nuclear watch new mexico

Scoping Comments on the Environmental Impact Statement For the Proposed Chemical and Metallurgical Research Building Replacement Project

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Submitted by
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Submitted to
Ms. Elizabeth Withers
NEPA Compliance Officer
DOE Office of Los Alamos Site Operations

Dear Ms. Withers,

Nuclear Watch of New Mexico (NWNM) is pleased to submit the following scoping comments on the National Nuclear Security Administration's (NNSA's) proposed Chemical and Metallurgical Research (CMR) Building Replacement Project at Los Alamos National Laboratory (LANL).

Potential Aging Effects on Plutonium

In this commentator's view, the rationale for the Stockpile Stewardship Program (and its associated tens of billions of dollars) largely hinges on the future effects of aging on plutonium-239. This is directly relevant to the CMR Replacement Building(s), as presumably it would be the NNSA's premier facility for analytical chemistry and assay work on special nuclear materials. Also in this commentator's view, DOE unfortunately controls the debate on what those aging effects might be, and will likely play up any tiny degree of uncertainty in order to ensure the continuing flood of appropriations. If DOE were principled in this matter, it would disclose what is known to date and what can be reasonably projected for the future. Further, because it has much to do with the need and mission of the CMR Replacement Project, DOE would disclose that in the draft EIS.

This commentator has compiled the following from DOE documents and other sources indicating that plutonium-239 is stable over a long period of time. Therefore, the safety and reliability of the U.S. nuclear weapons stockpile is assured for the long-term, at a minimum for the next half-century.

As a baseline: "The stockpile is currently judged to be safe and reliable by DOE." 1996 Stockpile Stewardship and Management (SSM) PEIS Vol. I at p. 2-3. In all subsequent years the three lab directors have certified that the stockpile has remained safe and reliable. Potential future problems in nuclear weapons safety and reliability can be divided into problems with nuclear and nonnuclear components. However, potential problems with nonnuclear components can be ruled out as not being germane to the core debate over the SSM Program. "For nonnuclear components, a significant amount of functional test data is acquired during manufacture and is then used to begin building a statistical esti-

mate of component reliability. Subsequent laboratory and flight testing in the surveillance program accumulates additional data that include the effects of aging and exposure to stockpile environments. Thus, over time, high confidence in the safety and reliability of nonnuclear components and subsystems can be established." SSM PEIS Summary, p. 19.

The SSM PEIS goes on: "The situation is not the same for nuclear components and the assessment of their nuclear performance... In the past, [full-scale] nuclear testing filled the gaps in basic understanding of the complex physics phenomena; it provided high confidence in the certification of nuclear safety and performance. Without nuclear testing, science-based stockpile stewardship will focus on obtaining the more accurate scientific and experimental data that will be needed for more accurate computer simulations of nuclear performance." Ibid. Hence, the overarching justification for the SSM Program lies in future uncertainty over aging effects on nuclear components. However, language in supporting documents for the PEIS indicates that there is little uncertainty for the foreseeable future.

For the SSM PEIS DOE prepared the *Stockpile Management Preferred Alternatives Report* and the *Analysis of Stockpile Management Alternatives Report*, both released in July 1996. Under "Capacity Assumptions and Contingency Options": "Only replacement of pits destroyed in routine surveillance testing is expected until a near term life limiting phenomenon is observed in stockpile pits. Most pit requirements during weapon refurbishment are expected to be satisfied by requalification and reuse of existing pits *since historical pit surveillance data and pit life studies do not predict a near-term problem.*" Stockpile Management Preferred Alternatives Report, July 1996, p.12. Emphasis added.

"Most nuclear weapons in the stockpile were designed for a minimum lifetime of 20 years. However, *experience indicates that weapons can remain in the stockpile well beyond their minimum design lifetime.* Two nuclear weapon systems remained in the stockpile for more than 30 years." Analysis of Stockpile Management Alternatives, July 1996, p. 7-8. Emphasis added. Under "Primary [the nuclear package with high explosives] Requirements": "Known aging effects of high explosive components results in an estimated stockpile life of 30 to 40 years based on current understanding of high explosive aging." Ibid, p. 7-11.

"*No age related problem has been observed in pits up to 30 years in age*, though very little data exists for pits older than 25 years. In addition, no age related problem is expected until well past the START II [the second Strategic Arms Reduction Treaty] implementation date [year 2003]." Ibid., p. 7-12. Emphasis added. Under "Conclusion": "Nuclear components (pits and secondaries) are expected to have service lives significantly in excess of their minimum design life of twenty to twenty-five years." Ibid., p. 7-17.

Senior DOE officials have hinted that the buildup of helium gas as a result of plutonium decay could affect nuclear weapons performance in the near term. Again, this is contradicted by PEIS language. During the SSM PEIS public comment period, a commentator asked, "How long can pits remain in the stockpile before buildup of decay products becomes a design or handling concern?" DOE responded: "Modern nuclear weapons are designed with a minimum design life of 20 to 25 years. Based on existing surveillance data, DOE expects the pits to last at least this long, and probably considerably longer. However, very little historical and applicable data exists beyond 30 years. *With regard to the buildup of decay products alone, DOE does not currently believe this will become a prob-*

lem in less than 50 years..." SSM PEIS, Volume IV, p. 3-84. Emphasis added.

Since the release of the SSM PEIS, Raymond Jeanios (professor of geophysics at UC Berkeley), published an article entitled "Science-Based Stockpile Stewardship" in *Physics Today*, December 2000. Some relevant quotes are:

> Perhaps the most important result from measurements is that Pu exhibits good crystalline order even after decades of aging.
>
> …on the nanometer scale, aging appears to have the same effect as a greater Ga [gallium] concentration, in that it shifts the Pu to a more stable configuration.
>
> The overall finding from a variety of observations… is that the Pu samples not only retain long-range order but actually get closer to the ideal crystal structure with increasing age. Annealing processes, perhaps related to those countering the crystal-structure disordering, appear to counteract radiation-induced damage and mitigate the initial buildup of He [helium] quite effectively, at least for Pu in the US stockpile.
>
> Surprisingly, however, the high explosive used in US weapons has been found to improve systematically with age in key measures of performance, such as yielding characteristics and detonation-front velocities.
>
> Thus, crucial primary-stage components that were initially subject to concern have been shown through the SSP to be robust as they age. Indeed, there is now consensus among specialists that the Pu pits in the US stockpile are stable over periods of at least 50-60 years, with the most recent studies suggesting a far longer period. More important than the indications of benign aging is the demonstration that the materials are now becoming understood in sufficient detail, and surveillance methods are becoming sensitive enough, to ensure that any signs of degradation will be observed in time to apply the necessary repairs or refurbishment.

Another point concerning the future effects of aging on plutonium:
J. Carson Mark, former head of LANL's Theoretical Division (and an ardent arms control advocate), before his death personally told this commentator that the lab had the foresight some four decades ago to set aside weapons-grade Pu-239 for the express purpose of studying aging effects. Further, while pointing to Pu-239's long half-life (approximately 24,000 years), he stated that the big news was "no news." I subsequently requested from LANL data or conclusions from these "set aside" experiments," but was denied on the basis of classification. Nevertheless, I reiterate here that those conclusions are germane to the need and mission for the CMR Replacement Project and should be generally disclosed in the draft EIS as part of the Project's need and mission. It is self-serving for LANL and the NNSA to remain silent on this subject.

A final point concerning the future effects of aging on plutonium:
It was widely reported in regional media that LANL will be "spiking" Pu-239 with Pu-238 (half-life approximately 88 years) in order to achieve accelerated aging effects. Perhaps these experiments are taking place in the old CMR Building. The CMR Replacement Project draft EIS should address these

experiments, in part to explain why the experiments would be truly valid. Can the data really be applied to the future safety and reliability of Pu-239 pits? If these experiments are indeed conceptually credible, what is the proper blend with Pu-238 that would assure valid results? As a heavy gamma emitter, how is it that Pu-238 wouldn't skew data results? How long of a performance baseline is the NNSA attempting to establish for plutonium pits? A half century (when, given the referenced quotes above, that already seems pretty well assured)? A full 100 years? Would the NNSA purposively reach for such a lengthy performance baseline that it would be impossible to offer guarantees of safety and reliability? What or who is to ensure the objective and dispassionate analyses of and resulting conclusions from the data, when ultimately 10's or 100's of billions of dollars are in the balance for the Stockpile Stewardship Program?

Mission and Need for the CMR Replacement Project

IN NWNM's view there is little in the way of mission and need for the CMR Replacement Project. This view is based, in part, on the apparent long-term stability of Pu-239 as explained above. It is also based on our reading of the 1970 NonProliferation Treaty (NPT), Article VI, in which the nuclear weapons states pledged to "pursue negotiations in good faith on effective measures relating to the cessation of the nuclear arms race at an early date and to nuclear disarmament…" In turn, Article VI of our own Constitution clearly stipulates that international treaties are to be enshrined as the supreme law of the land.

Moreover, at the 2000 NPT Review Conference, the United States and the other declared nuclear weapons powers made an "unequivocal commitment" to end the arms race and negotiate disarmament. They also agreed to institute the principle of irreversibility in nuclear disarmament and related arms control and reduction measures; make concrete measures to reduce the operational status of nuclear weapons; increase transparency regarding nuclear weapons capabilities; and create a diminishing role for nuclear weapons in security policies. The recently signed Bush/Putin Strategic Offensive Reduction Treaty, with its complete lack of scheduled dismantlements and shifting of warheads from operational status to a "responsive reserve" from which they can be withdrawn, does not meet the requirement of NPT Article VI. Further, the new Nuclear Posture Review has expanded the role of potential use of nuclear weapons by the U.S. and the number of countries to be potentially targeted.

The Federal Register 7/23/02 Notice of Intent for the CMR Replacement Project EIS states:

> Mission critical CMR capabilities at LANL support NNSA's stockpile stewardship and management strategic objectives; these capabilities are necessary to support the current and future directed stockpile work and campaign activities conducted at LANL.

Directed Stockpile Work is the largest budget category under the NNSA's Total Weapons Activities, under which extensively planned Stockpile Life Extension Programs for each of the existing weapons systems in the "enduring" stockpile are being implemented. The aim of these programs is to preserve the operational life of each weapons system for at least 30 years. Far from the stated rationale of merely maintaining the safety and reliability of the stockpile in the absence of full-scale testing, these programs are aggressively introducing major modifications and possible new designs that will improve accuracy and military effectiveness in order to meet "changing military requirements." The weapons labs themselves now describe the stockpile as "evolving," in contrast to simply "enduring." One of the stated

objectives of Directed Stockpile Work is to "provide the capability to realize new weapons, if they are needed." Finally, an expanded Phase 6 [Quantity Production and Stockpile Phase] has been established by the NNSA to indefinitely extend the life of all remaining nuclear weapons systems.

With respect to "campaign activities" at LANL, it is worthy of note that the "target" stated by the lab for its plutonium pit campaign is to "[r]e-establish a robust pit manufacturing capability to produce stockpiled and *new-design pits without underground testing*." LANL FY01 Institutional Plan, p. 31, emphasis added. The express intent of the Comprehensive Test Ban Treaty, which would cut off full-scale underground testing, is to halt the continuing advancement of nuclear weapons designs. Although the U.S. has failed to ratify the CTBT, it has to date observed a testing moratorium. Apparently, through technical experimental and simulation advances, LANL now seeks to circumvent the intent of the CTBT.

It is obvious that the CMR Replacement Project will be tightly bound to both LANL's Directed Stockpile Work and to the lab's plutonium pit production campaign. With this in mind, the draft EIS should discuss the Project's roles in either supporting or conflicting with NPT Article VI and the intent of the CTBT. Further, the No Action Alternative, instead of being considered as merely another NEPA requirement, should be vigorously pursued. In NWNM's view, this Project has no more justification (and arguably less) than its preceding proposal, the Special Nuclear Materials Research and Development Laboratory, which was terminated over a decade ago.

The Need for an Integrated Technical Area-55 EIS?

The 9/26/01 LANL Ten-Year Comprehensive Site Plan (TYCSP) makes clear that big plans are afoot for Technical Area-55, LANL's site for plutonium pit production. Amongst the five "Strategic Facility Plans" is "Integrated Nuclear Planning" (INP). The TYCSP states:

> The INP effort is to provide an integrated, coordinated plan for the consolidation of laboratory nuclear facility construction, refurbishment/upgrade, and retirement activities. The focus is on programs and activities involving special nuclear materials. The overall plan for the INP is that it be comprehensive, incorporating considerations for all affected Laboratory sites and facilities. The developed plan will establish priorities for these types of activities based on comprehensive cost/benefit and risk evaluation considerations as well as considerations driven by programmatic requirements over the next 20 years… The INP is an overall plan; it is not in itself a construction project but a plan that will encompass major construction projects at the laboratory…
>
> There is a need for an integrated process that provides the following:
> • Systematically identifies the capabilities necessary to meet the long-term Laboratory nuclear materials mission, etc.,
> • Integrates and prioritizes planned activities based on program requirements, safety and security posture, and protection of core capabilities, and
> • Develops a cost-effective and achievable roadmap of construction and consolidation activities for the next 20 years…
>
> Proposed INP Project elements:
> • CMR Replacement Project

- TA-18 Relocation Project
- TA-55 Infrastructure Investment
- Pit Radiography
- NMSSUP [Nuclear Materials Safeguard and Security Upgrade Project] Phase II
- Radioactive Liquid Waste Treatment Facility (RLWTF) Upgrade

9/26/01 LANL TYCSP, pp. IV-24 through 26.

Additionally, the February 26, 2002 BSL-3 Environmental Assessment mentions "the possible construction of a new building for pit manufacturing use (these actions are speculative at this time but are currently under general discussion)." This presumably means a replacement for Plutonium Faciltiy-4, which would be a huge undertaking, certainly much larger than the CMR Replacement project itself.

Much of the above quotes smell very much like NEPA. NEPA bars segmentation of connected actions in its analyses and considerations. Because all of these actions appear to be in at least conceptual planning stages (therefore reasonably foreseeable) and are taking place in the same geographical and site-specific location (Technical Area-55 or in close proximity) it would seem that proper compliance with NEPA would require something tantamount to a "TA-55 EIS." When I raised this point at the 8/13 CMR Replacement Project public meeting one DOE official responded that "construction schedules would be different and we wouldn't want construction workers tripping over each other" (paraphrased). This commentator has extensive construction experience and some familiarity with NEPA requirements. It is obvious that construction schedules and NEPA analyses are two distinctly different things. Construction schedules are a management concern and do not rise to the level of federal environmental law requirements. NWNM asserts that if multiple projects in the same locale are within a foreseeable time period (say ten years or less), are arguably related to one another (and even possibly physically linked to each other via tunnels or piping), then those projects should be bundled together and analyzed in a common NEPA document. To do less is to skirt NEPA requirements for analyses and consideration of interconnected actions and potential cumulative effects. NWNM further asserts that the burden is on the NNSA in the draft EIS to credibly defend why an integrated "TA-55 EIS" is not required.

Large Containment Vessels

The Federal Register 7/23/02 Notice of Intent (NOI) for the CMR Replacement Project EIS states that "continued support of LANL's existing and evolving missions roles are anticipated to require additional capabilities such as the ability to handle large containment vessels in support of Dynamic Experiments."

In context that statement implies that large containment vessels will be handled in the proposed facility. The EIS needs to clarify for what use. In response to my question at the August 13 public meeting LANL personnel declared that Dynamic Experiments (explosive experiments involving radioactive materials, hence the need for containment) would not actually be conducted in the Replacement Building. Instead, handling of the containment vessels would involve washout and cleanup. Again, that needs clarification.

However, this doesn't make complete sense to this commentator. Why doesn't washout take place closer to where these tests will actually take place? Presumably these would be at the Dual Axis Radiographic Hydrotest Facility (DARHT) in Technical Area 15, the Los Alamos Neutron Science

Center in TA-53 and the future Advanced Hydrotest Facility. The LANL Site-Wide EIS stated that the lab's number of Dynamic Experiments (or, more specially, hydrotests) was slated to triple under expanded nuclear weapons activities. More likely, in this commentator's view, the real purpose of any containment vessel washout in the Replacement Building would be for shot debris analysis. This would tie back to the NOI's statement that "[m]ission critical CMR capabilities at LANL support NNSA's and management strategic objectives; these capabilities are necessary to support the current and future directed stockpile work and campaign activities conducted at LANL." As already discussed above, directed stockpile work consists of an aggressive schedule of nuclear weapons refurbishments, a number of which arguably result in "new" nuclear weapons, and possible new designs. In this context, it makes sense that containment vessel washout would take place at the CMR Replacement Building, which will presumably be LANL's premier facility for analytical chemistry and radioassay work on special nuclear materials. Shot debris analysis there would directly aid and support the thrust of directed stockpile work. If this line of speculation is correct, the EIS should so disclose. The NNSA should not attempt to just blithely explain away the presence of containment vessels as "cleanup."

Other related issues that the EIS should examine are:

- Analysis of the risk of transport of these containment vessels from the site(s) of Dynamic Experiments to the Replacement Project;
- How cleanup residues are to be treated and disposed of. What portion is liquid, what portion is mixed (both radioactive and hazardous) and therefore subject to the Resource Conservation and Recovery Act? Where would mixed wastes be disposed of (since such disposal is prohibited at LANL)? What portion would be transuranic wastes; what portion low-level wastes?
- What is the need for cleanout at the CMR Replacement Project when other cleanout facilities already exist? What are those facilities?
- What kind of floor space would be needed at the Replacement Building for containment vessel washout? The EIS should provide a generalized schematic.

The CMR Replacement Project and the future Advanced Hydrotest Facility

The draft EIS needs to disclose and discuss any relationship between the CMR Replacement Project and the future Advanced Hydrotest Facility (AHF). That relationship (if any) should be discussed in general, and particularly in the event that the CMR Replacement Project's is to "handle" any Dynamic Experiments containment vessels from the AHF. The 9/26/01 LANL Ten-Year Comprehensive Site Plan states that for the AHF "Critical Decision Zero (CD-0) documentation is currently being developed and is planned for submittal to DOE in mid-FY 2002" (p. II-13).

This future link between the CMR Replacement Project and the AHF is not just mere speculation on the part of this commentator. The 9/26/01 LANL Ten-Year Comprehensive Site Plan, at Table II-2: "Summary Missions, Alternatives and Requirements Table," under "Surveillance" identifies TA-55's plutonium facility as the functional site for plutonium pit disassembly and recovery of special nuclear materials. Under "Alternatives/Options" the table goes on to say "[i]ncreased numbers of retired weapons and increased component age will necessitate the additional diagnostic capabilities in the 'hot' laboratory space." Presumably, the CMR Replacement Project would provide much of that 'hot' laboratory space.

Under "Facility Strategies" to be addressed the table goes on to say "[i]dentify capability and space needs to conduct surveillance program that integrate [sic] the Stockpile Stewardship needs with

Stockpile Maintenance (e.g. connect to the Advanced Hydrotest Facility (AHF) program)." Thus this commentator believes that the future link between the CMR Replacement Project and the future AHF is demonstrated. The draft EIS should disclose and discuss it.

Decontamination and Demolition of the Old CMR Building

The NOI states that the NNSA will evaluate "the potential decontamination and demolition of the entire existing CMR Building…" This needs to be reflected in the draft EIS and any subsequent Record of Decision. The draft EIS should consider and disclose the following, at a minimum:

- The waste streams that would emanate from D&D. What volumes are to be expected? What portions are to be disposed as conventional solid waste, hazardous, low-level radioactive, transuranic and mixed?
- With respect to conventional solid wastes, given that the Los Alamos County landfill is due to be soon closed, where would they go? With respect to mixed wastes, where will they go? What is to be the expected impact, including volumes, upon the lab's "low-level" waste dump at TA-54 Area G? How might Area G's operating life be foreshortened by CMR wastes?
- The CMR Building surely contains significant amounts of special nuclear materials. Where do those inventories go? What are related transportation and security risks?

Miscellaneous Comments/Questions

- Wing 9 of the CMR Building had a number of hot cells for particularly dangerous work with radioactive materials. The LANL Ten-Year Comprehensive Site Plan notes that one of the mission needs that the old CMR Building supplied was "[s]hielded hot-cell facility for plutonium weapons evaluation." Will the Replacement Project also have hot cells? If so, the EIS should provide a description of possible hot cell activities and a generalized schematic of hot cell floor space.

- The NOI states that this EIS will analyze and consider environmental justice issues. The February 2002 environmental assessment for LANL's proposed Biosafety Level-3 Facility used demographic data that declared that New Mexico was 86% white. Furthermore, demographic data in that Environmental Assessment for Rio Arriba County, which supplies the majority of the LANL's technical support and custodial work force, was completely absent. In contrast, the 1999 LANL Site-Wide EIS had more refined data and concluded that the population in a 50-mile radius around the lab was 51% "minority." This EIS should not simply lump the state's historic Hispanic population into the "white" category and thereby avoid a "hard look" at potential environmental justice issues.

- In response to citizen litigation, in 1996 a federal judge found that LANL had been in major violation of the Clean Air Act for over six years. Moreover, historic air emissions records for the CMR Building were often incomplete and often based on assumptions. This EIS needs to make clear how the Replacement Project would comply with the Clean Air Act. As part of that, the locale for the Most Exposed Individual (as defined by the Clean Air Act) should be determined and a potential dose calculated. Use of a dose model other than CAP-88 (which is realistic only for flat land topography) should also be considered, if needed with EPA approval.

- Under the threat of the Clean Air Act litigation mentioned above LANL personnel retrofitted the CMR Building with additional radioactive air emissions monitors. For the Wing 9 hot cells LANL personnel also installed air monitors for radioactive air emissions not necessarily governed by the Clean

Air Act (perhaps for xenon and argon (?)). Would similar air monitoring devices be installed at the CMR Replacement Project?

• What volumes of liquid wastes are to be expected from operations at the Replacement Project? What class of wastes are these to be (sanitary, nitrates, hazardous, mixed, low-level, transuranic)? What will the impact be on the Radioactive Liquid Waste Treatment Facility at TA-50? What pretreatment would take place at the Replacement Project before liquid wastes are piped to TA-50? Would the piping be double piped? What tritiated liquid wastes might there be? If so, what portion of tritium might be reactor-produced or accelerator-produced?

• The publicized cost of the CMR Replacement Project is in a range of between $420 - 955 million. This is a ridiculous range, compounded by the up to $240 million (?) put into the now abandoned CMR Building Upgrades. Clearly the EIS will have to more concretely express what true architectural, engineering and construction costs will be. Moreover, the EIS should make clear how taxpayers' money will be prudently spent in project construction and completion, something that the DOE has a woefully poor record in.

• Presumably substantial work with Pu-238 would occur at the CMR Replacement Project. Given Pu-238 special hazards as a heavy gamma emitter, the draft EIS needs to discuss special precautions taken with this material. This is underscored by past Pu-238 contamination and occupational doses at PF-4.

• For the draft EIS the NNSA should consult with the New Mexico Environment Department in order to ensure that no contaminated soils would be disturbed during construction.

- End of comments -

Respectfully submitted,

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Director