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on
the New START Treaty
before the
Senate Committee on Foreign Relations

July 15, 2010

Chairman Kerry, Ranking Member Lugar and Members of the Committee, thank you for the opportunity to appear before you today to respond to the Committee's questions on the New START Treaty and the ability of the National Laboratories to maintain the safety, security, and effectiveness of the stockpile into the future. I am Dr. Michael R. Anastasio, the Director of the Los Alamos National Laboratory (LANL), and it is an honor to appear before you today to present my views.

In President Obama's April 2009 Prague speech and in the recently released Nuclear Posture Review (NPR), this Administration has articulated its goal to reduce the global nuclear danger. In both the speech and the policy document, the Administration has directly linked reductions in nuclear weapons to the maintenance of the nuclear arsenal. This then is a propitious time to discuss what is necessary to maintain the stockpile into the future as the Senate considers ratification of the New START Treaty.

From a Laboratory standpoint, it is important to understand that New START will reduce the number of delivery vehicles and warheads, but it will not alter the Nuclear Triad. Secretary of Energy Steven Chu testified before the Senate Armed Services Committee on June 17, 2010, that "As the stockpile decreases in size, the role of science, technology and engineering in deterrence will increase in importance." This means that the United States will have to devote appropriate attention and resources to protecting the physical and intellectual science, technology and engineering (ST&E) infrastructure that underpins the stockpile.

Los Alamos and the other National Security Laboratories also have historically played an important role in arms control, providing technical support to negotiators, to those who implement treaties, and to those who monitor the treaties and assess compliance. While I will not discuss this further, we continue to bring the innovative technical capabilities of the Laboratory to these challenges.

I do not see New START fundamentally changing the role of the Laboratory. What New START does do, however, is emphasize the importance of the Laboratories' mission and the need for a healthy and vibrant ST&E base to be able to continue to assure the stockpile into the future. These issues will be the focus of my remarks.

STOCKPILE STEWARDSHIP

Stockpile Stewardship Successes

The United States and its allies continue to depend on a nuclear deterrent as part of the overall security posture. The manner in which the nation executes this mission has changed dramatically over the last several decades. In 1989 the United States ended the production of new nuclear weapons; three years later the United States adopted a moratorium on nuclear weapons testing that remains in effect to this day. In response to these new circumstances, the FY 1994 National Defense Authorization Act charged the Secretary of Energy to establish a Stockpile Stewardship Program (SSP) "to ensure the preservation of the core intellectual and technical competencies of the United States in nuclear weapons." To meet this challenge the nation has invested significant resources in the advanced scientific, experimental, engineering and computational capabilities of the National Laboratories. These capabilities are the basis for the Laboratories to assess the overall safety, security, and effectiveness of the stockpile as well as to execute the Stockpile Life Extension (LEP) Program, which I will describe in more detail below.

It is primarily through the SSP that the Laboratory provides technical support for U.S. nuclear forces, posture and policy. Our approach involves the continual assessment of the stockpile through surveillance enabled by a more fundamental scientific understanding. This has required us to build upon past nuclear test experience with the development of more advanced experimental and simulation tools and the expertise of the scientists, engineers, and technicians at our laboratories and production plants.

Our surveillance results show ever-increasing effects from aging. These results are assessed with an extensive range of non-nuclear testing and vastly improved simulation capability. Ultimately, expert judgment and rigorous inter-laboratory peer review assure that critical conclusions are drawn from the best available data, appropriate high-resolution simulations and a suite of evolving experimental capabilities. Sound science is the core of our confidence.

The SSP at the Laboratories has had many successes to date; these successes were by no means assured when the Program began in 1995 as an ambitious effort to sustain the nuclear weapons stockpile while minimizing the need for nuclear testing. Examples of these successes include:

Annual Assessment: I am responsible for an assessment, based on a rigorous technical process, of all weapons in the stockpile for which the Laboratory is responsible. This "annual assessment" letter is provided to the Secretaries of Defense and Energy, as well as the Chair of the Nuclear Weapons Council, and then is forwarded to the President. I have personally signed eight assessment letters during my tenure at both Lawrence Livermore and now at Los Alamos and have had direct involvement in all 15 cycles since the inception of the program in 1996. In many regards, this letter and its detailed set of backup documents is the annual summation of all that we do in Stockpile Stewardship.

Pit manufacturing: In 1989, the United States halted plutonium pit manufacturing at the Rocky Flats plant in Colorado, leaving the U.S. as the only nuclear weapons state without the ability to manufacture the core component of nuclear weapons. Using our science and technology to qualify the new build processes, Los Alamos restored this essential capability in 2007 and has

nearly completed the build of pits required for the W-88, a central component of the sea-based deterrent.

DARHT: The Dual Axis Radiographic Hydrodynamic Test (DARHT) facility is now fully functional and allows our experimental teams to obtain three-dimensional, high-resolution, time-sequenced images taken within billionths of a second at specifically selected times within an implosion of a mock nuclear weapons assembly. Last December, the first dual-axis experiment was successfully carried out at DARHT. Data from the experiment will allow Los Alamos to close a Significant Finding Investigation (SFI) on a stockpile system. DARHT data is also critical to the W76 LEP effort.

Supercomputing: In partnership with IBM, Los Alamos built and deployed the world's first petascale (million-billion calculations per second) supercomputer – Road Runner. After an initial series of unclassified science runs to assure machine performance, Road Runner is now dedicated to classified weapons work. Later this summer, Los Alamos in partnership with Sandia, will take delivery of out next supercomputer – Cielo – another petascale machine. The breadth and quality of experimental data being obtained has allowed Los Alamos to validate the significant progress on integrated three dimensional software tools within the Advanced Simulation and Computing campaign.

LANSCE: The Los Alamos Neutron Science Center (LANSCE) facility, an 800 MeV proton accelerator, makes a number of important contributions to our understanding of weapons performance. Proton radiography (pRad) at LANSCE allows us to make time-resolved measurements of dynamic events of weapon components, such as high-explosive detonation and burn. Data from pRad informs the W-76 LEP and B61 work. The LANSCE protons are also used to create spallation neutrons that allow the imaging of weapons components and are used to understand the basic nuclear physics. The Weapons Neutron Research station at LANSCE provides invaluable new radiochemical data used to refine the nuclear yield determinations, thereby allowing LANL staff to glean additional information from archived nuclear test data. LANSCE is the only facility in the country where these types of classified experiments that involve special nuclear material can currently be conducted.

Plutonium Aging Physics: LANL conducted years of detailed experiments that examined the physics of how plutonium ages. This assessment, paired with work conducted at Lawrence Livermore, enabled the NNSA to better understand the lifetime of plutonium components and its impacts upon nuclear weapons performance. This work allowed for better estimates of the sizing of production capabilities and of needed resources.

Maintaining the Stockpile through Life Extension Programs

As we learn about our strategic systems through Stockpile Stewardship, we then work with DoD and DOE/NNSA to determine appropriate steps for extending the lives of these systems for an additional 20 to 30 years beyond their original lifetimes through LEPs. To date, the LEP focus has been to effectively refurbish them so they are "just like" they were originally designed, to meet the requirements of the Cold War (high yield to weight ratios). LEP activities include: research, development, and production work required to ensure that weapon systems continue to meet national security requirements.

The nation has successfully completed LEPs for the W87 ICBM warhead and the B61-7/11 gravity bomb. The W76 LEP is well underway and is contributing significantly to the long-term viability of the nation's sea-based deterrent force. Major components refurbished as part of the LEP include: the nuclear explosive package; the arming, firing and fuzing system; and the gas transfer system. This LEP is expected to extend the life of the W76 for an additional 30 years without reliance on underground nuclear testing. LANL played a major role in this effort, which required reconstitution of specialized material production after several decades. The First Production Unit (FPU) for the W76 LEP was completed in FY 2008.

With the bulk of the Laboratory's efforts on the W76 LEP complete, Los Alamos will shift its focus to the the B61 LEP, consistent with the NPR. Major components that will be refurbished as part of the LEP include: new detonator cable assembly, main charge, foams and polymers, and a new gas transfer system. This LEP also provides the opportunity to install enhanced, intrinsic safety and security features by modifying components in existing designs to meet today's dynamic security environment. Los Alamos expects to support an FPU in 2017 assuming timely Congressional approval of the funding needed to carry out the program.

LEP requirements derive from the joint DoD-DOE Nuclear Weapons Council (NWC). Each nuclear weapon system they identify and Congress funds is studied to develop options that meet the requirements established by the NWC. Per the guidance in the NPR and in the Administration's Stockpile Stewardship and Management Report, it is my obligation to ensure that the teams at Los Alamos examine all the relevant technical options for an LEP, including refurbishment, reuse and replacement, and bring them forward to the NWC for a decision.

These efforts will include modifying Cold War-era weapons for enhanced margin against failure, increased safety, and improved security and use control. For example, introducing insensitive high explosives into systems that currently use conventional high explosives can improve safety. Future LEP studies will consider the possibility of adapting the resulting warhead to multiple platforms in order to reduce the number of warhead types. In all LEP studies, the Laboratories will rely on fundamental and applied ST&E to improve its understanding of nuclear weapon behavior and to assure the safety, security, and effectiveness of our nuclear deterrent supported by a reduced and more sustainable, efficient and appropriately-sized nuclear security infrastructure.

Leveraging our Science for National Security

The issues that have arisen in the last 18 years of assuring the reliability of nuclear weapons without conducting a nuclear test are complex science and engineering problems. Some of these problems were anticipated – like the aging of certain components in a warhead – and others were totally unexpected. The success of the Stewardship program has been the ability to draw on a deep and rich science base at the Laboratories. This science base is enriched by engaging on a broad range of scientific problems, many of which have a direct relevance to broader national security interests. A vibrant science, technology and engineering enterprise is essential to supporting the stewardship program, and at the same time it provides a powerful resource for issues such as nonproliferation, counter-proliferation, counter-terrorism and intelligence assessment.

There is a tendency when people hear about the role the NNSA Laboratories play in solving other national problems that these are simply nice "spinoffs." These provide more than just positive benefits for the nation; rather, this work outside of the weapons program is essential to the conduct of the core nuclear weapons mission. We have a vibrant scientific workforce at Los Alamos, including around 2,500 PhDs that are the core of our science base. The weapons program benefits directly when these scientists have the opportunity to extend their skills by working on challenging technical problems, like climate modeling, which then can validate and improve the methods in our 3-D weapons codes and solve challenges in the stockpile.

The following are a handful of recent Laboratory scientific successes that leverage our weapons science capabilities for broader national security interests, and also feed directly back into the nuclear weapons program.

Intelligence: Our weapons program capabilities give us the ability to assess foreign weapons programs and to assist the intelligence community. There is much truth to the statement that "it takes a nuclear weapons lab to find a nuclear weapons lab."

Nuclear forensics and attribution: Los Alamos delivered a suite of models and databases for National Technical Nuclear Forensics applications, such as modeling debris signatures and other nuclear security applications. LANL's capabilities in this area are a direct outgrowth of the former nuclear weapons testing program where scientists had to study the detailed chemistry of soil samples to determine various characteristics of a detonation. Our experts in this area can not only help with current nuclear forensics, but they also support the weapons program by helping to re-interpret data from previous underground tests. This information is then used to validate our weapons codes.

Plutonium Center of Excellence: LANL's efforts in non-weapons plutonium work help ensure the country maintains a core human capital ability to work with this material. The same researchers and technicians who work on plutonium 238 for use in deep-space missions for NASA also support the manufacture of plutonium pits for the stockpile.

Detection Technology: Much of the work at Los Alamos in the basic sciences arena has had a significant impact on detecting threats from emerging phenomena. For example, building x-ray and gamma ray detectors on satellites has promoted the discovery of fundamental cosmological phenomena like the collapse of black holes. In turn, these detectors have been refined and are part of our front line defense in monitoring other nations' weapons programs.

Advanced simulation and energy/climate research: The ability to simulate complex systems – like a nuclear explosion with thousands of parts exploding in a fraction of a second – is something that has also driven national security science forward. LANL has developed two of the four modules (sea ice and oceans) used in international climate models. Many of the lessons learned from observing a complex climate system can be applied to our weapons models. In particular, we have discovered heretofore unknown phenomena – in terms of regional climate impacts and within weapons systems – as we have gone to finer and finer levels of resolution in our simulations. On the energy front, LANL is also a partner in the recently announced DOE Office of Nuclear Energy Hub focused on nuclear power. LANL will play a key role in helping to build a "virtual reactor."

Gulf Oil Spill: Scientists from Los Alamos and other laboratories have played a significant role in the federal government's efforts to assess and stem the oil leaking in the Gulf of Mexico. Several efforts are continuing as the crisis continues. One particular area of emphasis is in diagnostics of the well system. LANL designed and developed the first ever two-dimensional radiography system deployed in deep water (below a few hundred feet). The radiography leveraged numerous capabilities including machining, advanced image analysis, and modeling techniques.

Next Chapter of Stockpile Stewardship

For the future, we need to build on the core scientific successes achieved through Stockpile Stewardship that have maintained the safety security and effectiveness of the stockpile for 18 years without nuclear testing. However, we are now at a crossroads as a nation. The next few years will determine our approach to the stockpile for decades to come. There is an opportunity right now for a national consensus to develop around nuclear policy that has been needed since the end of the Cold War. As I will discuss further below, I am encouraged by the significant strides this Administration has made in issuing a new policy, in the form of the NPR, as well as by its FY11 budget request for the Department of Energy, which I believe is an important first step. With this as a basis, I hope that Congress and the Administration can reach a bi-partisan national consensus.

Even with such a consensus, my concern is that with all there is to be done, the level of interest and budget support that we have seen this year will need to be sustained by future Administrations and future Congresses. As I have seen over my nearly 30-year career at the Laboratories, solutions and fixes in this arena cannot be accomplished quickly. This will require a sustained effort on the part of the nation for decades to come.

NEW POLICY FOR NUCLEAR WEAPONS

The Administration's NPR, issued in April of this year, "provides the roadmap for implementing President Obama's agenda for reducing nuclear risks …" It focuses on five key objectives of nuclear weapons policies and posture, one of which is "Sustaining a safe, secure, and effective nuclear arsenal".

The Directors of Livermore and Sandia joined me in issuing a tri-lab statement about the NPR in April. We felt it was important to first outline the roles and responsibilities of the national laboratories in terms of providing the technical underpinnings to ensure the safety, security and effectiveness of the nuclear deterrent. With regard to the NPR's overall framework, I repeat here what we said:

> "We believe that the approach outlined in the NPR, which excludes further nuclear testing and includes the consideration of the full range of life extension options (refurbishment of existing warheads, reuse of nuclear components from different warheads and replacement of nuclear components based on previously tested designs), provides the necessary technical flexibility to manage the nuclear stockpile into the future with an acceptable level of risk.

> We are reassured that a key component of the NPR is the recognition of the importance of supporting a modern physical infrastructure–comprised of the national security laboratories and a complex of supporting facilities–and a highly capable workforce with the specialized skills needed to sustain the nuclear deterrent."

While the joint statement reflects the Laboratory Directors' collective views, I will elaborate on my own thinking on the NPR. It clearly emphasizes the three key elements of Stockpile Stewardship – hands-on work on the stockpile; the science, technology and engineering base; and the infrastructure at the laboratories and plants. I agree with the NPR's view that these are the three critical elements of the nuclear weapons enterprise. It is essential that all of these elements be in balance and adequately funded to maintain a safe, secure and effective stockpile. I will focus my remarks on each of these elements in turn.

Stockpile work

The NPR is explicit about the weapons that need life-extension over the next 10 years: completion of the W76, proceeding on the full scope life extension of the B61, and study of the W78. I strongly agree with the NPR assertion of the need to increase the safety and security of our systems. The LEP process provides opportunities to do so, for example by switching all conventional high explosive (CHE) primaries with insensitive high explosive (IHE) primaries to increase safety margins and deploying certain intrinsic surety systems in the stockpile to better meet today's security challenges.

The NPR's statements on needed LEPs align well with the assessments that the Laboratories have made in recent years. We have seen that in many cases, the uncertainties associated with the current issues identified through surveillance threaten to overwhelm the small performance margins that characterize many of the weapons in the current stockpile. Essentially, this uncertainty dictates that almost every weapon system in the current stockpile will require completion of some type of life extension activity in the next 25 years.

The available mitigation actions for the results observed in surveillance, such as changes external to the nuclear package or relaxation of certain military requirements are reaching their limits. Consequently, as the Perry Commission observed, "The Stockpile Stewardship Program and the Life Extension Program have been remarkably successful in refurbishing and modernizing the stockpile … but cannot be counted on for the indefinite future." We will need to take advantage of the flexibility articulated in the NPR to go beyond just refurbishment that has been considered to date and evaluate the full range of options (refurbishment, reuse and replacement) to increase nuclear performance margins to mitigate the need for nuclear testing.

The NPR states that in "any decision to proceed to engineering development for warhead LEPs, the U.S. will give strong preference to options for refurbishment or reuse." The NPR also strongly endorses, and the NNSA Stockpile Stewardship and Management Plan reinforces, the importance that on a case-by-case basis, the full range of LEP approaches will be considered: refurbishment, reuse, and replacement. I recognize the sensitivity of this topic but am convinced that allowing the laboratories the flexibility to present policy makers with our best technical recommendations to meet requirements is critical to our role in the stockpile management process. This approach greatly reduces the possibility of having to conduct nuclear testing, while at the same time exercising our nuclear designers and engineers. I do not feel overly constrained

by the language in the NPR; rather, I believe it provides the necessary flexibility to manage the stockpile with acceptable levels of risk.

The starting point for all of this hands-on work, of course, is the stockpile surveillance program that pulls actual units from service and puts them through rigorous destructive and non-destructive testing. Through these efforts we are able to anticipate issues as well as learn when issues may require action, but I have been concerned for some time that we are not doing as much surveillance as we should be doing. The NPR states that investments are required in "Strengthening the science, technology, and engineering (ST&E) base needed for conducting weapon system LEPs, maturing advanced technologies to increase weapons surety, qualification of weapon components and certifying weapons without nuclear testing, and providing annual stockpile assessments through weapons surveillance [emphasis added]." I agree with this assessment. Since our knowledge base begins with surveillance, it is essential that we sustain support in this area.

Science, Technology, and Engineering

I strongly endorse the view of the NPR on strengthening the ST&E base; it is this base that provides the underpinning of confidence in the stockpile in the absence of nuclear testing. This expertise can only be maintained by continued scientific advances; it cannot be static. However, it has been allowed to erode in recent years, putting at risk our ability to make the necessary future advances in our capabilities. It is important to note that often years of technical work, for example in actinide sciences, are required ahead of time to enable the successful completion of today's requirements. Without investment today future confidence is at risk.

In addition, it is essential that we acquire experimental data from non-nuclear experiments to provide the 'ground truth' about stockpile issues. Today, we are beginning to see many of the investments of Stockpile Stewardship come to fruition – notably the DARHT at Los Alamos, the NIF at Livermore, and the MESA facility at Sandia – yet, we have inadequate resources to carry out the all key experiments at these facilities. Just as the nation is positioned to reap the benefits of these investments, funding declines make it extremely difficult to maintain, use or enhance these facility capabilities that are necessary to preserve our deterrent and to further other national security goals.

Similar to the world of experiments, today we are faced with an equal computational challenge and opportunity. To maintain the scientific vitality, international competitiveness, and leadership needed to support the Administration's nuclear posture, continued advancement to exascale class computation is necessary. Such a capability will position us to provide better support for the stockpile, particularly in the form of surety options, and to provide reliable support for intelligence analysis including emerging foreign threats in the broad area of nuclear security.

Compounding that challenge of a healthy, vibrant ST&E base is the aging workforce at Los Alamos and elsewhere in the complex. At Los Alamos, the average age of career employees is now over 48, and 32 percent of all career employees are expected to retire within the next five years. Without an infusion of younger talent who can become recipients and beneficiaries in the transfer of knowledge from those with decades of experience, we will be at risk for loss of that knowledge.

Aging Infrastructure

Much of the nuclear infrastructure needed by the United States resides in facilities that date back to the 1950s. While we take great efforts to ensure our employees are safe in these aging facilities and that the public is not put at risk, the challenges and costs to maintain their active status is mounting rapidly.

The NPR and Administration's FY11 budget support the Uranium Processing Facility (UPF) in Tennessee and the Chemistry and Metallurgy Research Replacement (CMRR) Nuclear Facility in New Mexico. They represent the critical next step in shrinking the nation's nuclear infrastructure footprint while allowing these vital operations to continue in the most safe and secure environments possible. I strongly endorse investments in these two facilities and believe without them the costs associated with maintaining the existing facilities will eventually overwhelm the weapons program budgets.

The CMRR project at Los Alamos will replace the existing Chemistry and Metallurgy Research (CMR) facility, completed in 1952, that is at the end of its useful life. This facility houses the analytical chemistry, materials characterization, and actinide research and development activities that are required to support a wide spectrum of work at Los Alamos. The work in CMRR is critical to sustaining the nation's nuclear deterrent, but it also is critical to nonproliferation efforts, development of power sources for U.S. space missions, training of IAEA inspectors and the work of nuclear forensics. We have been working closely with our industry partners to bring strong project management to this effort and to deliver this important project on cost and schedule. I am proud to report that on the first phase of this project, construction of the Radiological Laboratory Utility Office Building (RLUOB), we did just that: it was completed on time and budget last year. We are in the process of outfitting that facility and expect to occupy RLUOB in 2012. We continue to work closely with NNSA on the design of the next and final stage of the project, the Nuclear Facility. To successfully deliver this project, it will be important to have certainty in funding and consistency of requirements throughout the project.

At the same time, there are many other essential facilities across the complex and at Los Alamos that cannot be neglected because of our necessary focus on the major nuclear facilities. Infrastructure considerations must include operation of current facilities and the consolidation of old, inefficient ones. For example, we are working to identify adequate funding to maintain and operate the LANSCE facility for material properties, carry out planned actinide research and renew an aging infrastructure where over fifty percent of the buildings are more than forty years old.

To reduce costs we have already eliminated a million square feet of antiquated laboratory and office space. Using funds from the American Recovery and Reinvestment Act we are in the process of decontaminating and demolishing the earliest plutonium and uranium facilities at the Laboratory.

FY11 BUDGET PROPOSAL

In addition to the NPR, the Administration has developed an FY11 budget that moves us in the right direction. I view the NNSA's FY11 budget request as a positive first step and I urge its approval by Congress. The $624 million increase to Weapons activities is primarily focused on addressing the crumbling infrastructure of the Complex – most notably the plutonium infrastructure at LANL and the uranium infrastructure at Y-12, as well as beginning to attend to the needs of an aging stockpile with increased funds for Life Extension Programs. These are welcome increases and will begin to address some of the concerns that the Strategic Posture Commission and the Laboratory Directors have raised in recent years.

Restoring the scientific and physical infrastructure – all while managing pension and other challenges – will take time and sustained support by the Congress. Sustaining strong science funding in the form of Science Campaigns and advanced computing, as well as the infrastructure account, known as Readiness in Technical Base and Facilities (RTBF) that underlies all of the work we do, is essential. This funding enables us to carry out the fullest of scientific research and development efforts necessary to meet our nuclear weapon mission and broader national security needs and to attract and retain the best and brightest scientists.

CHALLENGES

The NPR provides the necessary policy framework, which I hope leads to a national consensus, and the FY11 budget request provides the first step in the fiscal implementation of the roadmap to sustain the long-term safety, security, and effectiveness of the stockpile. It is important to recognize that to fully implement this roadmap requires investments that carry across multiple Administrations and multiple Congresses. Today, I fear that there is already a gap emerging between expectations and fiscal realities. I fear that some may perceive that the FY11 budget request meets all of the necessary budget commitments for the program; however, there are still significant financial uncertainties, for example, the design of the UPF and CMRR are not complete and the final costs remain uncertain.

As I look to the future, I remain concerned that science will be squeezed when trying to compete with capital infrastructure investments and life extension program funding priorities. Having experienced three decades of federal budgets and their impacts on the weapons program, it will be challenging to sustain the increases the Administration has called for. Just as I am encouraged by the significant increase we see in FY11, I am concerned that in the Administration's Section 1251 report, much of the planned funding increase for Weapons Activities do not come to fruition until the second half of the ten year period.

Another example of the fiscal challenges that I see on the horizon is related to pensions. Like many other organizations across the country, we at Los Alamos are facing a pension shortfall during the current fiscal year and it is expected to grow over the next two years.

In FY10, the Laboratory has worked closely with the NNSA to resolve a pension shortfall of $76 million. Part of the solution has been to require employees to make contributions; the Laboratory is increasing its fringe rates to cover costs and NNSA has provided assistance on the order of $46

million. Next year, the pension shortfall is expected to be $77 million, and in FY12, the shortfall is expected to grow to about $200 million. NNSA is aware of this issue and we are working closely on possible options to address it. My chief concern is that if the Laboratory must shoulder the bulk of this increase, this will dramatically reduce the funds available for programmatic deliverables and cause significant disruption of the Laboratory workforce.

As I noted earlier, it will be important that as a nation we can align expectations with the fiscal realities that we see. At the same time, it is essential that we balance investment across all three major elements of the program – hands-on stockpile activities, ST&E, and infrastructure. For example, without investment in ST&E today we put at risk timely execution of the program beyond the very near term. On the other hand, focus on near term stockpile LEPs without infrastructure investment limits the near term program scope and efficiency and puts at risk longer term timely execution. Stability of funding plans is also important so that the balance that is struck can actually be executed. One approach to maintain focus on these issues across multiple Administrations and Congresses could be a set of "safeguards," that have been used in past arms control treaties.

CONCLUSION

Thank you again for the opportunity to appear before you to testify on this important subject. As I stated, I am very encouraged by the progress this Administration has made both on the policy and the budget fronts. The NPR provides the policy framework with the technical flexibility to manage the stockpile with an acceptable level of risk and the FY11 budget request is a positive step forward.

I am cautiously optimistic that with Congress' support we – as a nation – can recapture the bi-partisan consensus that once existed about the nation's strategic deterrent and the overall nuclear weapons complex. At the same time, I have concerns about sustaining the focus and an appropriate budget over the several decades for which it will be required. As a Laboratory, we are dedicated to ensuring the innovative science and engineering necessary to sustain our strategic deterrent and that can be applied to the many challenges the nation now faces. Maintaining the necessary focus and resources of the Administration and Congress is critical in order to achieve these national goals.

I look forward to engaging further with the Committee on this important topic and I welcome your questions.