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February 13, 2012

Chairman Michael Turner  
House Armed Services Subcommittee on Strategic Forces  
2216 Rayburn House Office Building  
U.S. House of Representatives  
Washington, DC 20515

Ranking Member Loretta Sanchez  
House Armed Services Subcommittee on Strategic Forces  
2216 Rayburn House Office Building  
U.S. House of Representatives  
Washington, DC 20515

Dear Chairman Turner and Ranking Member Sanchez:

As your Subcommittee prepares to hold a hearing on the governance, oversight and management of the nuclear security enterprise and to hear from the National Academy of Sciences (NAS) in regards to their report on the issue, we felt it necessary to share with you some of our views and concerns. As individuals with a long history working in this environment and leaders of the organization representing employees at the DOE/NNSA laboratories, the Los Alamos National Laboratory and the Lawrence Livermore National Laboratory we believe that we can provide critical insight on this vital subject matter. We applaud you for holding the hearing and hope that a number of important issues will be addressed at the hearing.

### **Background**

The National Academy of Sciences (NAS) recently completed their year-long study of the effects on their scientific and national security missions of the transition to private, for-profit monopoly management of the DOE/NNSA laboratories, the Los Alamos National Laboratory and the Lawrence Livermore National Laboratory. The final NAS report was just released. In our testimony today we would like to summarize and amplify what we told the NAS about the many ways the work environment has changed at the Labs since the management transition, and how these changes have had a detrimental effect on accomplishment of the Labs' missions. The changed environment has affected careers through program misdirection and loss of trained personnel, and has escalated a decline in science and engineering productivity. Both Labs have suffered from a decline in recruitment and a continued loss of senior people.

We believe that the root cause of all these problems is the for-profit monopoly management structure itself. We would like to summarize here the two main reasons why we believe this, and suggest to you what can and should be done to correct these problems.

## **Corruption of the Scientific Method by For-Profit Monopoly Management**

In order to understand better what is fundamentally wrong with the way the science enterprise is now conducted at the Labs, we first would like to describe for you the right way to do science. The right way to do science is to follow strictly the scientific method. The scientific method was first developed over 400 years ago, and its implementation has led to fundamental advances in our understanding of natural phenomena, a seemingly endless sequence of technological developments based on new understandings of nature, and a consequent vast increase in human prosperity that has become the foundation of modern civilization. In other words, hypothesis-driven science, based on the scientific method, has a long history of success.

In hypothesis-driven science, we first inductively construct a mathematical model of the observed properties and behavior of the physical system of interest, then we use the model to develop a hypothesis of how the physical system will behave or respond to new or different conditions, then we test the hypothesis by carefully designed experiment, then we use the experiment results to refine the model. Iterating these steps advances our knowledge and understanding. In hypothesis-driven science, modeling and experiment work synergistically. No incentive is necessary, since the advancement of knowledge is simultaneously its own incentive and its own reward.

At the Labs now, there is not much hypothesis-driven science being done. Instead, it is mostly milestone-driven science, and much more so since the transition to private for-profit management. In milestone-driven science, we develop a milestone, or a set of milestones, for model prediction, and a separate set of milestones for experiment. Modeling and experiment results are ends in themselves, detached from any need to advance understanding. Unlike hypothesis-driven science, milestone-driven science does not have an already built-in incentive. At the Labs, milestone-driven science is incentivized by monetary reward, particularly the performance-based incentive management bonuses built into the management contract.

Thus, with the for-profit management structure, the focus has shifted dramatically to meeting contract performance goals and earning the maximum performance fee. This single-minded focus on milestone-driven science has resulted in less tolerance for the open debate and discussion that is necessary both for good science and engineering and for regulatory compliance. In other words, any critiques --- vitally necessary to the success of hypothesis-driven science --- that are viewed by management as potentially putting the management fee at risk are strongly discouraged, even suppressed. Scientists and engineers cannot function properly in such an environment.

At the start of the NAS Study, we presented to the Study panel one example of how, at Lawrence Livermore, milestone-driven science has impeded the progress of scientific understanding vital to the nation's goal of achieving fusion ignition. The example we gave at that time concerned the determination of the high-pressure compressibility of deuterium. Measurements made at different Labs using different experiment facilities and

different measurement techniques came up with widely different values for deuterium compressibility at a pressure of about a million atmospheres. Despite several proposals that were advanced by Livermore scientists and others on how we might resolve the issue of which measurement is correct, management's attitude was that the matter was closed --- after all, the Lab did meet the milestone to get the measurement --- and resources would instead be directed at moving on to the next milestone. Management's focus on meeting milestones rather than advancing understanding is a principal factor in why the issue of the correct compressibility of deuterium remains unresolved to this day.

Now, a more recent happening, also in the National Ignition Campaign, provides an even more dramatic example of the failures of milestone-driven science and how it has put the Lab's future in jeopardy.

The first strategic error was to promise fusion ignition by a date certain, and then devise arbitrary experiment milestones to get to the goal by the promised date. Unexpected results were obtained last September in National Ignition Campaign experiments on the National Ignition Facility (NIF) laser at Livermore. These experiment results were a serious setback to meeting the performance milestones in the National Ignition Campaign. Management's response to this setback was to postpone all other experiments on the NIF laser --- experiments by the weapons program, DOD experiments, and other science experiments --- and to re-allocate resources from other programs so as to conduct an accelerated National Ignition Campaign. In other words, they doubled-down on the original bet, still banking on meeting the milestones and getting to the promised land by the promised date. If the original bet was risky, the doubled-down bet is riskier still.

Meanwhile, there has been a major disruption for almost all employees at the Lab. Some have seen a complete cessation of the work they were doing. Others have been re-assigned to other tasks in direct support to the National Ignition Campaign, sometimes without a good fit to their expertise. How this is all going to play out over the coming months is yet to be seen.

The recognition that milestone-driven science is a problem is not original with us, or with the NAS Study panel. More than two years ago, on January 28, 2010, Dr. Richard Garwin of IBM prepared information for Congress. At that time this is what he said:

“Scientists and weapons experts were seriously demoralized --- however unintentionally -- - by the transfer of Los Alamos and Livermore to corporate management, with no prior recognition that for each Laboratory there would be a \$100 million management fee and a similar further program budget reduction because Laboratory activities would no longer be exempt from tax. This lack of foresight and the apparent valuation of bureaucratic milestones over technical performance has been a substantial problem in recent years.”

If Congress allows the current arrangement of for-profit milestone-driven science to stay in place at the Labs, there will just be an endless series of such disruptions and failures, and the damage to the Labs and their scientific missions will be irreparable. The time is

now to make the fix. The fix to us is obvious: re-compete the management contracts, and de-privatize.

Before we get to that, however, we discuss briefly another serious flaw in the current for-profit monopoly management structure of the Labs.

### **Wasting Public Money by For-Profit Monopoly Management**

The original objective of Congress in putting the Labs up for bid was to improve efficiency, accountability, and transparency<sup>i</sup>. NNSA's awkward bid process, however, all but precluded the transparency of a public C-Corporation and instead compelled the opaque private LLC structure we have now.

Furthermore, a private *monopoly* is anything but efficient; hence the existence of anti-trust laws. A for-profit monopoly funded by the government is worse still, and when we add a lack of tangible, customer-testable products (nuclear warheads), this is the worst situation of all.

“Free Market” capitalism involves a willing buyer, with a choice of which supplier to choose (e.g., Coke or Pepsi) and which price to pay (e.g. \$1.89 as an emergency walk-in or \$0.99 on sale). The availability of competing choices is what makes the system work – and lacking these ingredients, for-profit privatization becomes a very Un-American idea indeed.

“Free Market” capitalism for the employees (or as LLNS and LANS calls them, “the most valuable resource”) means not just an option to leave a defective or corrupt firm, but an option to leave, join the *competition* instead, and help to sink the defective or corrupt firm. This helps keep greed, incompetence, and corruption in balance. This model has of course failed in the case of LLNS & LANS since, as a taxpayer subsidized private monopoly, they have no competition.

The result has been apparent from day 1: LLNS and LANS cost the taxpayers an extra \$400 million per year. But in another way, the \$400M/yr (now approximately \$2B after 5 years) is a small amount of money.

Guided by the nuclear weapon design desires of LLNS and LANS, the NNSA has spent well over \$30B since their takeover of the Labs and associated production complex. Since that time we have seen an endless (and failed) stream of LLNS and LANS proposals for new, untested combinations of plug-n-play nuclear weapons, designed to provide for easily met performance bonuses and easy management at LLNS and LANS. All of this has had the effect of diverting valuable resources, at great cost, from other missions – whether in science, energy, environment, or even in the curatorship and certification of the existing nuclear weapons stockpile to modern, professional standards. It is easier for LLNS and LANS to take the easy route, and NNSA rewards this bad behavior. The transparency of a public, non-profit structure would have a huge effect on discouraging such bad behavior.

Nuclear weapons certification is another expensive failure of the LLNS and LANS monopoly. In this core mission, the National Academies reviewed the LLNS and LANS stillborn certification methodology<sup>ii</sup> after 7 years of promises, and the NAS recommended that a different process be used<sup>iii</sup>. An unaccountable monopoly resulted in a stagnant and inferior weapons certification process. The real world, both open public and corporate, has developed and implemented product certification based on national standards while the LLNS and LANS monopoly has only languished and spent massive tax dollars on “Key Personnel” salaries that are 10 to 20 times the American national average salary.

NNSA was advised by several competent sources<sup>iv</sup> not to award both Labs to the same “Firm”. Yet, they did so anyway. The resulting monopoly led to a string of inevitable failures. In the real world, whether the open, non-profit, public world or an open, for-profit corporate world with competition, these failures would lead to the liquidation of LLNS and LANS, with the mission going to its competitors instead.

### **Action Requested**

We believe that nuclear weapons science and certification, the major role of these NNSA labs, is inherently a public, non-profit mission. For this reason, and for the reasons outlined above, we strongly urge the Committee to include language in the National Defense Authorization Act for 2013 to re-compete the management contracts for the Los Alamos and Lawrence Livermore National Laboratories in such a way that these Labs are managed as public or private non-profit entities operating in the public interest, and to return their focus to their original science and national security missions. We also strongly believe that further Congressional delay in taking such action will be harmful to the national interest. We cannot continue to wait year after year since in the meantime, massive amounts of tax dollars are being wasted – not just the extra \$400 million per year cost of the LLNS and LANS monopoly structure, but the misdirection of the entire \$7 billion per year NNSA weapons budget. The future certification pedigree of the B61, W78, and W88 are now under direct threat.

We also recognize that, in the current political climate, only smaller incremental steps may be possible in the near term. One step that we could take immediately would be to introduce low-cost competitors to the LLNS and LANS monopoly on site at each of the taxpayer-owned facilities of Los Alamos and Livermore. Several management-level people have expressed interest in such “small business enterprises”. Will we continue to stifle their entrepreneurship and its potential benefits for the nation and its taxpayers? This small inexpensive step would introduce real free-market competition and help guide us toward the ultimate solution to the LLNS and LANS problem. The cost of these small independent non-profit enterprises could easily be covered by imposing a cap on the current LLNS and LANS management fees.

We would again like to thank you for your attention to this critical issue and are available to answer any questions that you may have for us. Again, we believe that the input of the employees that work in the labs are critical in reviewing the developments of this change. Thank you for your attention and time.

Respectfully,

A handwritten signature in black ink that reads "Dr. Colvin". The signature is written in a cursive style with a large, looped initial "C".

Dr. Jeff Colvin  
LLNL Physicist  
SPSE Legislative Director

A handwritten signature in blue ink that reads "Roger W Logan". The signature is written in a cursive style with a large, looped initial "R".

Dr. Roger Logan  
1<sup>st</sup> Directed Stockpile Work Leader at LLNL  
Retired from Los Alamos and Livermore

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<sup>i</sup> House Energy & Commerce, "Review of the University of California's Management Contract for Los Alamos National Laboratory" Subcommittee on Oversight and Investigations, 1 May 2003.

<sup>ii</sup> National Academies, "Evaluation of Quantification of Margins and Uncertainties Methodology for Assessing and Certifying the Reliability of the Nuclear Stockpile", Mar 2009, [http://www.nap.edu/catalog.php?record\\_id=12531](http://www.nap.edu/catalog.php?record_id=12531)

<sup>iii</sup> Logan, R.W., "U.S. Nuclear Weapons Design and Certification Infogram: Comments on the NAS Draft Report on QMU", Dec 2008.

<sup>iv</sup> Brian, Danielle, Project On Government Oversight, "POGO's comments to the Draft Request for Proposals for the contract to manage Los Alamos National Laboratory", Project On Government Oversight, 6 Jan 2005. <http://www.pogo.org/pogo-files/letters/nuclear-security-safety/nss-lanl-20050106.html>