



Los Alamos Study Group

Nuclear Disarmament • Environmental Protection • Social Justice • Economic Sustainability

Defense Nuclear Facilities Safety Board hearing of March 22, 2016 Santa Fe, New Mexico

Testimony of Greg Mello

Honorable Chairman Connery, Members of the Safety Board, Principal Deputy Administrator Creedon and Assistant Secretary Regalbuto, NNSA and DOE field office Managers Lebak and Hintze, and staff:

Welcome to northern New Mexico, and thank you for the opportunity to speak to you. My oral comments will summarize longer written comments. I am speaking on behalf of myself, my wife and co-worker Trish Williams-Mello, and, more loosely, for the approximately 1,400 members of the Los Alamos Study Group.

I have been sporadically involved in LANL safety issues since 1984 when, as a representative of the State of New Mexico, I was the first external regulator to visit Los Alamos National Laboratory (LANL) and enforce environmental law – in my case, hazardous waste law. I subsequently drafted the first groundwater and vadose zone monitoring plan for LANL. Subsequent to that I worked on environmental cleanups in New Mexico and at Lawrence Livermore National Laboratory as a consultant. Since 1992 I have been the executive director of the Los Alamos Study Group, a non-governmental organization working on Department of Energy (DOE) weapons policy and environmental issues.

1. On transuranic (TRU) waste management at LANL

Over the years what we think has been an unwarranted element of hysteria has crept in, regarding the dangers of above-ground TRU storage at LANL, which then acquired political cachet. This resulted in the so-called Framework Agreement¹ of early 2012.

This agreement set a June 30, 2014, deadline to remove 3,706 cubic meters of non-cemented TRU waste, both legacy and newly-generated up through FY2010, from above-ground storage at Area G as well as removal of all newly-generated TRU from FY2012 and FY2013 stored at Area G by the end of calendar year 2014.

This agreement is obviously toast at this point. We hope there is not another one.

We believe the dangers of forest fire at Area G were and are still being generally overrated, as we have said since the Cerro Grande fire, which burned most of the potentially dangerous forest fuel in the area. Has the fuel density increased to a dangerous level, which will support a hot and aggressive fire? We think not, and we see simple solutions if it has.

Prudent tree and brush control, combined with competent fire control (water, foam) during forest fires, should suffice. At a minimum this needs to be reviewed objectively, from outside the waste management echo chamber.

In this we presume, perhaps wrongly, that LANL has installed adequate, safety-class local fire water supply and sprinklers. If we are wrong this should be promptly corrected. That situation would be a classic LANL state of affairs: failure to implement a \$1 M solution leads to a new \$10M or 100 M funding stream.

Experience since 2001 suggests we were right about the unseemly rush to remove this waste – which, combined with especially incompetent LANL management, and enabled by failures on the part of *all* contracting, regulatory, and advisory agencies – produced the contamination incident at the Waste Isolation Pilot Plant (WIPP).

¹ https://www.env.nm.gov/HWB/documents/LANL_Framework_Agreement.pdf

DOE should turn a deaf ear to the local political clamor for more cleanup money at LANL. There is enough. It is however badly spent.

Decades of experience convincingly show that it would be a grave mistake to focus solely on the details of TRU waste management at LANL (or on any other narrow programmatic management details, for that matter) in the hope that waste management at LANL can be converted into some sort of high-reliability, high-safety operation. That will just never happen.

Well-intentioned efforts to mildly reform LANL always founder for a number of basic reasons:

- a. The culture of LANL defeats all those who would improve it. The reforms offered are invariably minor and ineffectual.
- b. Fundamental aspects of the contracted nature of LANL, and its contract structure *create* and *uphold* these cultural problems, together with its scale, core mission, diversity of missions, physical scale and dissected topography, isolated geographic location, and perhaps above all its overweening political power and the literally dozens of ways the lab works to increase its power and avoid accountability.
- c. LANL's cultural problems and the accidents and management fiascos produced from them will always reappear, because they are just the flip side of qualities that various controlling parties (LANS, DOE, key political actors) claim to *want* at LANL, such as freedom from "micromanagement," broad missions, and high salaries. The last mentioned leads to high costs, arrogant attitudes despite what is far often little actual knowledge, and in the region as a whole, an "aura of apartheid" (Philippe Bourgois). LANL senior managers never seem to fully understand the magnitude and full dimensionality of what they don't know, and what they are up against, until they have finally seen at least part of "the elephant."
- d. The failures of state regulators and the DOE are perennial and can be expected to remain despite the best efforts of individuals, given the nature and circumstances of both agencies. NNSA is not big enough to manage LANL and the federal/contractor salary disparity works against NNSA and DOE. Both agencies lack independence from the LANS contractors and the only slightly broader corporate cartel that does most of DOE's work.
- e. LANS has neither given, nor does it truly seek to give, adequate attention to its high-hazard nuclear operations. If it did, the known problems would have been fixed long before now. Detailed prescriptions based on the notion that LANS will follow best practices are based on false assumptions, and naïve.
- f. We find that LANL, and LANS, dissemble and lie almost continuously, often without knowing it because of pre-programmed assumptions and stock propaganda phrases that arrest rational thought. It is a truly perverse place with a deeply anti-democratic – at bottom, anti-civilizational – identity and qualities. Time and time again representations are made which turn out to be materially false or deceptive, sometimes years later. This quality of deception and dissimulation is an inherent aspect of LANL's secrecy and is also a product of the unethical nature of some of its missions. From its beginning, cover stories have been part of LANL. It has no true public meaning -- no true story -- as Pueblo leader Herman Agoyo told us so many years ago. In my professional experience, there is no facility or industry in New Mexico that is more secretive, arrogant, and deceptive than the two NNSA laboratories here. From cover stories to cover-ups is very small. These qualities have increased over time, and under LANS.
- g. The nature of LANS is a problem. It is *corporate* instead of federal and thus able to pay politicians and undertake large public relations/propaganda efforts. It is a corporate *partnership* with merged and hidden accountabilities. It has one key partner (Bechtel) that is *privately held*. Bechtel has a *long history of clandestine entwinement with government on the largest scale*. LANS is *for-profit* rather than a public service. It is *site-specific*, without reach-back. It is, ephemeral. It is *fully-indemnified* and *cost-plus* so there is no financial cost to its mistakes. It has a management *contract that lacks elementary accountability provisions*, including for Anti-Deficiency Act violations. It has *corporate employees working in DOE and DoD* on change-of-station assignments and in Congress, as Fellows. It lobbies Congress. All this adds to

LANS management problems, because the easiest fix is often political rather than managerial. Solving the safety and management problem – they are not two different things but rather part of the same thing – with LANS in place will be impossible. Privatizing LANL was a mistake.

The management and cultural failures of LANL were a major reason NNSA was created 17 years ago. LANL's abundant management and cultural failures remain. It is time to shift gears, radically, at LANL. We have discussed what we think are appropriate LANL reforms in comments to the Commission to Review the Effectiveness of the National Energy Laboratories (CRENEL).

The era of LANS is closing.² Prolonging the LANS' "lame duck" period is a bad idea. We believe LANS needs to be "out the door" by October 1, 2017. NNSA's new, simpler, and more objective contracting criteria should allow a fairly prompt release of a bid package, and NNSA should staff up as necessary to accomplish that. The streamlined request should simplify the bidding process as well.

As you know we think LANL should be managed under a different model than post-Manhattan Project practice. This is discussed in our CRENEL comments. A bridge contract might be necessary to bring this about.

The upshot is that we think the subject of this hearing is too narrow. Board member Sean Sullivan thought so as well. We agree with his recorded comment, though unlike him we think this hearing is a good idea, provided we broaden the conversation. The best safety engineering will not make LANL safe unless root causes are addressed first. This never seems to happen, so the same problems recur.

It is not DNFSB's mandate to look at broad policy issues, but it is ours. We trust DNFSB to get the details right, if you remain free from political interference, are sufficiently bold, and are adequately funded.

The proper place for LANL TRU is WIPP, which we believe can and should be safely re-opened and ultimately expanded for disposal of all TRU waste, old and new, as well as all surplus plutonium – but not thermally hot waste categories such as defense high-level waste (HLW) or spent reactor fuel (SNF), regardless of waste form.

The TRU Waste Facility is due to be completed in FY2017. Overall, we do not see any rush in closing down operations at TA-54 but look forward optimistically to competent management in the new facility.

We expect DNFSB and DOE to aggressively monitor, and to publicly and formally communicate problems in TRU management at LANL.

We note that with WIPP closed, there is currently no disposition pathway for LANL TRU. We have suggested a pause in LANL TRU-generating operations, during which time the resources involved could be re-directed toward addressing some of the abundant unresolved safety issues at LANL. In fact it is hard to see why anything would change if this is not done.

We have written extensively on most of the issues we raise in this testimony. Please see our web site for more details on selected questions, or feel free to call or write at any time.

2. On the *production* of additional TRU waste at LANL and some of the deeper questions involved.

There is no ceiling or cap on TRU waste production at LANL. In fact present NNSA mission plans will increase TRU waste production. The lack of any ceiling on TRU waste implies new disposal capacity, which we believe should occur at WIPP.

At LANL, more TRU will come from:

- Pit production

² Please see <http://www.lasg.org/ActionAlerts/Bulletin213.html>.

- Plutonium (Pu) disposition
- Pu-238 processing and manufacturing
- Decommissioning and disposal (D&D) of contaminated buildings
- And, potentially if not certainly, legacy waste cleanup

Also, we may ask, are there any plans to bring other TRU waste to LANL before shipping to WIPP?

The future of all these programs has to be discussed in order to get any kind of handle on TRU waste management. Otherwise the problem will grow uncontrollably. Other factors being equal, the best-managed TRU waste is that which is not generated.

There needs to be a comprehensive TRU inventory, plan, schedule, and budget, by LANL location and by year, including new generation, D&D, and buried TRU and the disposition of same. It is impossible to talk about managing an unbounded waste universe.

a. Pit production

The purposes of stockpile pit production are, roughly:

- “Capability-based deterrence,”
- Retention and transmission of skills
- Emergency production (technical and geopolitical surprise)
- Interoperable Warhead (IW) #1
- Subsequent new warheads in 2030s

These purposes are either bunk (all but the second one) or else could be satisfied with a relatively small pilot program using existing facilities (the second one). In collaboration with the Congressional Research Service (CRS) we have examined the purpose and need of the so-called “Plutonium Modular Approach” (PMA) and find it completely lacking, to be charitable.

Less charitably, PMA is another LANS-led run on the Treasury, like its predecessor the Chemistry and Metallurgy Research Replacement (CMRR) project.

If NNSA and its STRATCOM client truly seek large builds of new warheads in the 2020s and afterwards as they claim, PMA, TA-55, and LANL will not work for that purpose. It’s a pipe dream.

At LANL there is a perception that LANS does not care if its grand construction plans fail, because LANS supports itself meanwhile on the massive overhead such projects – in fact all its projects – bring. Most of LANL is overhead.

The main issues NNSA will face in their attempt to expand pit production are:

- Lack of solid mission need
- Bad design (especially the “modules”)
- High and uncertain cost
- Recurrent poor facility management
- Long project duration (construction ends FY27)
- Recurrent poor project management
- Numerous fiscal “time bombs” in NNSA and DOE
- Competition for funds in government (within DoD and more broadly)
- Compatibility of the work with other LANL work
- Hiring and retention issues, in part stemming from LANL’s isolated location

Attempting to expand LANL pit production and its industrial infrastructure – both – will waste not just NNSA’s but also DNFSB’s time, money, and attention. It will alienate LANL staff, undermine community support, and increase not just costs and environmental impacts on a daily basis but also operational risks and legacy environmental risks, costs, and legacy contamination.

NNSA’s legislated program goals (from the FY15 National Defense Authorization Act, NDAA), namely to:

- Make 10 war reserve (WR) pits in FY24
- 20 WR pits in FY25
- 30 WR pits in FY26
- 50-80 pits/yr demonstration production rate for 90 days in FY27, can delay 2 yrs maybe
- Recover Pu-238 for warheads and “invest in Pu-238 capabilities for the stockpile.”

These can be – and are being – taken with a grain of salt, because there is no coherent basis for them, and no solid funding stream to go with them. As for PMA, NNSA has never examined the alternatives.

Extensive capital investment is required for this expanded mission, some of which will take away from – will *prevent* – needed maintenance, D&D, and safety at LANL. The total project cost of the current version of the CMRR project, plus “modules,” is now estimated by NNSA at \$5.9 billion. Only a fraction of this appears justified at this point.

The “modules” were proposed as a line item for FY17 but were rejected by OMB last year together with their rationale, which was said to require considerably more justification. The plan still is to complete them in FY2027. They are expected to cost up to “\$3B” for at least 2 modules of circa 5,000 sq. ft. usable space each. Per square foot costs for usable space for two modules at this price will be roughly \$300,000, or twice that of the cancelled CMRR-NF. They are to be connected to PF-4 and the Radiological Laboratory, Utility, and Office Building (RLUOB) by seismically-fragile tunnels. They are to have some kind of minimal mechanical, HVAC, and fire equipment and be dependent on these neighboring facilities to a greater or lesser extent, raising the risks of common mode failures and overloads.

We do not believe this design concept is safe for workers, or viable overall in the context of an aging PF-4 and an RLUOB that was built for other purposes – and to lesser standards than is being planned today. RLUOB, which is not a large building, is now supposed to become, under NNSA’s latest plan, by far the most expensive single construction project in the history of this state, at \$1.44 B, with most of the cost to come in new equipment and installation.

According to CRS, neither LANS nor NNSA has ever conducted a modern, complete analysis of the space needed for pit production and the supporting analytical chemistry mission that examines the relationship of space and production rate, modern analytical techniques, and other real-world variables. In fact NNSA has not answered dozens of questions of this type, many of which were posed by CRS. We believe NNSA is entirely dependent on LANS for scoping and understanding its needs in this program – which needs LANS profits by exaggerating, as they have done in the past and as the previous contractor did as well.

The proposed modules seem to be planned essentially as “sacrifice zones,” much like “gravel gerties” at Pantex. We see issues of worker entrapment, emergency access, utility breakdown and overload as mentioned, and an inherent difficulty of ensuring safety-class functions on the other end of fragile tunnels.

On May 16, 2008, Defense Nuclear Facilities Safety Board (DNFSB) Chairman Dr. A. J. Eggenberger wrote NNSA regarding, among other things, DNFSB’s concerns regarding the lack of, and schedule for, an “objective assessment of programmatic alternatives” for LANL’s CMR missions (usually given by LANL as the *raison d’être* for the CMRR project) as well as the lack of any “[identified] programmatic need to manufacture war reserve pits beyond the current campaign scheduled for completion in about 2010.” This letter is discussed in a June 11 Study Group letter to government officials. How prophetic Dr. Eggenberger was. And that “objective assessment of programmatic alternatives” has never been written.

b. Pu disposition

PF-4 is no place to conduct a large-scale Pu processing campaign for Pu disposition. Even if the building systems were made safe – and we are not there yet – and even if it was well-managed – we are not there yet – PF-4 was not built for that purpose and such a mission is very likely to bring the building and its supporting infrastructure to its knees one way or another. The Pu processing mission undertaken at PF-4 in the 1980s very nearly did that, as Sig Hecker, I think it was, and others subsequently said.

As noted above, NNSA has not conducted or provided a competent and coherent analysis of how the many proposed missions for PF-4 can be safely accommodated in that building. This concern was raised by the Board in, I believe, August 2008. There is no way PF-4 can become a safer building while its missions continually increase. The same is true for supporting LANL nuclear facilities.

We believe the ARIES program at LANL is not ready or able to scale up to this larger mission, let alone the supporting infrastructure within and beyond PF-4.

We believe the mixed-oxide (MOX) program has failed, regardless of the outcome of current congressional debates and the specious claims being advanced regarding the unsuitability of WIPP for this waste.

We believe the “dilute and dispose” alternative will also fail, for reasons too complicated to explain here but which have to do with its expense, lag time until start, and duration.

We will therefore need pit sterilization and direct disposal per the sketch in the Red Team report, even if it is politically premature for NNSA to propose that method today.

Realism about Pu disposition and, immediately, PF-4’s proper role in it (i.e. none) should make the absence of need for PMA vividly clear.

WIPP will need to be expanded for additional TRU waste from NNSA programs, D&D, and cleanup as well as for surplus Pu disposition. At present the universe of TRU waste has no bound.

Someday there is likely to be additional Pu to dispose as well, after the present 40 or so tonnes.

c. Pu-238 processing and manufacturing

Pu-238 is a major consumer of space and allowable Material-At-Risk (MAR) in PF-4. The specific activity of Pu-238 is about 275 times that of Pu-239. Transferring Pu-238 work from PF-4 to a hypothetical underground module is frequently mentioned, although this would not make the work less dangerous for workers, the primary consideration NNSA and DNFSB should be focused upon.

The future of Pu-238 programs is perennially in flux and uncertain. Some of the program drivers are secret; some come from other agencies, with or without funding associated. We have not recently reviewed these programs. The Government Accountability Office (GAO) is currently reviewing these programs and any conclusions we could offer would be premature, except to note that various Pu-238 programs, with various supporting infrastructures, exist in multiple states at the present time.

d. D&D

NNSA’s (and to much lesser extent DOE’s) backlogged D&D program will generate TRU waste, unless, as may well be the case, potential TRU waste is diluted into Low Level Waste (LLW) at the point of generation.

I have nothing to say about TRU waste from this source but would like to emphasize the risks and real costs of neglecting to program or fund NNSA D&D. The NNSA backlog of empty, contaminated buildings is a disgrace as well as a danger. This problem exists alongside deplorable tendencies to:

- Underfund necessary maintenance, leading to growth in deferred maintenance.
- Maintain excess facilities, which house excess and low-value programs, especially at LANL.
- Propose investments in unneeded new facilities, from PMA to, potentially, MaRIE at LANL.
- Continue operations in unsafe nuclear and non-nuclear facilities, such as the Chemistry and Metallurgy Research (CMR) building at LANL, the Main Shops, the Sigma Building, and others, while failing to complete safety upgrades at key facilities like PF-4. For non-nuclear facilities, no outside party has even advisory jurisdiction.

In short, NNSA's infrastructure priorities are wrong, and safety is unnecessarily being compromised, both directly and indirectly.

e. Cleanup

I have lost track of how much more TRU waste we can expect from further LANL cleanup, as well as how much more containerized TRU waste lies in the ground that potentially could be exhumed and re-disposed at WIPP.

LANL has squandered too many decades and billions in inefficient and unnecessary work, and now we need a true risk-based triage. We don't have much time. I was part of the beginning of this program, in 1984. My views have changed as LANL has mostly taken us all for a ride, excepting the good work of many staff members, which does not avail against poor management of the whole.

3. On broader questions of safety at LANL and other issues of ongoing concern

As regards airborne contamination, we believe worker safety (including collocated workers) is more important than public safety as a safety performance metric for a large site such as LANL, where a hypothetical contamination source may be far, even miles, to the maximum exposed individual (MEI).

This concept applies to routine chemical emissions as well as radiological accidents. At Area L, there is an inappropriate lack of filtration for carcinogenic vapors from a soil vapor extraction system, which was approved by the local Citizens Advisory Board *with*, not *without*, active carbon filtration. These emissions appear to fall within the permitted envelope for LANL as a whole, but that is not relevant to nearby, downwind workers who may receive dangerous doses under certain weather conditions. This speaks to a cultural as well as an engineering failure.

Proposals for shallow underground nuclear facilities, which appear to be motivated by public safety (as well as resistance to terrorist attack) need to be evaluated first and foremost with worker safety, as well as emergency response, in mind. In history as well as rational (i.e. non-hysterical) prospect, worker safety issues are more important than fears of terrorism or radiation doses to a distant public from a hypothetically empty building. NNSA owes its workers every reasonable precaution against risk.

Regarding PF-4, we have consistently questioned the lack of closure on outstanding issues. New issues seem to arise before the old ones are taken care of. As the building and its equipment age further, we can expect more of this. If NNSA has a coherent plan and budget for bringing PF-4 into compliance with DOE safety regulations, and for maintaining PF-4 through the 2020s and 2030s, we have never seen it. Yet PF-4 is the foundation of all LANL's Pu programs.

Regarding the post-construction conversion of RLUOB to a Nuclear Laboratory and Office Building (NLOB), what precisely is the plan? This is a very expensive project, costing hundreds of millions. It is also apparently in violation of 10 CFR 830. Congress and the President can waive DOE safety regulations with new legislation and law. Is that the plan? What is the plan? Does DNFSB approve, then?

We saw, at the Waste Characterization, Reduction, and Repackaging Facility (WCRRF), how DNFSB tacitly approved of safety violations related to the building's adequacy, which was just one contribution to LANS' scofflaw attitude and the resulting accident. Why didn't DNFSB safety inspectors visit that building and see the obviously-inappropriate organic kitty litter, stacked in pallets and in use? Why didn't DOE? Why didn't the New Mexico Environment Department (NMED)?

It is dangerous to allow, without protest, continued operation of facilities, in clear and knowing violation of safety standards. Yet it happens every day at LANL. We blame DNSFB, NNSA, DOE, and NMED for this state of affairs, as well as LANS.

There is clearly no *urgent* mission need for most of what LANL does, as the long-term shutdowns of PF-4 and the Weapons Engineering Tritium Facility (WETF) demonstrate, leaving aside the question of whether there is *any* defensible mission need for much of the work in question. The U.S. nuclear deterrent, so-called, has not collapsed because PF-4 has been partially shut down. That action should be the model for others. Fix it up, or shut it down.

We need an inventory of unused LANL facilities, preliminary to an accelerated D&D campaign.

Regarding CMR, we are very disturbed that this is no available plan to vacate this facility, or budget for its destruction. The promised 2019 date, postponed from 2010, is the latest possible date.

We believe the "Bolas Grande" project and the NLOB project are being used as excuses to keep CMR open, as a political bargaining chip. The last time DNFSB held a hearing in Santa Fe, in 2011, the Board emphasized the need to vacate CMR ASAP. As far as I can tell, zero progress has been made. NNSA should immediately prepare such a plan and a budget, which belongs in the current Future Years National Security Plan (FYNSP).

There is no known plan that provides for seismic safety of LANL's facilities, including emergency response.

The assumptions and results of emergency response exercises should be made public. We assume the Board is seeing the kinds of dual-hazard exercises (e.g. earthquake plus forest fire) it requested in 2011.

I believe that, given that most rare gift in the professional life of senior appointees, namely time to reflect, you will recognize that "nuclear weapons safety," including safety of nuclear warhead facilities, is a rather narrow concept that may lose much of its meaning when viewed from a wider perspective. In that wider perspective, which you are not charged to take in but we must, nuclear facility safety can be seen as illusory, even oxymoronic.

In practical terms NNSA's warhead complex will never be safe. Nor will it ever be a "normal" industry. It is inherently unstable. That is why DNFSB exists. The larger and more complicated and ambitious this industry is, the less stable it will be. To the extent that it is not shut down as a matter of policy, accidents or external events of various calamitous kinds will, sooner or later, shut it down, unless de facto safety standards erode to the point where human life and health are no longer of high value.

f. **Transparency**, and its lack.

g. **Finally, we want certain reasonable, short-term commitments from NNSA, DNFSB, and DOE EM.**

We appreciate your holding this public hearing, but we also want results. We don't want to waste your time and we don't want our time wasted either.

- Ms. Creedon, please promise that LANS will be gone by October 1, 2017.
- Ms. Creedon, please promise that there will be no PMA line item in next year's budget request. If the next president wants it, she can ask for it.
- Ms. Creedon, please promise that NNSA will prepare an Environmental Impact Statement (EIS) for the PMA project prior to any possible future CD-1 and construction line item.

- Ms. Creedon, please promise that CMR will be closed by the end of FY2019, and a D&D plan and budget will appear in the FY 2018 budget request.
- Ms. Creedon and Ms. Regalbuto, please promise that NNSA and EM will D&D all of LANL's empty, contaminated buildings by the end of FY2019, at which time D&D of CMR will commence.
- Ms. Creedon, please promise that the redundant, troubled, and mis-sited Weapons Engineering Tritium Facility (WETF) will close by FY2019. It can be D&D'd with CMR.

We have other requests but these, together with those mentioned in the text above, top the list. My time on this project is up. We appreciate your patience.

Sincerely,

Greg Mello