Success probabilities for War Reserve (WR) pit deliverables are impacted as illustrated by decreased success probability (see Table 1).

⁴ [Joint Explanatory Statement, FY23 NDAA](#), electronic pp. 99-100.

⁵ [Bulletin 297](#): (04/11/22) LANL pit production is incapable of meaningfully contributing to production requirements. Details at this [worksheet](#). An active version of this worksheet is available on request.

⁶ [Warhead plutonium modernization spending, actual & proposed by site](#), May 6, 2022.

⁷ Institute for Defense Analyses, "[Independent Assessment of the Plutonium Strategy of the \[NNSA\]](#)," p. vii.

⁸ Ibid.

⁹ Ibid.

¹⁰ There exists a LANL "Campus Master Plan" but it is not yet public. LANL has prepared an [introduction](#).

¹¹ [Warhead plutonium modernization spending, actual & proposed by site](#), May 6, 2022.

¹² [FY 2021 Stockpile Stewardship and Management Plan](#), Dec 2020, p. 4-4.

¹³ Ibid.

¹⁴ See "Campus Master Plan" [introduction](#), p. 10-4. Since billions of dollars in PF-4 "upgrades" are already occurring, "augmentation" is likely what is meant. Three options for this are introduced on pp. 2-2 through 2-5 in the [2018 EA](#) and subsequently analyzed.

¹⁵ Ibid, throughout.

¹⁶ [Bulletin 297](#), op. cit.