# NNSA Plutonium Sustainment Programs: Easily-Forgotten Discussion Points

Greg Mello, Los Alamos Study Group

July 30, 2012; August 13, 2012 light edits

- It appears that some members of Congress do not yet understand or grasp that the Nuclear Weapons Council (composed of the DoD, military, and the National Nuclear Security Administration [NNSA]) has after careful study endorsed the delay of the Chemistry and Metallurgy Research Replacement Nuclear Facility (CMRR-NF) for at least five years as the best path for the nation.[1] As NNSA has frequently stated, this delay is necessary not just for fiscal reasons but also will allow needed reexamination of fundamental project requirements.
- It is therefore not an appropriate time for detailed project design, or for retaining the project team doing that project-specific design. Indeed those teams are already being disbanded.
- There is no fixed DoD requirement for pit production capacity. Neither is there any current requirement to make pits for the stockpile.[2]
- To our knowledge there has been no comprehensive, independent study of National Nuclear Security Administration (NNSA) Plutonium Sustainment Programs, one that comprehensively reviews facilities, needs, investments, and life-cycle costs across programs, sites, and facilities, and which incorporates an analysis of a) project risks and corresponding program impacts and b) sensitivity to stockpile policy choices. What we see instead is the relatively blind snowballing of separate, unexamined projects and programs, the aggregate costs and risks and underlying purposes and needs of which are poorly understood or integrated.
- Plutonium warhead programs are not independent of plutonium disposition programs, but rather compete for facility space and for money. Facilities primarily engaged in plutonium disposition missions may however offer also contingency space for warhead programs, such as the preparation of purified plutonium metal (which includes most of the analytical chemistry requirements of pit production). This approach was endorsed by Los Alamos National Laboratory (LANL) and Lawrence Livermore National Laboratory (LLNL) in 1996.
- The snowballing of unresolved cost and risk issues in plutonium programs is driven by, and is part of, a larger and very rapid snowballing of cost, schedule, and risk issues in NNSA overall. The full scope of this problem, its various causes, and its implications, is not being openly discussed, let alone solved.
- Among the causes of its management failures, NNSA's culture of almost near-zero accountability for its laboratory contractors ranks high, and this is not being discussed. Contractor failures are typically bases for further, expanded appropriations.
- Los Alamos National Security (LANS), the management and operating (M&O) contractor at LANL, has in particular a "can't do" posture regarding what it can and cannot do in its large plutonium facility, PF-4. The expert opinion of the Secretary of Energy Advisory Board

[1] Memorandum for members of the Nuclear Weapons Council, Mar 27, 2012 (pdf).

[2] Please see citations in "Concerns regarding CMRR-NF in the FY2013 National Defense Authorization Act (NDAA) as reported in the Senate", July 16, 2012.

(SEAB) Task Force regarding the massive inefficiency of operations there has been forgotten.[3] There is apparently no adequate plutonium pit mission for which LANS does not need a massive capital investment, according to LANS.

- Apparently in anticipation of a second huge plutonium facility project immediately following CMRR-NF at LANL, LANS has failed to promptly and adequately modernize PF-4 or address its long-term safety problems, which is problematic for all of NNSA plutonium programs – with or without CMRR-NF or any successor project. LANS, with tacit NNSA approval, may be running PF-4 to failure, as a recent former NNSA LANL Site Office Manager has frequently told us.
- There is no public and congressional understanding of the costs, risks, and feasibility of particular "modernization" strategies for the stockpile, particularly those involving primaries. The fallacious assertion that the "need" for new facilities like CMRR-NF is independent of a) stockpile size, b) types of warheads to be sustained, and c) the chosen strategies for sustaining them obscures the true relative costs of Life Extension Program (LEP) strategies. Not just as regards CMRR-NF, the interplay of costs and risks among these three factors is at present obscure to Congress.
- At present many members of Congress are proceeding with an unrealistic view of how many delivery systems – submarines, bombers, and land-based missiles – can and will be replaced in future decades. The U.S. will not replace all these delivery systems.
- It appears that these unrealistic stockpile assumptions incorporate highly-optimistic, and therefore risky, assumptions about the future U.S. fiscal situation, which shows no sign of easing. Quite the reverse.

---

[3] "The enormous investment made in the TA-55 facility has not yielded anywhere near the productivity levels this facility should be capable of attaining. The process is operated with little sense of urgency. It appears that each manufacturing step is "an event" attracting numerous witnesses and visitors. The process of actually building a pit seems to be a secondary mission of the facility, not the primary focus.

"At every phase of operation, there appears to be numerous opportunities to "lean-out" the operation. The current process follows 1950's "inspect in" quality methodology. As such, the vast majority of the time the plutonium material, raw or in the process of becoming a pit, is waiting to be inspected, to be tested, waiting for test results, etc. This is an incredible waste of time. This is not to say that quality inspection does not have its place, it does. But given the many years of pit manufacturing experience, we should know how to make these components by well characterized processes which should not require the current amount of sequential testing which absolutely kills productivity. At a minimum, a rigorous review to determine necessary testing requirements would be valuable. In addition, current analytical metrology techniques, if applied, should yield superior results in much shorter time frames.

…

"From a modern industry standpoint, world class productivity, quality, and safety can all be attained at the TA-55 facility by thorough and rigorous analysis and hard work on the production floor. The cursory analysis of the TA-55 facility yields a ratio of value-added to non-value added work of perhaps 1:20 or much worse. This indicates a tremendous opportunity for improvement. The available productive capacity of this plant is being wasted by inefficient utilization of plant equipment and personnel.

"In conclusion, the TA-55 facility is an expensive national asset, which has the opportunity to be a dramatically more effective and efficient facility if operated as a modern production facility, utilizing available automation and world class operations management techniques." Appendix H, SEAB, *Report of the Nuclear Weapons Complex Infrastructure Task Force: Recommendations for the Nuclear Weapons Complex of the Future*, July 13, 2005. http://www.doeal.gov/SWEIS/DOEDocuments/049%20SEAB%202005.pdf.

- LANS cannot make an objective assessment of either complex-wide or LANL-specific capabilities and needs, if for no other reason than LANS, which has been the design and construction manager for CMRR-NF and for all other new LANL facilities up to now, and has powerful conflicts of interest, including strong incentives to increase operating costs at LANL. LANS is the primary author of the CMRR-NF project – and of its problems, misrepresentations, and oversights to date.
- Given the systematic understatement of costs that plague all NNSA programs and projects, with the resultant waste of funds and program delays, it is more appropriate to fashion an inquiry of what went wrong at CMRR-NF than to perpetuate the project – especially under current management. The dissipation of over one-billion dollars and the associated decade-long delay and distraction are properly an occasion for reevaluating the LANS M&O contract.
- In the absence of clear federal (not: contractor) planning, and without the above understandings, continued detailed design of the Chemistry and Metallurgy Research Replacement Nuclear Facility (CMRR-NF) at Los Alamos National Laboratory (LANL) would be pure folly. Over one-half billion dollars spent in CMRR-NF planning and design over nearly a decade did not reveal that there were sound alternatives to the project. It took a budget shortfall to bring this awareness. Even now, Congress is factually confused. The Senate Armed Services Committee (SASC) is confused in particular.[4]
- The frankly partisan and parochial political interest in CMRR-NF shows it is necessary to stop the residual CMRR-NF momentum entirely to think clearly about it.
- Obviously Congress has failed to properly oversee NNSA's plutonium programs or to notice that alternatives to CMRR-NF have long been available. Over the history of the CMRR project, the most consistent (and in retrospect, the most accurate) bipartisan questioning came from the House Appropriations Committee. The most dogged and parochial defense of the project came from the Senate.
- It will take some time for all parties to understand and accept the fiscal realities and true program needs at NNSA – and the steep risks to national security of exceeding those actual needs in favor of grandiose make-work. Vague slogans like "modernization" are thrown around without understanding of what needs "modernizing" and what does not, and what kind and degree of modernization is appropriate. Attempts to "modernize" of the stockpile and NNSA facilities need hardly be sound management, and if not carefully balanced within a realistic funding profile will not be. Theories about increasing the frequency of LEPs, as expounded since November, 2011 if not before, by Dr. Cook, show how little understanding there is of the wisdom of not trying to fix things which are not broken. This proposed increased LEP frequency is make-work pure and simple.
- NNSA and DOE are supporting several current and planned plutonium experimental, processing, and storage facilities with different capabilities and missions in seven states (CA, NV, NM, TX, ID, TN, and SC) and have never had any intention of contracting its plutonium operations to a single site.

[4] Again please see "Concerns regarding CMRR-NF in the FY2013 National Defense Authorization Act (NDAA) as reported in the Senate", July 16, 2012.

- LANS, NNSA, and many members of Congress fail to understand that attempting to build CMRR-NF or any other large new plutonium facility, particularly at LANL with its confined topography, poor geological substrate, and relatively high seismic risk is a ***high***-risk strategy, not a ***low***-risk one. Several members of Congress, and of course the self-interested contractor LANS, continue to speak of the "risks" of not building CMRR-NF now. There is instead a much greater risk in relying on a hypothetical future facility which may or may not be successfully completed at a rather distant time and only then after expenditure of unknown but very large sums.
- As the JASONs have recommended, there is no need to have any but a sharply-targeted program of plutonium studies.[5] Meanwhile, NNSA needs to follow through with publication of results from its plutonium aging studies.
- No one has testified that delaying CMRR-NF will not prevent the indefinite maintenance of today's large, diverse nuclear arsenal, let alone any subset of it.

[5] JASON, 1994, "Science-Based Stockpile Stewardship," p. 85: "Having an open research program on the physics and metallurgy of uranium and plutonium is highly undesirable from the perspective of nuclear proliferation. Consequently, we see the SNM manufacturing component of the stewardship program as a narrowly defined, sharply focused engineering and manufacturing curatorship program."
http://www.fas.org/irp/agency/dod/jason/sbss.pdf.