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NUCLEAR WEAPONS COMPLEX MODERNIZATION

HEARING

BEFORE THE

STRATEGIC FORCES SUBCOMMITTEE

OF THE

COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES

ONE HUNDRED TENTH CONGRESS

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NUCLEAR WEAPONS COMPLEX MODERNIZATION

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
STRATEGIC FORCES SUBCOMMITTEE,
Washington, DC, Thursday, July 17, 2008.

The subcommittee met, pursuant to call, at 10:01 a.m., in room 2212, Rayburn House Office Building, Hon. Ellen Tauscher (chairman of the subcommittee) presiding.

OPENING STATEMENT OF HON. ELLEN O. TAUSCHER, A REPRESENTATIVE FROM CALIFORNIA, CHAIRMAN, STRATEGIC FORCES SUBCOMMITTEE

Ms. TAUSCHER. Good morning. This hearing of the Strategic Forces Subcommittee will come to order.

Today, we will consider the National Nuclear Security Administration's (NNSA) plan for modernizing the nuclear weapons complex, what the NNSA calls its plan for a Complex Transformation.

I want to welcome our first panel of distinguished witnesses, starting with the Administrator of the NNSA, Under Secretary Tom D'Agostino.

It is a pleasure to have you back before the subcommittee, Under Secretary, and thank you very much for all the cooperation and all the great work you and the thousands of people that you represent do every day for the American people.

Following the Administrator's testimony, we will be joined at the witness table by the team of experts that manage and operate the NNSA nuclear weapons complex, whom I will introduce at that time.

This topic has not received the attention it deserves. The maintenance and modernization of the nuclear weapons complex is a prerequisite to the continuing success of the science-based Stockpile Stewardship Program.

For more than a decade, the Stockpile Stewardship Program has enabled us to successfully maintain the safety, security and reliability of our Nation's nuclear deterrent without underground nuclear tests.

The Nation's success in this endeavor is a marvelous story and, frankly, it is not well enough publicized. But even where there is recognition of the effectiveness of the stewardship program, there is not always a recognition of the challenges of extending that success.

With today's hearing, I want to have a frank discussion of what it takes in terms of both fiscal, physical and human capital to sustain and expand the success of the stewardship program.

The backdrop for this discussion, of course, is the larger debate over the United States' nuclear weapons policy. I am as eager as anyone for a 21st century update to our nuclear weapons policies. That is why I led the effort last year to create the Congressional Commission on the Strategic Posture of the United States.

I believe the Commission will foster and frame a national discussion on the role of nuclear weapons in assuring our national security. But as the Chairman of the Commission, the former Secretary of Defense Bill Perry, has noted, even as we try to move toward a world free of nuclear weapons, we must be realistic about the length of that process.

It will take us decades. And so over that timeframe, we must ensure that the Stockpile Stewardship Program remains viable, which means we cannot simply sit on our hands and watch buildings erected during the Manhattan Project crumble, if in their absence, we have no space to do the work that stewardship requires.

And it means that we cannot lay off thousands of scientists and engineers and then expect to do the science and technical work that stewardship requires.

Our responsibilities are greater than that, and that is why we have called this hearing today.

With that, let me turn to my very good friend, our ranking member, the distinguished member from Alabama, for any comments he might have.

And before I turn to Mr. Everett, we don't have many other hearings planned for the rest of this year. We expect that we may be out in September. I am going to begin my process of saying goodbye to my friend.

Mr. Everett is going to be retiring this year. He has had a number of years of distinguished service on this committee. He chaired this subcommittee. The little I know about being a chairman, I have learned from Mr. Everett. He is a great American and a great Alabaman, and I now yield time to the ranking member.

STATEMENT OF HON. TERRY EVERETT, A REPRESENTATIVE FROM ALABAMA, RANKING MEMBER, STRATEGIC FORCES SUBCOMMITTEE

Mr. EVERETT. Well, I don't know quite how to follow that. I appreciate my good friend and chairman's comments. And what I can say is she is one of the brightest people I have ever worked with, and I appreciate her dedication to the issues that we face with this subcommittee, which are often, frankly, conflicts and sometimes controversial—often controversial.

And you know, we are handling missile defense, all the overhead satellites and so forth, and then nuclear weapons. So I very much appreciate the partnership that we have had over the years in taking a look at these critical issues for the Nation. So thank you very much.

Ms. TAUSCHER. You are welcome, Mr. Everett.

Mr. EVERETT. And I would also like to extend a warm welcome to our witnesses. We have some exceptional brain trust with us today. I thank you for all your service and your dedication to what you do.

We start down this path—we started down this path in April of 2006 when this subcommittee held a hearing on the Department's future plans for the nuclear complex—weapons complex. I think revisiting this topic is essential, and I thank the chairman for calling this meeting, which is critical and important and timely.

I echo many of the concerns that she has. Our nuclear weapons complex is aging and our Nation's cadre of nuclear experts is aging. Without modernizing the infrastructure and fostering a new generation of nuclear experts, we put at risk a key portion of our Nation's defense, our strategic nuclear deterrent.

Two years ago, this subcommittee was concerned that despite numerous studies there had been little change and almost no actual transformation. Since then, NNSA has put forward a plan for Complex Transformation.

Its vision is to achieve a smaller, safer, less expensive complex—makes a lot of sense. However, there are a lot of questions about the particular course of action put forward by NNSA, and many are trying to understand how Complex Transformation relates to other nuclear policies and program issues being debated in Congress.

Let me put forward some of the questions now and ask you to address them in your testimony. If you don't have time, then we will get to them in the questions and answers, starting with: What facility and infrastructure projects should move forward regardless of the future—on policy and size of the composition of the stockpile?

How does the plan ensure long-term health for the stockpile—program?

How does the plan rebuild human capital, as the chairman mentioned, across the nuclear enterprise in manufacturing, design, science, et cetera?

How does the plan meet the military's need for a more responsive infrastructure and its need for weapons that are more reliable, safe and secure?

How would Reliable Replacement Warhead (RRW) benefit the complex, and would it affect our transformation plan?

How does NNSA fund transformation with a relatively flat budget?

Last, for our second panel in particular, is there a better business model?

What questions aren't we asking that we should be asking?

Congress has before it some challenging nuclear policy and program issues that we do have—have many implications for the complex, and I am hopeful that the strategic commission that the chairman led the way in establishing last year will help to inform our decision-making on these issues.

However, I believe our Nation will continue to maintain a strong nuclear deterrent, particularly as long as others maintain or seek nuclear capability. And our allies rely on our extended nuclear deterrent.

A strong deterrent requires a strong infrastructure and workforce, and I fear without moving forward on modernization now, we risk weakening the stockpile we have been—that we have and jeopardizing our options for the future.

Again, thank you all for being here.

And I thank the chairman for calling this meeting at this time and for her leadership in the Commission. Thank you.

Ms. TAUSCHER. Thank you, Mr. Everett.

Under Secretary D'Agostino, the floor is yours. As we have received your prepared statement in advance, it will be entered into the record.

I want to thank you again for delivering, once again, a very comprehensive review of the accomplishments and the challenges facing the complex. We welcome your remarks and the floor is yours.

STATEMENT OF HON. THOMAS P. D'AGOSTINO, ADMINISTRATOR, NATIONAL NUCLEAR SECURITY ADMINISTRATION; DR. GEORGE H. MILLER, DIRECTOR, LAWRENCE LIVERMORE NATIONAL LABORATORY; DR. MICHAEL R. ANASTASIO, LABORATORY DIRECTOR, LOS ALAMOS NATIONAL LABORATORY; DR. THOMAS O. HUNTER, PRESIDENT AND DIRECTOR, SANDIA NATIONAL LABORATORIES; DR. STEPHEN M. YOUNGER, PRESIDENT, NATIONAL SECURITY TECHNOLOGIES, LLC; J. GREG MEYER, PRESIDENT AND GENERAL MANAGER, BABCOCK & WILCOX TECHNICAL SERVICES PANTEX, LLC; VINCENT L. TRIM, PRESIDENT, HONEYWELL FEDERAL MANUFACTURING & TECHNOLOGIES (FM&T), LLC; DARREL P. KOHLHORST, PRESIDENT AND GENERAL MANAGER, BABCOCK & WILCOX TECHNICAL SERVICES Y–12, LLC; DENNIS HAYES, GENERAL MANAGER, DEFENSE PROGRAMS, WASHINGTON SAVANNAH RIVER COMPANY

Mr. D'AGOSTINO. Thank you, Madam Chair.

And Chairman Tauscher, Ranking Member Everett, members of the subcommittee, thank you very much for the opportunity to discuss U.S. nuclear weapons policies and our programs.

I would also like to take a brief moment as well to thank Ranking Member Everett for his great leadership on NNSA issues.

I understand this is, in all likelihood, your last testimony—or last hearing as members of this important committee, and I want to thank you on behalf of the NNSA and all of us out in the field for everything you have done for us and for the Nation as a whole. We really appreciate your support.

I would also like to acknowledge the representatives that we assembled behind me. These are the folks that work on our programs and our stockpile and our deterrent—not only that, on nonproliferation and counterterrorism issues.

They spend their days and sometimes evenings and weekends working on these programs, worrying about them, and I appreciate your opportunity—the opportunity to have them come forward to show—talk to you about what they know.

My written testimony, as you mentioned, goes into considerable detail on our vision shift from a 21st century—or from a Cold War era nuclear weapons complex to a 21st century national security enterprise. Both of those sets of words are different, and they are on purpose, but they are different.

But what I want to convey today is that this vision of a smaller, safer but modern nuclear security enterprise is well thought out and is first based on requirements that we have received from the Department of Defense (DOD).

Second, based on our ability to retain the human capital that is unique and world-class in performing their mission.

And third, there is an urgency to act now to sustain key infrastructure capabilities necessary to maintain our deterrent.

As we discuss these issues today, we must remember that the transformation of the stockpile and enterprise is, in some effect, already taking place.

The first chart we have here before us shows the significant reductions in deployed strategic nuclear warheads that have occurred, and as planned for the future.

As you know, the Moscow Treaty and President Bush's unilateral cuts to the nuclear weapons overall stockpile, which is now half of what it was when he took office—we really don't have a large Cold War weapons stockpile anymore.

And since we don't have a large Cold War arsenal, we don't need the large Cold War complex that supported that arsenal and was so important to our Nation's security over the many decades in the past.

And we have plans to reduce both the square footage of the complex to be more efficient and to focus on the capabilities needed to support future national security needs.

A question has been raised by some individual—individuals that this Administration has not articulated an underlying strategy for our strategic posture.

And in response to that, in March of 2008, just this year, Secretaries Bodman and Gates provided Congress a detailed, classified white paper entitled "National Security and Nuclear Weapons in the 21st Century."

The document describes what type of deterrent strategy is needed; articulates the size and nature of the stockpile to correspond to that strategy; and three, articulates the type of infrastructure needed to support that stockpile into the future.

As you know, we are the only declared nuclear state that is not, in fact, currently modernizing its infrastructure.

Over the past three years, we have been aggressive in our efforts to analyze, describe and perform environmental studies associated with the type of security enterprises needed to meet the future requirements.

As you can see from the stack of papers here, this isn't an approach we have taken idly. This is not a PowerPoint analysis. This is detailed business-case analyses, environmental analyses as required, and the team spent a couple of years, actually, pulling all this together.

And it is remarkably detailed and thorough, and I am very proud of actually the work that they have done on each of these potential options.

The draft "Complex Transformation Supplemental Programmatic Environmental Impact Statement" was published and posted in January of this year for public comment, and we are systematically in the process of considering well over 100,000 oral and written comments on the documents, and those are the bottom 2 documents I have here.

[The information referred to is retained in the committee files and can be viewed upon request.]

Mr. D'AGOSTINO. My intention ultimately is to make a decision in 2008 on this three-year effort in order to continue on a viable path that will support the next Administration and the recommendations of the Congressional Commission on Strategic Posture, whose origin is from this very subcommittee.

And I think the idea is to mesh the Record of Decision with the recommendations, so that the Commission has the opportunities, and I would call the space in order to make the recommendations appropriate to Congress and the next Administration. I think actually the synergy is quite nice here.

As Members of Congress can appreciate, change can be unsettling, and the recent budget-driven dislocations and involuntary separations that have impacted this program have been very hard on employee morale and retention of younger staff members.

When I announced the release of the "Complex Transformation Supplemental Programmatic Environmental Impact Statement," I highlighted that scientific and engineering expertise are essential for the 21st century mission of our deterrent and nonproliferation missions.

In addition, Secretary of Energy Bodman signed out a lab vision paper most recently setting forth the strategic mission of NNSA's three national security laboratories and the Nevada Test Site (NTS) to be able to respond to evolving 21st century global security threats.

[The information referred to can be found in the Appendix on page 151.]

Mr. D'AGOSTINO. Enabled by our core weapons-related programs, these same individuals can and are using their skills in other areas of national security importance, such as nonproliferation programs, research and development (R&D), nuclear counterterrorism, and support to the intelligence community (IC).

Simply put, it is that understanding of nuclear materials and properties, weapons and their effects, that supports these other critical national security needs out into the future.

Regarding the physical transformation of our important plutonium and highly enriched uranium (HEU) capabilities, we need to make decisions and investments today in order for the sustainment of the strategic deterrent out into the future.

Key construction projects such as the Uranium Processing Facility (UPF) at Y–12 and the Chemistry and Metallurgy Research Replacement (CMRR) project at Los Alamos are critical to sustain the uranium and plutonium capability that is necessary for any stockpile configuration and to continue nonproliferation and nuclear counterterrorism activities.

Outside independent entities such as the Defense Nuclear Facility Safety Board (DNFSB) have noted that it is critical that the NNSA move quickly to replace uranium processing facilities located at Y–12 and the current Chemistry and Metallurgy Research (CMR) facility at Los Alamos.

Over the last three years alone, NNSA has received about a dozen letters from the defense board citing concerns with the outdated Cold War-era uranium and plutonium operations.

The board, as you know, is uniquely qualified to provide sound, independent, technical judgment with respect to safety and operations. And let me highlight one example.

The defense board wrote just this year, in May, that they are "concerned about the NNSA's ability to ensure safe operations of the CMR facility at Los Alamos, which may be essential for fulfilling NNSA's national nuclear security mission. Given the facility's age and seismic fragility, some upgrades may cost-prohibitive or impractical."

With respect to the relationship between the new facilities and the size of our stockpile, our investment in these projects is both sound and based on analysis of current and likely future scenarios.

The reality is neither our workforce numbers nor facility square footage scale linearly with the size of the stockpile. In today's era of small stockpiles, the required square footage in a modern, well designed facility to provide essential capabilities frequently provides just the sufficient minimum capacity for our work.

So just being able to maintain the capability is usually enough for the capacity that is required.

This may be best shown on the second chart labeled "Future Uranium Facility Requirements," and I will walk us through the chart, if I could.

The Uranium Processing Facility is a facility that we are currently designing—we are not building it right now; we are going to wait—we have to wait for our appropriate authorization, of course—to function within various production ranges which are correctly tied to likely future scenarios.

And we have considered scenarios from 0 up to about 150 units per year as a range or so. There is a title here labeled "Baseline." It is the second one from the left—is at the 50 to 80 level, consistent with the white paper, classified white paper, that has been up here since March.

So in the end, this Uranium Processing Facility will replace a series—not just one, but a whole series of 50-year-old buildings, Cold War-era buildings, down in Tennessee.

It is being filled, as I said, to meet the modest requirements consistent with the white paper, 50 to 80, not an MPF-like number which could be considerably higher.

And these are secondary. These are the components. It is actually the production piece. The bottom bar, which as you can see is almost two-thirds—or particularly on the column on the left is—that blue-shaded area just represents the minimum space required just to satisfy—not produce anything, just to take care of our deterrent, due to surveillance work that is needed; in fact, also to do work for Naval Reactors, the Naval Nuclear Propulsion program, to do the nonproliferation work, because as you know we are downblending a lot of highly enriched uranium, and do—and also do work for others in isotope production for scientific activities.

So whether we build—to take the capacity required to build one more, one secondary—this is the production part—is that first yellow bar on—on the left there. So you see, just to make one secondary requires an increment of space.

So whether you build 1 or 50 to 80, it is a very small variance in range. And in the end, what it shows is that what we are trying

to do is make sure that our designs are flexible and such that just the required capacity to make one requires a certain amount of capability.

In the end, this uranium processing facility, just space-wise, will be about half of what the Cold War-era space was overall total, which was spread out across and, more importantly, will allow us to consolidate our security areas.

Let me just take a minute, if I could, to focus on plutonium. The ability to work on and analyze and produce plutonium pits is essential to maintaining a deterrent and cannot be performed outside of the NNSA.

Our current research, surveillance and manufacturing capabilities require and rely right now on old nuclear facilities. Last year, after a 10-year effort, we were finally able to reconstitute an interim production capability in a 30-year-old facility.

But just as important, our current research and analytical building, the Chemistry and Metallurgy Research facility that is essential to maintaining the stockpile, dates back to the early 1950's. It is well beyond its economic lifetime, and it is quickly approaching end of safe operations.

The question is, what will happen if we do not transform and just maintain the status quo; I think the short answer is that we will reach a point where the NNSA will be unable to maintain our deterrent, not produce anything—we are not even getting to that point of producing, just unable to maintain the deterrent, because of the work that we have to do with the surveillance activities.

Every year, the costs to maintain and secure and operate our facilities and infrastructures continues to rise, yet our program to sustain our infrastructure, to support a reduced stockpile is cut through the appropriations process.

An independent group of scientists that advises the Government, the JASONs, the Defense Nuclear Facilities Safety Board, and the Defense Science Board have all issued reports or findings over the past several years highlighting the need for NNSA infrastructure improvements and modernizations.

The last two charts that you will see—and we will show—the first one will be the Y–12 before and after chart, and then the second one that will follow will be a future capabilities chart—kind of give you an idea of our overall approach.

At Y–12, we are going to consolidate all the highly enriched uranium functions into 2 buildings, and take it from the 80-plus acres that we have right now into about 15 acres.

So the image on the left shows the current image, and it may be hard to see from the rostrum—I apologize. The image on the right shows how a Y–12 of the future could look. You will notice a lot more green space, because we are going to be actually shrinking that security footprint down close to 90 percent.

That will save a lot of money, and it will drive our maintenance costs down, and it will make the operations of the Y–12 facility a lot more efficient, instead of having activities spread out over a much larger area.

That core strategy—and if I could get the next chart—is going to be applied across the complex. This idea of consolidating capabilities—and over the next 10 years, by consolidating capabilities,

what we are going to have is special nuclear materials (SNM) going from 7 sites to 5 sites in the future, with significantly smaller security footprints; consolidating mission functions across the enterprise, since our capacity requirements are no longer at Cold War levels; closing or transferring weapons activities from about 600 buildings or activities, most of those by 2010; and reducing the square footage of facilities to supporting—that support weapons-only mission functions by more than 9 million square feet, so the idea of going from about 36 million square feet to 25 million square feet or so of space.

[The charts referred to can be found in the Appendix on page 152.]

And ultimately, in the end, as Administrator, I am responsible for sustaining our capabilities to support the commitment to maintaining the lowest number of nuclear weapons consistent with our security requirements.

I have taken a long, hard look at the weapons complex over many years and where I think it needs to be consistent with our future requirements. The need to change is urgent, as you have described.

We must act now to adapt for the future and stop pouring money into an old Cold War weapons complex that is too big and too expensive.

Assuming we all agree that for the foreseeable future the Nation has a need for a credible strategic deterrent, then we will need a national security enterprise that is safer for our workers than those used during the Cold War, regardless of the configuration of the stockpile.

And perhaps more important, our dedicated workforce is the key to transformation and its success. Their expertise constitutes a key element of our Nation's security, and we must work to provide them the tools and facilities in order to perform their mission.

Thank you very much, and I will be happy to take any questions.

[The prepared statement of Mr. D'Agostino can be found in the Appendix on page 59.]

Ms. TAUSCHER. Thank you very much, Tom.

Now I would like to ask the impressive, hard-working team behind you to join you at the witness table, and I would also like to welcome each of them.

Dr. Michael Anastasio, Director of Los Alamos National Laboratory (LANL).

Mr. Dennis Hayes, General Manager, Defense Programs, Washington Savannah River Company (WSRC).

Dr. Thomas O. Hunter, President and Laboratories Director, Sandia National Laboratories (SNL).

Mr. Darrel P. Kohlhorst, President and General Manager, Babcock and Wilcox Technical Services at Y–12.

Mr. J. Greg Meyer, President and General Manager, Babcock and Wilcox Technical Services, Pantex.

Dr. George H. Miller, Director, Lawrence Livermore National Laboratory (LLNL).

Mr. Vincent Trim, President, Honeywell Federal Manufacturing and Technologies, LLC, which manages and operates the Kansas City Plant.

And Dr. Stephen Younger, President, National Security Technologies, LLC, which manages the Nevada Test Site.

Thank you, each and every one of you, for being here and for the many, many people that you represent, all hard-working Americans. And thank you for working with us on the logistics of this hearing, and we look forward to our discussion with you.

I am going to start with a question for Administrator D'Agostino.

I commend you for noting the importance of maintaining the science and laboratory base of the complex and for announcing the laboratory vision for the future.

At the same time, there have been literally thousands of laid-off staff from the national labs over the last two years. What specific steps do you plan to take to ensure that the critical human capital on which the Stockpile Stewardship Program depends is not permanently undermined?

Mr. D'AGOSTINO. Okay. Thank you, Madam Chair. There are a number of critical steps. The most important one, from my view, is exercising with the real work that we have in place right now. I think there is real work in the complex that the folks are doing, and to keep people focused on that work and make sure that they understand that I believe it is important, that the Nation believes it is important work.

Folks out in the field—and I can let them speak for themselves. It is my impression, based on talking to a lot of people, that they pay attention to what Congress does. They pay attention to what we do here. They read our testimony. They listen in on these testimonies. And they read the paper.

And the thing that worries me the most is the sense that the Nation does not care about this capability that has kept it so safe. So, a specific step from my standpoint is to reemphasize that this is important. I appreciate the subcommittee's understanding of their responsibilities in this area.

Most specifically, you mentioned the Secretary putting out the lab vision for the future, which addresses the laboratories and the Nevada Test Site, and ultimately really extends to the rest of the nuclear security enterprise.

But ultimately, that vision is—vision is important, and that vision described what I have talked about as making sure that we can go off and support other agencies as possible.

But a vision is nothing unless it is implemented, and so the view—my view is to implement that vision. This year, what I can do is engage in what I have called "strategic partnership agreements" with other federal agencies for commitment of resources over multiple years of time that our directors can plan on arriving and to do critical work for these other agencies.

And I hope within the next two months to be able to announce such a partnership, specific partnership, that is new and different from the past, and that maintains a long-term stability in a particular area. And if that works, we are going to continue to look at other areas where we can do more of that.

Ms. TAUSCHER. Let's talk about the Life Extension Programs, because it has been argued that the LEPs, as they are called, for our nuclear weapons have, on occasion, exceeded the limits of simply

refurbishing them. That is not my understanding, and I would like to clarify this for the record.

Do Life Extension Programs add any new military capabilities to our nuclear weapons?

Mr. D'AGOSTINO. Ma'am, our Life Extension Programs are focused on, of course, first of all, extending the life, because components do change, but focused on safety, security and reliability-type functions.

This is not about making a new weapon at all. The focus in many cases on safety and security—maybe a good example is the W76, where there—we focused on safety by adding the dual strong link mechanism, because we want to make sure that our weapons, where we can—make them safer than what we have had. Technology has changed over the last 30 years.

With respect to reliability, fuses and—our fuses changed a little bit on the W76, because the radar technology has changed dramatically over 30 years. So why not put in a 21st century radar instead of a 1970's or 1980's radar in the system, duplicating exactly that it was done?

But in the end analysis, what we are talking about is, you know, the exact same warhead. It has got the same mission that it had before. It has got the same yields that it had before to make sure it meets the same military characteristics that the Defense Department had originally set out.

It is carried on the same platform; it is carried on the same delivery vehicle, potentially the same targets. I am sure the target set has changed a little bit. But in essence, it is the same warhead. So this is not about enhancing performance, or increasing yield, or making it a hard and deeply buried type of a thing at all.

Ms. TAUSCHER. So effectively, Life Extension Programs are what they actually are said to be, life extension programs. They are not meant—they are not and do not change the performance, change the yield, change the military mission.

Nothing in the Life Extension Program can be constituted as improving the weapon, other than in the sense that you are extending the life of the weapon.

Mr. D'AGOSTINO. That is right. And other than the fact that, in some cases—this probably doesn't apply to the W76, but some of our older systems have vacuum tubes in them. You can't buy those anymore. They don't exist in many cases. You would probably have to go on eBay or something like that.

We are not going to do that, of course. We are going to use modern technology to replace that.

Ms. TAUSCHER. There are people in the room that are too young to know what vacuum tubes are.

Mr. D'AGOSTINO. Okay, I apologize. I am dating myself, I guess.

Ms. TAUSCHER. I have a question for Dr. Miller, Director Miller.

What will the National Ignition Facility (NIF) contribute to the Stockpile Stewardship Program? And what specific areas of uncertainty regarding nuclear weapons performance will the NIF help resolve? It is the largest laser in the world, isn't it?

Dr. MILLER. Yes, ma'am. Thank you very much. When we did nuclear testing, there were several major areas that we did not have fundamental scientific understanding of. Many of these have been

pointed out in a variety of studies and reviews, including the Defense Science Board.

Let me call these "the grand challenges of nuclear weapons physics." NIF is the only facility that allows us, in an experimental sense, without a nuclear weapon, to address all of the phases of a nuclear weapon that occur after the high explosive goes off and it goes into what we call the "nuclear phase."

So the temperatures and the densities that occur, like occur in the center of the sun, would be achievable in NIF.

And so issues of boosting, which the Defense Science Board called the largest challenge in weapons physics energy balance—there are about four of them that are addressable by NIF.

They will allow us validate and understand how to do the simulations accurately so that we will enhance our confidence and move further away from the need to do nuclear testing.

[The prepared statement of Dr. Miller can be found in the Appendix on page 71.]

Ms. TAUSCHER. Thank you.

My final question is for Dr. Anastasio, the Director of Los Alamos lab.

If CMRR Nuclear Facility is not built, what are the consequences to the Stockpile Stewardship Program and to other national security functions, such as nuclear forensics?

Dr. ANASTASIO. Thank you, Madam Chairman. The CMR, as Administrator D'Agostino said in his comments, is a capability that we use to—for the country to underwrite our stockpile stewardship activities.

The Chemistry and Metallurgical Research facility is old. It came online in 1952. And the capabilities there are essential to carry out our mission. One example is in the Stockpile Stewardship Program, periodically we bring weapons back from the military, take them apart and do forensics on the components in that weapon.

One of those is we actually take the pits apart and take samples out of the pit, take pieces out, and we use our analytic and metallurgical capabilities, our R&D scientific tools in this facility, to look at that material and see how is it aging, is it changing, can we project and predict its life and the issues that may or may not arise. So that surveillance activity is actually done in this facility.

Of course, it also supports other missions. Besides our stockpile stewardship, we do a lot of work to support nonproliferation activities, counterterrorism activities, nuclear forensics, as you identified, and even the National Aeronautics and Space Administration (NASA) space missions are supported by the activities that go on in that building.

So it is an essential capability that must be maintained somehow, but it is getting so old that it is very—and sits on an earthquake fault. It is difficult for us to continue to meet the evolving modern standards of safety and security.

So building a replacement facility for it is a way to sustain that capability in a practical sense.

And then the last point is, of course, it is part, as well, of the laboratories' transformation efforts to get to a smaller, more secure, more efficient footprint.

And as an example, the new facility will be over 100,000 square feet smaller. It will be relocated inside a consolidated nuclear area at the laboratory which is much more easy to have a security protection perimeter for. And we will be accommodating the activity that is going on now at the Lawrence Livermore Lab.

So it is a way to make us more safe, more efficient and more secure, at the same time continuing to carry out both our stockpile stewardship mission and to support many of the other national security activities of the lab.

[The prepared statement of Dr. Anastasio can be found in the Appendix on page 76.]

Ms. TAUSCHER. Thank you, Dr. Anastasio.

I am happy now to yield to the ranking member for such time as he may consume.

After Mr. Everett is finished, we will go to member questions under the five-minute rule, and we would expect that we will have two rounds because we have such a large panel and we want to be able to get as much out of you as we can.

So I am happy to yield to Mr. Everett.

Mr. EVERETT. Thank you, Chairman.

Mr. D'Agostino, you touched on this briefly during your testimony, but what facility and infrastructure projects should move forward regardless of future decisions on policy and size and composition of the stockpile?

You also touched on the "why," but also re-touch on the "why."

Mr. D'AGOSTINO. Yes, sir. I will kind of answer it in two ways. From the large sense, it is important for those projects—all those projects that provide the bare minimum capability that is required to maintain a deterrent, should go forward regardless of size.

Now, size should be considered, of course, but if, for example, a—to maintain a deterrent, I need to maintain a uranium capability. That doesn't mean I should build multiple uranium capabilities. I ought to have at least one good one. If I don't have one good one, I need one good one.

So I focus it on, is this a matter of capability or capacity? And my first priority is to maintain capability, because without capability, I can't maintain our deterrent.

The capacity part could come later, whether we need a second one or a third one. So I have to have kind of one of everything. And then I have to have it sized such that it allows for flexibility based on the bipartisan commission—the strategic commission that is reviewing it right now.

So I am sizing it from like—from the—I am going to need one warhead up to where we currently are right now, and it turns out that because, in many cases, just having one of something means that you can actually build more than one of something, that is probably where we are going to end up.

But specifically, the CMR replacement facility, because our plutonium capability and path forward is not sustainable.

At Lawrence Livermore, for example, we have a plutonium capability. It is in a multi-decade-old facility, but it is also being surrounded by a community that is just growing right around it. That is not a plan that is sustainable. It doesn't make sense, costs a lot of money.

And as Dr. Anastasio described up at Los Alamos, we are in an old facility there. So between the two, I only need one, and that is the CMR replacement facility.

At Y–12, it is about uranium, and I described the idea of getting to fewer—consolidating our uranium capability. And that philosophy can be carried forward kind of across the nuclear weapons complex.

But those are the two main ones right now that I am very uneasy about, because we are not on a good path, and we are on a very expensive path, and ultimately—you know, unless we fully support these functions or these facilities.

Mr. EVERETT. To what degree would—to what degree would NNSA's Complex Transformation plans be altered based on whether it pursues a Reliable Replacement Warhead (RRW) strategy or continues the Life Extension Program strategy?

Mr. D'AGOSTINO. If the Nation decided it wanted to pursue that strategy, our plans could be altered probably in a couple of main areas.

One is beryllium. Our plans for the future don't include beryllium, particularly beryllium metal, and then the oxides. But the idea of—that is a capability I won't have to maintain.

Right now, we don't have a capability to do a significant amount of work with beryllium, and we don't actually want to do that into the future. So a reliable replacement approach that considers getting rid of some of these materials allows me to not have to worry about beryllium anymore.

There is a heavy metal that is produced down and manufactured down in Tennessee that we would currently have to maintain. It is a mile-long production process stream down at—down there. It is in very old buildings, as well.

It is not highly enriched uranium, but if we didn't pursue another approach, I would need to maintain that capability and not have to rebuild that.

So these are important, but they are marginal activities, I think. At a bare minimum, what I want to do is make sure that the plans we have in place sustain a capability to provide options for the strategic commission and the next Administration, so they can move forward down—down whatever path the Nation ultimately decides it wants to go in the long run.

Mr. EVERETT. How does NNSA propose to fund Complex Transformation, given what many, and perhaps most believe to be a flat budget?

Mr. D'AGOSTINO. Okay. There are a number of steps. I will describe a couple of key ones, and then I could probably provide a more—a longer answer. I don't want to take up too much time.

But the key couple of steps that we are already putting in place is material consolidation. By consolidating material—let's say, for example, the work that we currently have under way at Lawrence Livermore to move plutonium, significant quantities of plutonium, that require his higher level security out—could save about $30 million a year.

So that is real money. That is significant. Those are resources that can be put back into infrastructure. And we are not just doing it at Livermore. In fact, we have completed that job at Sandia. In

the past, Sandia required a much larger security force, and most recently, within the last 12 months, we finished the job of moving those materials out.

We have opportunities at the Nevada Test Site, because it is a very remote location, to do work there that could potentially reduce our security costs elsewhere.

Right now, the NNSA spends over $800 million in security costs. It is money well spent, but there is a much more efficient way to do that.

And there are other mechanisms, such as consolidating contracts, looking at doing supply chain management in a different way, which is already under way right now. We have demonstrated savings of $5 million a year through this concept called reverse auctions, and we are expecting that to grow significantly this upcoming year.

And so these contractors have saved a lot of money by looking at business in a different way and working together more than just focusing on being completely independent of each other.

So there is some good things there, and I am confident that we can fund a significant part of this. And we are going to have to balance our workload, there is no question about it, with respect to facilities.

Mr. EVERETT. Largely, the savings from base closure commissions have not necessarily materialized. And I would—when you give us—I would ask for a more detailed explanation and the underpinning of why you reached the analysis that you did——

Mr. D'AGOSTINO. Okay.

Mr. EVERETT [continuing]. On this.

Mr. D'AGOSTINO. I would be glad to do that.

[The information referred to can be found in the Appendix beginning on page 199.]

Mr. EVERETT. Thank you, Ms. Chairman.

Ms. TAUSCHER. Thank you, Mr. Everett.

We are about to go to five-minute questioning from members. I would just like to note for the record that the unfortunate passing of former White House Press Secretary Tony Snow—his memorial service is now—has led some members obviously to not be here, and many of them will submit questions for the record, and obviously we extend to the Snow family our deepest condolences.

We go to Mr. Loebsack of Iowa for five minutes.

Mr. LOEBSACK. Thank you, Madam Chairman. I am going to pass.

Ms. TAUSCHER. We go to Mr. Wilson for five minutes.

Mr. WILSON. Thank you, Madam Chairwoman.

And thank all of you for being here today. I am particularly happy to see Mr. Hayes. I am very pleased to, along with Congressman Gresham Barrett, to represent the Savannah River Site (SRS).

And I had the background—I particularly appreciate your service. I was Deputy General Counsel at the Department of Energy (DOE) several decades ago, but I appreciate your dedication and service for our country.

And indeed, the Savannah River Site has been located in South Carolina for the last—since the early 1950's, and it has had a ter-

rific record of service. It has been so appreciated by the community. There is just strong community support.

And indeed, I just want to thank Mr. Hayes for his leadership to continue the strong feelings that the people of South Carolina and Georgia have for the Savannah River Site.

Mr. D'Agostino, as we are approaching issues, the Senate Energy and Water Appropriations Subcommittee included $22 million in their bill to expand the Advanced Retirement and Integrated Extraction System (ARIES) mission, to bridge the gap between when MOX and the disassembly and conversion facility opens.

Does SRS have the ability to help bridge this gap using existing facilities and material currently on or destined for the site?

Mr. D'AGOSTINO. Mr. Wilson, that is—they do. In fact, we are evaluating that right now. We are looking at this from a—kind of a nuclear security enterprise response.

We recognize the workforce at Savannah River, at the Savannah River Site, is dedicated. They know what they are doing. They have worked with plutonium, and they are part of our solution set as we look to figure out how do we bridge that gap between the startup of the MOX facility and the—and the—you know, bridge that gap between the Pit Disassembly and Conversion Facility (PDCF) project and the startup of the facility.

And my important view is we need to have the oxide material to keep MOX running, because I want to—I want to get all of the value out of that facility.

Mr. WILSON. We certainly support your goal.

The NNSA has determined that there is a need to—has it determined there is a need to expand the mission of ARIES?

Mr. D'AGOSTINO. That is right. In other words, right now, our current plan doesn't—because we expected there to be not much of a multiyear gap, and the reality is that because of funding profiles, there have been some shifts as a result of moving projects back and forth and not full funding that have caused the gap to widen.

So we are going to have to do a little bit more, most likelihood, in the ARIES process. But ultimately, in the end, what we are trying to figure out is what makes sense in the long run.

Mr. WILSON. And on funding, is this additional $22 million appropriation for ARIES necessary at this point?

Mr. D'AGOSTINO. I actually don't know the answer to that question, Mr. Wilson. I think it just came out recently. What we are trying to do is figure out what is the right thing to do programmatically and then figure out then what are the resources we need and where do we need the resources in order to support the ultimate goal of downblending the 34 metric tons (MT) of plutonium.

And then, of course, just last year the Secretary added nine more metric tons of plutonium to the batch, if you will, that is going through, and we are looking at ways to continue to add more material to be downblended.

And so I don't know if this is the right amount of money. But that is something that we are going to analyze and that Bob Smolen, who runs Defense Programs—he is the Deputy Administrator there—that is—he has got a team of people, including Savannah River, to look at that.

Mr. WILSON. And of great importance to the community, how does an expanded ARIES mission fit into the—NNSA's vision for the new weapons complex?

Mr. D'AGOSTINO. Well, I think it really kind of depends on whether the expansion of ARIES where it currently exists is the right—is the right approach. We haven't made that determination.

I think my goal ultimately is to make sure that—I mean, right now, ARIES is an activity that is being conducted, but we don't think it has got that pace and rate that is going to actually cover the gap.

So in the end, we want a permanent solution, because what we have got is the 34 metric tons, plus 9 metric tons, plus potentially another sizeable piece or slice of plutonium that we are going to add to the capability.

And you know, all of that material, whether it is 50 tons or not, or more, will be part of the answer, the business-case answer, that we will come up with.

Mr. WILSON. And in conclusion, under DOE Project Management Order DOE–0413.3A, a full evaluation of the alternative analysis is required before making a decision. Are there plans to initiate a full analysis of alternatives?

Mr. D'AGOSTINO. Absolutely. Right now, the Pit Disassembly and Conversion Facility—what we call Critical Decision 2, where we establish our baseline, is scheduled—it is probably going to happen January timeframe or early next year.

That 413 order requires us to reevaluate the previous critical decisions. And the previous critical decision is to reexamine all options, because it is important before we commit resources that we know that we are on the right path, and so we will do that as part of DOE 413, sir.

Mr. WILSON. Thank you, Madam Chairwoman.

Ms. TAUSCHER. Thank you, Mr. Wilson.

Five minutes to Ms. Tsongas of Massachusetts.

Ms. TSONGAS. Thank you.

And thank you all for your testimony. There is many of you up there, but I am going to address this question again to Mr. D'Agostino. Sorry.

In the wake of recent Department of Defense nuclear mishaps, select independent reviews have highlighted an erosion across the nuclear enterprise. To what extent has this erosion materialized within the nuclear weapons complex? And how do NNSA's Complex Transformation plans address this?

Mr. D'AGOSTINO. Okay. Thank you very much for your question. I think that is a great question. It reflects something that I have—we have been thinking about for the last number of years, actually.

We in this business have been—pay close attention to the Defense Department and work closely with them. About two years ago, the Defense Science Board wrote a report which described concerns about the infrastructure and attention on strategic issues such as these. In that report, there are recommendations for both the Department of Energy and the Department of Defense to undertake.

Secretary Bodman, as part of that, because he was briefed out by General Welch, who headed up that report, in fact—he talked

to the Secretary of Defense at the time and actually had a meeting with him, with the Deputy Secretary—took those actions very seriously and made a number of changes to our organizational structure and I think drove a tremendous amount of focus on the Department of Energy side.

We initiated a program called "Getting the Job Done," which focused on 10 specific items to restore the capability, to meet Defense Department needs. There was a bit of reorganization where the site office organizations that had previously reported up in the organization were shifted back down to Defense Programs.

And in this case, I have got Air Force General, retired, Bob Smolen, in that job. He is tightly connected with the new Air Force leadership and has showed them what we have done and provided recommendations to the Air Force on how to address that.

One final point is that as a result—Admiral Kirk Donald is dual hatted. He reports into the NNSA, to me, as well as to the Department of the Navy. He was the admiral that led the investigation for Secretary Gates and had shared what his lessons learned were as a result of his investigation.

And Bob Smolen and I have chartered an independent group led by Bill Desmond, who was the former Chief of Defense Nuclear Security, to make sure and evaluate those lessons learned from the Defense Department—let's make sure we bring them back here in the National Nuclear Security Administration and make sure that we are doing the right thing and that we have covered all our bases.

That review is underway right now and is expected—I expect to get some feedback—Bob Smolen and I expect to get some feedback in the October timeframe, roughly, this fall, because we want to take action, if any is needed, this year on that path forward.

Ms. TSONGAS. Thank you.

Ms. TAUSCHER. Do you yield back?

Ms. TSONGAS. I do.

Ms. TAUSCHER. Mr. Spratt for five minutes, Mr. Spratt from South Carolina.

Mr. SPRATT. Well, thank you all for your presence and for your testimony.

Is the five-site complex that you now have in mind dependent on the RRW? Is it modeled around that particular focal point?

Mr. D'AGOSTINO. No, sir. The consolidation of materials to five sites—I think is maybe what you are referring to—is independent on whether—what approach we use for the future stockpile, whether we maintain a life extension strategy or look to add enhanced safety and security via other methods.

Our view is that we need to consolidate our material for a couple of reasons. Efficiency right now is—and cost savings are huge parts of that.

And plus there is the safety and security aspect. If the material is in fewer locations it is easier for us to protect, and it is easier to make sure that that workforce is trained and know how to work on that on a day-to-day basis, versus trying to spread that capability around at too many sites.

Mr. SPRATT. Since you speak of capital cost, can you give us an idea of what the likely capital cost is going to be, the incremental costs over and above your typical capital budget?

Mr. D'AGOSTINO. Right now, we spend on the average of—our capital budget in the NNSA averages somewhere between $250 million to $450 million per year, depending on the year, because it goes up and down depending on the projects that we have overall.

We expect that this modernization effort is probably going to increase that baseline to about $600 million, $650 million per year, so on the order of $150 million to $200 million per year more.

So our focus is to drive down costs through better-business practices, through consolidation of materials across the complex, through supply-chain management——

Mr. SPRATT. But the incremental cost is $150 million to $200 million a year?

Mr. D'AGOSTINO. Roughly. And it depends on a couple of things. It depends on—there is unknowns out there. One is this Critical Decision 2 where we establish a performance baseline. That is kind of the—my contract with my contractors, if you will, saying you agree to provide this building at this date for this time for this amount of money on this rate of expenditure.

Both the Critical Decision 2's for the two facilities that we are talking about, the UPF and the CMRR—we haven't reached those points yet.

The CMRR Critical Decision 2 won't happen until we do a little bit more preliminary design work, until the year 2010, and that is something that the laboratory is working on fairly aggressively. And the UPF is a little bit—is downstream as well.

When we get those Critical Decision 2's, we will have to marry-up and make sure that our cash flow is supported by our existing budget, and that will be—that is the work that will have to happen.

Mr. SPRATT. You indicate that you would anticipate removing about 600 buildings and facilities?

Mr. D'AGOSTINO. What we would do—yes. Some of those buildings and facilities are actually just underutilized and not needed anymore, so we would take them down. Yes, sir.

Mr. SPRATT. How many of them have contamination costs, clean-up costs, associated with them?

Mr. D'AGOSTINO. I don't have that—I don't have that accurate number on the top of my head. I would like to take that for the record, if I could. But what—there are a number of these facilities, for example, that have very little contamination and are fairly simple to take down.

[The information referred to can be found in the Appendix on page 202.]

Mr. D'AGOSTINO. And our fiscal year 2009 request established a funding line—requested a funding line for—called Transformation Disposition—in other words, dismantling. And this is not heavily contaminated buildings.

There is a smaller subset of facilities that we are going to be working with our Environmental Management (EM) organization to see, you know, how we are going to do that. And that work—

it really depends on the alternative. I have a draft plan that is out in public right now.

When we get to the record of decision point, when we have agreement on what we will do, then we are going to sharpen our pencils on those particular points and figure out which ends up on which side of the line and how we want to move forward.

Mr. SPRATT. Okay.

I have a couple more questions that I will come back to.

Ms. TAUSCHER. Thank you, Mr. Spratt.

I am happy to go to Mr. Reyes for five minutes, Mr. Reyes of Texas.

Mr. REYES. Thank you, Madam Chairwoman.

My questions are along the same lines as Mr. Spratt. Mr. D'Agostino, because the consensus is pretty much that we are going to be seeing pretty flat budgets in the foreseeable future, probably the next decade.

Mr. D'AGOSTINO. Right.

Mr. REYES. So I have got some concerns that go back to when I was the ranking member and Mr. Everett was the chairman, from several perspective.

Number one, as you go through this process of eliminating these buildings that—that aren't being used, and take into consideration the cleanup and all these other things, for me security has to be an issue.

And so I am wondering, given the budget, given the challenge and given the transformation, how are you going to be able to reconcile that, or what is the plan to be able to provide and maximize security, given the challenges we have seen in the recent past?

Mr. D'AGOSTINO. On the security piece of it, within the security budget, the Defense Nuclear Security Program, there is a line on research and development and technology insertion. In other words, it is the idea of doing security differently, not doing it—doing less security, but doing it from a different standpoint.

And there are a number of technologies that are being looked at to be implemented—Remotely Operated Weapons systems, for example—that can reduce the overall level of costs, since the cost in security is over $800 million a year.

So this is not about less security. This is about doing it a little bit differently, because the biggest costs of security ultimately are the costs associated with maintaining a very large workforce. And the more guard stations there are that exist out there, the more numbers of guards that you have to maintain those and the like.

There are some activities that are being considered across the complex, some of my colleagues may be able to provide some specific examples of security technologies that they have been able to actually implement in their areas.

We know that we can save $30 million by shifting the Superblock facility at Livermore from a Category I/II facility to a Category III/IV facility, because—and that is—that is a pretty significant cost.

We know in Texas, for example, at the Pantex plant, we can look at Zone 4, which is a remote weapons storage site for plutonium and the like, and that if we move some of that underground, and we have got capabilities across the complex, we can change the security posture dramatically.

So right now at Pantex, we protect two very large areas, Zone 4 and Zone 12. If it were reduced down to one, I think the costs of security savings there are in the multiple tens of millions of dollars per year.

And those are the areas that we are going to go aggressively after to try to drive that efficiency in the program, because we recognize—I recognize that, you know, there is not a—there is not enough room to add, if you will, a large multi-hundred-million-dollar line on top of everything else. It is just not affordable.

So we have to look at doing business differently, and that is one—that is our third strategy, is change the way we do business.

Mr. REYES. Well, some of the concerns that I have—and again, predicated on the experience that I have had in—particularly in this committee as a ranking member—is that we don't cut corners, that we don't—that I guess the—because one of the big issues that we identified previously was the culture of some of these facilities was that, you know, we are scientists, we don't have to worry about security that much, that is somebody else's—that is somebody else's concern.

So cutting corners, the challenge that we have with the budget, the understanding that there was a commitment made to this committee, or the subcommittee, that training on an ongoing basis to make sure that there is—the workforce is sensitized to security and the breaches that we have experienced in the past, that that doesn't fall by the wayside.

You know, in tough budget times, unfortunately, one of the first things that go—that goes is training, and that is an important part of this piece, given the track record of some of these facilities.

So, I hope you keep the subcommittee informed of this ongoing—because it sounds like it is an ongoing and fluid plan that is evolving, so that we can, I guess, make sure that those concerns are addressed.

Thank you, Madam Chairwoman.

Mr. D'AGOSTINO. Yes, sir.

Ms. TAUSCHER. Thank you, Mr. Reyes.

I am going to go to questions before we go to Mr. Larsen.

I would like to talk—ask a question of Dr. Hunter from Sandia.

Following the competitions for the contracts to manage and operate Livermore and Los Alamos laboratories in the last few years, some have begun to question whether for-profit entities are ideally suited to manage these institutions.

Should the business model of governance of the national laboratories be a consideration in Complex Transformation?

Dr. HUNTER. Thank you, Madam Chairman—very important question, one that we spend a lot of time thinking about, because we—we like to look at our—for instance, our role at Sandia and ask, "What is the best way in which we can support the Government?"

I would like to make just a couple of points about how I feel about that and then directly address your question about for-profits.

I think an essential ingredient which can't be bought at any price but which is critical moving forward is that each of the institutions be an institution committed to national service, that their primary

and fundamental role is we are about national service, and all of our decisions and all of our incentives for decisions are about how we serve the Nation best.

Second, it is very important that the incentives and the roles and the leadership of the institutions think about how to have both, not either, and not a balance, but both excellence in operations, including security, and excellence in science, a quest to try to maximize and provide both at the best possible level.

And then getting more directly to your question, each institution, each person who leads and each person who has a responsible position, has to feel accountable for what they do. They have to feel accountable to this value of national service. They have to feel accountable to the fact that they must deliver.

And with the accountability, and the feeling of accountability must go the authority to deal with it and the proper balanced role of what—who does what in the institution and who does what with respect to the Federal Government.

And then last, the dominant criteria should be the stewardship of its people and the people, as reflecting on other comments, have to be felt to be valued and respected and supported.

You cannot buy, and it is a good thing—you cannot buy people who know and care about nuclear weapons. They have to be created. They have to be invested in. They have to be supported.

If you put all those together, I think it does not matter so much about profit or for-profit. What matters is what—what is the ethos or the value statement of the institution, how is it supported, and how is it managed, and how does the Federal Government then respond by acknowledging the accountability and the incentives that go with it.

[The prepared statement of Dr. Hunter can be found in the Appendix on page 82.]

Ms. TAUSCHER. That is a great answer. Thank you.

Dr. Younger, of the Nevada Test Site, in your testimony you suggest that the Device Assembly Facility (DAF) at the Nevada Test Site is underutilized.

What additional Stockpile Stewardship Program or national security activities could be supported there, and what sort of modifications, if any, would be required to enable such work, and what would they cost?

Dr. YOUNGER. Thank you. The Device Assembly Facility is currently being modified to house the Critical Experiments Facility that was formerly located at TA–18 at Los Alamos. That will result in considerable security savings while providing a full capability for the Nation.

When that modification is complete, we will still have 40,000 square feet of empty space—the Device Assembly Facility, at a time when nuclear capable space costs approximately $65,000 per square foot to build. That could be used for a variety of missions.

We are looking at the possibility of augmenting—not replacing, certainly, but augmenting weapons disassembly in the DAF, or small lot special case disassemblies.

There are a variety of plutonium operations that could be conducted in the DAF—business-case warrants, including surveillance,

including an augmentation to the ARIES process at Los Alamos, and including other plutonium operations.

The typical cost for the modification of the DAF, since it is a fully capable nuclear facility today, and since security is already paid for by other missions—and I might add that the DAF is considered one of, if not the most, secure facilities in the DOE complex.

The cost of modification for a major mission would be between $100 million and $300 million, which is considerably less than construction of a facility.

[The prepared statement of Dr. Younger can be found in the Appendix on page 88.]

Ms. TAUSCHER. Just as an aside, many of our colleagues and I, with Administrator D'Agostino, took a tour of many parts of the complex a few months ago, and I think one of the most fascinating things that the American people don't understand, which is why this narrative that we are building is so important, is when you go to the Nevada Test Site, which—I would recommend you change your name.

When you go to the Nevada Test Site, it is a warren of busyness. There is so much stuff going on there. You have got so many other things that you're doing that are very important—homeland security, national security—so much going on there.

And I think that most people think that when you go to the Nevada Test Site you are moving away the cobwebs because it hasn't been used for so long. And the truth is, it is a dynamic facility.

And I think it is very important that we continue to get the message out of all the other work that is being done there. And I am not kidding about changing the name.

Dr. YOUNGER. I cordially invite——

[Laughter.]

Dr. YOUNGER. I cordially invite all the members of the committee to visit the site that is currently in Nevada that will shortly be renamed.

Ms. TAUSCHER. We will be back.

And also, we went to Pantex, and we have J. Greg Meyer here, who is from Pantex, and we would just like to talk a little bit about the operations and workload at Pantex.

And would it be altered if the decision on Life Extension Programs was life extension programs only, or if we moved to something that was similar to the RRW strategy? What kind of workload would Pantex have? Would it be altered, and the mission that you have there at Pantex?

Mr. MEYER. The exact mission would not change in terms of assembly/disassembly, but the mix of that workload would. But right now, if—we do a number of different weapons systems, both lifetime extension programs, as well as dismantlements, as well as surveillances.

If the decision was made to do only LEPs, we would then focus very heavily on that and continue to do dismantlements, and then surveillances as necessary.

If we were going to go down the RRW path, on the other hand, we would probably not do LEPs or surveillances to the same extent. We would be building one new weapons system, RRW, but doing very heavily dismantlement work.

Bays and cells at Pantex are multifunctional in that sense. They don't wear out. We basically stage the tooling appropriate and do the training, so the workforce would be about the same. The training would be slightly different, especially if it is RRW.

With RRW, since it is—it would be a new design—actually, we are working—we have been invited to participate with the laboratories and give some of the actual production input so that design would have our inputs in and make the assembly/disassembly process easier for us.

But the flexibility of the Pantex lab would support either role.

[The prepared statement of Mr. Meyer can be found in the Appendix on page 95.]

Ms. TAUSCHER. Thank you very much.

And I have got a question for Vincent Trim of the Kansas City Plant.

The decision was made to build a new facility at Kansas City. Talk very briefly, if you can, about how—what the process of evaluation was to make that decision? Assumably, the decision to build the new facility was—included cost savings, and if you could just tell us a little bit about why the decision was to build the facility as opposed to consolidation?

Mr. TRIM. Certainly. The current facility was built in the late 1940's and is approximately 3.3 million square feet. We believe the mission only requires roughly 1.2 million square feet of manufacturing space, so it is a pretty easy business case when you look at the cost of maintaining a Cold War structure, security, maintenance and a whole host of costs that go along with that.

We had independent groups look at the business case, and primarily, the driver is that maintaining the capability is also about maintaining the talent that exists.

We are more than just assemblers of nuclear—or builders of components. We have engineers, and we bridge that gap between design and manufacturability at the Kansas City Plant.

But the business case is very compelling and will yield $100 million a year in savings when we hit rate production and get into the new facility in 2012. Thank you.

[The prepared statement of Mr. Trim can be found in the Appendix on page 103.]

Ms. TAUSCHER. Thank you. I have questions for Mr. Kohlhorst and for Mr. Hayes, but I will hold them till after Mr. Larsen of Washington asks his questions for five minutes.

Do you want to pass?

Mr. LARSEN. Yes, I will pass.

Ms. TAUSCHER. Mr. Kohlhorst, how are you? The Y–12 plant in Tennessee—the planned Uranium Processing Facility is being designed to accommodate potential shifts in our strategic weapons policy, I assume.

Can you tell us a little bit about how that is being done and how you are facilitating the kind of flexibility that may be needed?

Mr. KOHLHORST. Certainly, Madam Chairman. Working through the preliminary and concept designs of that facility, we have made sure that the maximum flexibility is there for changes in the stockpile, changes in the workload.

The facility is being designed with all the correct safety systems and security systems built into the facility so that if these changes come about, we are prepared to move processing equipment, reconfigure the processing lines, add capability where we need it, reduce it in other areas.

It is a general—it is a very general manufacturing facility on the inside of the processing area, although it has some—some nuclear safety systems that surround it that keep us safe no matter what we—so all of those are being taken into consideration as we do the design.

[The prepared statement of Mr. Kohlhorst can be found in the Appendix on page 108.]

Ms. TAUSCHER. Thank you very much.

Mr. Hayes, what should the NNSA and Congress do to ensure that DOE planning for plutonium disposition at Savannah River Site—what do we do to make sure it is synchronized with the NNSA's Complex Transformation plans?

Mr. HAYES. Good morning. I think the activities that Tom talked about before that are currently underway will ensure that the activities going on at Savannah River and with a broader perspective the NNSA are accounted for.

We have several key experts at Savannah River, with years of plutonium experience, participating in complex councils to make sure that that information is communicated.

[The prepared statement of Mr. Hayes can be found in the Appendix on page 116.]

Ms. TAUSCHER. Thank you.

Mr. Spratt for a second round for five minutes?

Mr. SPRATT. You may have answered this before, and I was listening to the testimony and reading the briefing memorandum at the same time. But what is the current plan for the location of the Pit Disassembly and Conversion Facility? Is it slated to go to Savannah River, or will it—is it being considered for location elsewhere?

Mr. D'AGOSTINO. I will take that, Mr. Spratt. Our current plan is to build a Pit Disassembly and Conversion Facility at Savannah River.

The activity that we have underway this year is to make sure that the MOX Facility that we are also building at Savannah River has the material—the feedstock it needs to keep operating, because we don't want to operate it just for a short period of time and then have it shut down for a couple years while it waits for the PDCF to finish construction.

So that is, you know, the—this discussion on the ARIES line was to—to make sure we fill the gap, if you will, or mind the gap, and make sure that that gap gets filled, or that that gap gets filled by modifying some facilities at Savannah River to fill the gap.

Whether it gets done at Los Alamos to fill the gap, or Nevada to fill the gap, that business case is under way. But the program of record, and our path forward on PDCF is to build it at Savannah River.

Mr. SPRATT. One of the necessary facilities you have indicated will be plutonium production. And I have been through TA–55 a couple of times, and each time we have been—seen that facility, we

have been told it has a production capacity of 1 shift and a maintenance shift, I think, of about 50 pits a year.

Is that not adequate for the stockpile that we are envisioning for the future?

Mr. D'AGOSTINO. Mr. Spratt, that is absolutely right. It is adequate for the stockpile we are envisioning, 50 to 80 pits per year. And maybe Dr. Anastasio can add on at the end of this to clarify my statements, since his—the expertise exists at both—at Los Alamos and Livermore.

But in order to do what I would call basic surveillance—in other words, take care of our current stockpile, do the analytical chemistry and material characterization work, the TA–55 complex, which you just described, relies on this other building, which is not located there, to do the chemistry work. And it is that other building that is very old that we are very worried about.

But the 50 to 80 pits per year, which is part of our current requirement in our classified paper—the laboratory believes that with changes—it would require some changes internally—glove boxes and lathes and things like that—that it could happen.

Maybe——

Dr. ANASTASIO. Yeah, Mr. Spratt, to amplify a little bit, the existing PF–4, which is in the TA–55 that you have visited in the past—we believe we had adequate space to support all the stockpile stewardship mission that we have, including up to a production capacity of 50 to 80 pits per year.

We will have to do some reconfiguration of the glove box lines and so forth that is inside that building, but it will not—and of course, we have to do normal upgrades to maintain that facility over time. But we believe there is—we are convinced that there is adequate space and capability for that.

That gives me the opportunity to also say the replacement building for CMR that we are contemplating, which would be co-located there within the same security perimeter, again will give us the opportunity to get more efficiency for security, and more effective.

But also, that is not a facility that we will use to do pit production, so we will not be doing Pit Protection in the new facility we are trying to build. It is just the capability to do the analytic chemistry and the metallurgy that goes along with our surveillance as a—and all the other missions that we carry out.

We believe that that facility is needed regardless of whether we make 0 pits per year or 50 to 80 pits per year. That production role will go on in the existing PF–4 that you have seen.

Mr. SPRATT. One final question, if I may. We have talked all morning about facilities, bricks and mortar, but the real essence of this complex is people, and attracting in the next generation the kind of people you have had in prior generations.

Do you build that concept into the design of this? Are you looking for missions you can accommodate with your new facilities complex that will be attractive, like the NIF at Livermore? Is this part of your planning? And how do you attract in the next generation the talent you have been accustomed to?

Mr. D'AGOSTINO. Mr. Spratt, I will start with the federal—the answer on the federal side. And I may, if you permit, ask one of—

somebody to comment on the contractor side, because there is multiple programs.

On the federal side—in fact, we may even have in the room some of—we have a program called the Future Leaders Program, where every year we go out and recruit from universities and colleges all over the country to bring in top talent in both engineering and business practices, about 30-some-odd per class.

We are into our fourth class right now—did the graduation not too long ago. And it is fantastic to have young folks come in with different ideas on how to—how to work things. These are people that are very smart.

I have asked them to make sure to not rely on the way we currently do business; if they have got a question, to ask it. And in many cases—one gentleman in particular took a look at how we look at safety data, and because we compile a tremendous amount of data that our—these eight sites pull together—and we have been analyzing it for years in a certain fashion.

And these young folks came in there and say, "Well, what about looking at it this way?" And it is amazing what we learn by that—just that one experience. So we are very much energized on the Federal side to bring in fresh talent on that standpoint. It is pretty exciting to see, actually, getting folks in like that.

If I may, I could ask some of the other panel members to comment on your question.

Ms. TAUSCHER. Briefly.

Dr. ANASTASIO. Sure. I would——

Mr. D'AGOSTINO. Any takers?

Dr. ANASTASIO. Run down the line.

As an example, some of the new capability that—in place, like our new Road Runner computer that is the fastest computer in the world now, at Los Alamos, brings in talent because it is—it is the same capability that you need to use to do any kind of high-performance computing.

It enables us to do our global climate modeling and understand much better *La Niña, El Niño* kinds of weather, because of water patterns in the Pacific that we can now analyze with much more resolution.

At the same time, just this summer, we have over 1,000 students at Los Alamos. We average about 350 postdoctoral students per year at the laboratory as our pipeline, and it is still a very high-quality set of workforce.

So it is these other programs that we do that is the window of the—for the students to want to come to the laboratory and become part of all these other activities.

Dr. MILLER. Let me just step back a step. I think fundamentally—this is the comment that Tom Hunter made earlier. Fundamentally, people come to the laboratory to serve the Nation. They need to know that what they do is valued by the country. They also like the laboratory because we are given a set of scientific and technical challenges on behalf of the country that they find exciting. And it is a stable work environment.

All of those things have to do, in a very fundamental way, with the way Congress and the Administration look at the laboratory and make use of the talents of the laboratory.

And those underlying issues, or overarching issues if you care to think of them that way, are really as fundamental as the particular programs that we have.

Ms. TAUSCHER. Tom, did you want to say something?

Dr. HUNTER. Thank you, Madam Chair, if I may, just briefly. This is not a dilemma for these institutions only. This is a dilemma for the Nation.

And one important and, I think, essential way to look at these laboratories is we are not a small player now. We are a large player in where the Nation goes on its commitment to science and engineering.

And these institutions stand at the very forefront of that today. We have to make sure that continues to be the case in the future, and we promise them just two simple things: If they come to these institutions, they can work on the Nation's security, and they can also work at the forefront of their scientific fields. We must maintain that as we go forward.

Mr. TRIM. Madam Chair, from a plant perspective, I think attracting talent is highly dependent on the impression these graduates have on the commitment to the complex, the recapitalization of the complex. And pivotal is the reframing of the mission to encompass a national security mindset. And I think that really resonates with people who want to serve the Nation and be part of the mission.

Mr. MEYER. I would like to add that it is a challenge at—especially in Amarillo. We have got a geographic challenge that some of the other sites don't have, and you have been there, Madam Chair and others.

And it is a relatively modest site, so we recruit very heavily among university students and bring them on as interns and actually recruit them at that point and pay for them—their last year's tuition reimbursement.

Three or four years later, those people have clearances, they have good experience, and they are somewhat tired of the Amarillo social life, and so they are ready to move on to bigger and better things.

So we do have a retention problem that—and again, we—we are keeping up with it, but it is a continual battle, so—but we recognize that that is clearly our legacy. That is where we need to focus.

Mr. KOHLHORST. Just a quick comment. Y–12 has just kicked off an apprentice program. Fifty new apprentices, and we had 2,610 applicants. We have a manufacturing academy where we reach out to high schools, work with high schools; we have an exchange program with a community college.

So all of us at plants are looking at that critical—making sure we have the pipeline full, making sure we have folks ready to step in as we see our population moving far more toward——

Dr. YOUNGER. I will conclude by saying that the Nevada Test Site can help with Amarillo's social problems.

Ms. TAUSCHER. I was just going to recommend that. [Laughter.] Exchange programs. It is, what stays in Las Vegas obviously stays in Las Vegas.

Dr. YOUNGER. But seriously, as Dr. Miller said, it is all about mission. And people come to the Nevada Test Site because they be-

lieve they are doing something important for the Nation and they are doing technically excellent and interesting work.

So, so long as there is important mission to be done, I feel confident we will attract the best in the Nation.

Ms. TAUSCHER. Mr. Hayes, I assume you concur with all that.

Thank you, Mr. Spratt.

Mr. Everett.

Mr. EVERETT. Thank you, Ms. Chairman.

Very interesting conversation. I know that in many of the fields that we have advanced science and engineering that we have a lot of problems in finding people to go into those fields, young people.

And I was wondering a couple things. Number one, how many of those applicants that you have, or those working for you are foreign born, and what troubles does—what does that present embedding them? And also, in the overall picture, everybody included, are you having a lot of trouble getting clearances for them?

Mr. D'AGOSTINO. I will start off on that. On the federal side, we don't—we don't have, I think, the same types of a problem. We have been recruiting to make sure we get a diverse workforce coming in at that young age.

That is really important to us, because it is these different backgrounds that people bring to the table that allow us to look at problems in a different way, and ultimately solutions really arise out of that.

We do have a challenge on security clearances. That is ultimately a responsibility of the government to grant those, and it has had—does have an impact. It ends up being a cost impact. I think both the labs and plant directors here could probably give an anecdote to describe the type of impact that it has.

But my sense is that we have started trying to be smarter in how we hire to make sure that we do some pre-screening up front so we don't bring people in and then have them sit and do kind of unclassified work for a year while we try to get them a clearance, then find out that there was a problem in their background.

So a lot of it has to do—and we flushed out a lot that, particularly in this organization that is a federal organization called Office of Secure Transportation, where we have a number of federal agents—these are Government Federal agents that protect the material and the warheads as they move around the country.

So it has been a challenge. Money fixes it to a certain extent, but we don't want to throw money at something if we can fix it from an operational standpoint.

And it might be worth getting some input from the field on—with respect to the other parts of your question, sir.

Dr. MILLER. I think the fundamental problem is a—is a problem at the national level.

The country is failing to graduate the numbers of scientists and engineers, particularly in physical sciences, that it needs to sustain its level of economic competitiveness. There was an article in the paper just this week about that.

At the graduate level, in—you know, increasingly large fractions of Ph.D.s are foreign-nationals, not that they are not U.S. citizens. They are not U.S. citizens, not that they are foreign born. They are not U.S. citizens.

So far, we have been able to sustain our workforce. We have a program at Livermore called the Lawrence Fellows, which is a very prestigious postdoc program. A large fraction of the very best Ph.D.s that we see are foreign-nationals.

And so it is a—again, it is widely recognized as a fundamental problem of the country. We see the impact. It is manageable to date, but I think it is something that is of major consequence.

Dr. ANASTASIO. Madam Chair, if I could just add one other comment, please.

Ms. TAUSCHER. Surely.

Dr. ANASTASIO. That another concern I have with the future of science is if you look at the trends that we are already seeing that concern me for the future, if we look at NNSA, as we think of the budget—I think of it in three pieces—hands on, dealing with the stockpile, dealing with the infrastructure—we have talked a lot about today—and the science that underpins all the judgment we have to make about confidence in our deterrent.

As the stockpile ages and gets older, it takes more of our hands-on effort to take care of it and be confident about it.

We have talked about the investment we need to make to recapitalize the complex. If we have a relatively flat budget, as you have—this committee has indicated—if those two elements are growing and we have a flat budget, that means that the piece in the middle, the science, is going to get squeezed out.

And that is a big concern of mine, that the workforce understands that. They feel that in a very visceral way. And can we keep the workforce we have today and still recruit the very best for the future? I am very worried about that trend.

And as we are sorting through policy decisions on the direction, like the Commission you have in place, I really urge Congress to make sure that we do whatever we can to sustain that level of science we can in the interim so that we don't lose this quality workforce we have today.

Ms. TAUSCHER. Before we go to Mr. Hunter, Mr. Everett, if you would yield for a second——

Mr. EVERETT. Sure.

Ms. TAUSCHER [continuing]. Do you have a raw number of what the throughput of engineers, for example, or postdocs in physical sciences that—that the labs and the complex need in the next five years, say, what the throughput is, what number it is?

Because I think the Congress, and I think this subcommittee particularly would be very interested in working with our colleagues in other committees and certainly working with the Secretary of Education to understand exactly what it is we need to do to galvanize the forces necessary to begin to increase the number of Americans that are going through these classes and taking these courses.

Mr. D'AGOSTINO. Well, I can give you a—just in—but we will take that—because I think we want to give you a complete answer.

[The information referred to can be found in the Appendix on page 199.]

Mr. D'AGOSTINO. An anecdote, if you will. There is 2,500 federal employees in the NNSA. We have done surveys and we have checked it with our employees: Who is retirement-eligible? There is

a difference between retirement-eligible and actually retiring, as we all recognize. And as economic times change, that has an impact.

But retirement-eligible employees we have about 40 percent—40 percent to 43 percent of our workforce, depending on what discipline they are in, whether they are engineers or business, are going to be retirement-eligible. And a number of those have indicated that they will actually retire.

In fact, that is why we have started our Future Leaders Program, which will probably just hope to stem the tide, but it won't change the tide. That tide is going.

So doing quick math, it is anywhere from 800 to 1,000 people, out of 2,500. That is a pretty significant portion that we are worried about. The average age of the workforce is—you know, it is about 49 years old, roughly or so. And we are driving that down with the younger folks, but it is still a problem.

Ms. TAUSCHER. Mr. Hunter, I think I interrupted you.

Mr. Everett, you still have time.

Dr. HUNTER. Thank you, Madam Chair. And I will try to respond to both questions, if I could.

First, to the question of numbers, we can always estimate anything as scientists and engineers. But roughly speaking, roughly speaking for our institution, we look at our five-year plan. Scientists and engineers, roughly, it is about 300 per year. So you could argue maybe similar to Tom's number, 1,500 or so to 2,000 people over the next 5-year period would have expected to leave, and in—under a stable picture, which we see—if there is a stable picture, then it would be replacements.

Back to the question, though, of the general availability, you asked how many specifically were foreign-nationals. In our case, very few, just—in only very special cases of international science engagement or special fields outside the classified area—you would have a few employees.

We do allow them to be permanent employees under very special cases, but very few are actual employees that are not citizens.

The other issue that—adding on to what Dr. Miller said—was not only is the Nation not graduating enough science and engineers that are—that are—that are citizens, we do not have an adequate representation of both women and minorities in our physical sciences graduate programs.

And so we have to work very—we work very hard in all those fields to try to seek out and find the best talent, but the Nation needs to do more.

We have a lot of programs to do that. We are actively engaged on campuses all across the country. But it will be a challenge under any case, on the best of conditions, for any institution like these, who lead the country in the areas of physical sciences.

Mr. EVERETT. Thank you.

Michael, I think I detected a subtle—not-so-subtle plea for not a flat budget in your answer. [Laughter.]

For our two directors of Los Alamos and Livermore, how will those labs continue to exercise their peer review functions as Complex Transformation, consolidation of missions and functions takes place?

Dr. MILLER. I think this is a very important—very important issue, particularly since the country is committed to no further nuclear testing. The best the Government can get is the truly independent answers of—from Livermore and Los Alamos on any particular question.

So I think it is very—it is very important. It is something that Mike and I both spend a lot of time looking at. Through the annual assessment process, we do provide input to each other, so the people at Livermore provide input to Mike on the things that Mike is responsible for. He provides input to me on things that I am responsible for.

I personally believe that this process could be strengthened by requiring that each laboratory do a complete analysis of the entire stockpile every year so this process can be strengthened. I think it is vitally important that it be strengthened.

And the way we—again, the way we do the peer review is—is we work very hard at maintaining where it is important—independent capabilities in the computer simulations that we do, in many of the different kinds of experiments that we do to validate them.

So, we work very hard at making sure that we maintain that independence, because it is so critical to this.

Dr. ANASTASIO. Yeah, I would just say I agree with what he said. And actually, your comment to me—I think there is other ways to deal with the issue without increasing the budget, but it really relies on having a strategy—a policy strategy for the country.

Once we have that, I think we can work with the Congress and the Administration to come up with an approach to deal with the future that, you know, we can do with reasonable cost, but it really depends on what that policy direction looks like.

And my plea was until we have that, let's hang in there and not do anything too detrimental to the science until we get that sorted out.

Mr. EVERETT. Well, we would surely look forward to those savings that—that Director D'Agostino said that are forthcoming.

And for our two directors that I addressed the question to, I won't take any further time here, but I would really appreciate any more specific detail on how you will continue to do that—not the fact that you talk to each other and that sort of thing. But thank you very much.

Dr. ANASTASIO. We will be happy to get you something for the record.

[The information referred to can be found in the Appendix beginning on page 199.]

Ms. TAUSCHER. If I could engage the ranking member for a second, what I heard Director D'Agostino say was not necessarily more money but more predictability.

Mr. EVERETT. I think that is a fair assessment.

Ms. TAUSCHER. Thank you, Mr. Everett.

Mr. Franks of Arizona for five minutes.

Mr. FRANKS. I am not getting ahead of anyone here, am I, Madam Chair?

Ms. TAUSCHER. Well——

Mr. FRANKS. They have already asked questions?

Ms. TAUSCHER [continuing]. Mr. Larsen——

Mr. FRANKS. Okay. All right.

Thank you, Madam Chair.

I guess I just first want to suggest that there is not too many nuclear physicists up here on the panel, and there may be some things about tritium and uranium and plutonium that we still have to learn.

And those of you in the R&D field have done some amazing things, and I think that the fact that you are—have been able to certify our weapons here for this long, with the supercomputer capabilities and the modeling that you have done, is really nothing short of astonishing, in spite of some of the challenges that you have laid out here related to getting new recruits into the system.

And of course, Mr. D'Agostino, your efforts to consolidate work and realize efficiencies as we do this transformation to a new complex—I have got to tell you, those are pretty tall orders, so I have got two questions, because I know some of you will answer both of them.

How can we on this panel help you in your effort to maintain and gain the necessary personnel to do the amazing work that you do? I mean, this is a—you guys are the—I have said many times, you are the hidden, front line of freedom, because a lot of times people don't see what you do, but it is vital to all of us. So, how can we help you with that?

And secondarily, in terms of the efficiency—or inefficiencies, perhaps I should say, in the old complex that we are trying to transform here, what are the most glaring inefficiencies that you would postulate here, and how can we best facilitate or help you in the endeavor to correct some of those things?

Mr. D'AGOSTINO. Okay. I will start off, if I could, Mr. Franks, and open it up just a little bit.

That is a great question. In fact, I think the subcommittee has started down the path by helping drive to a national consensus—the stability that the lab directors had talked about is actually vitally important.

The workforce, whether it is federal or contractor workforce, does pay close attention. They want to know that the Nation values its work. They want to—and—because that is—that is their job. That is what motivates them. That is what drives them.

So being the Strategic Forces Subcommittee, of course, is essentially what we are really talking about here. You are in absolutely the right position to send the signal that—that there is a consensus on what the Nation should be doing in these areas, and that there is a sense of stability, because it does come down to being able to bring in the right kind of people.

We can have the best computers in the world, the best lasers in the world, the best experimental sites in the world, but ultimately in the end it comes down to getting those A-plus students in here to operate those facilities.

And that is all based on stability, because people make decisions that way, as you know, sir. And so the path forward that we have right now, the evaluation of the—both Secretaries have sent up a classified document describing our security policy and strategy.

We have got a—the bipartisan commission that is coming forward to take a look at strategic issues. Kind of the melding of those

two activities—and until we get a broader consensus that carries forward for both parties and spreads across, making sure that the support to the existing infrastructure, which we consider fragile at this point, is maintained.

And so I appreciate the committee's support in that area.

I would ask, are there any other comments? Okay. No?

Dr. HUNTER. If I could comment——

Ms. TAUSCHER. Sure.

Dr. HUNTER [continuing]. Just very briefly, I think there are a couple areas that you have already begun nicely, Congressman. That is, first, to recognize the important—help us recognize the important role that the people and institutions play in this—in national security, and then, wherever possible, encourage and enable an objective, fact-based national debate about what needs to happen in terms of policy, as this committee has done so well.

And then at every possible avenue, encourage the role that we might play in support of these broader national agenda themes, such as the competitiveness of our scientists and engineers and the role we must play in broader national security.

Mr. FRANKS. Madam Chair, if I might just follow up.

Then in terms of the greatest insufficient aspects or areas that you think our existing complex is falling short, and the areas that you hope to address in the transformation process here, what do you consider to be your most significant challenges?

And is there a time—this is not a very fair question, because I know your mission, essentially, is to provide a responsive infrastructure that will give the arsenal of freedom a safer, more secure and more reliable weapons.

That said, is there a time that we are approaching in the country to where, with the existing aging of the arsenal, that you feel like certification is going to be a significant problem? And what can we do to head that off in the days that we have now?

Mr. D'AGOSTINO. Okay. In the near term, I have got the list of typically half a dozen to a dozen items that I worry about all the time. And it kind of depends on which is number one at the particular time.

But they are basically—the list is fairly consistent, and I will give you a couple of the things that worry me the most right now—and that is a sustainable plutonium strategy. I don't think we—I know we are not on a path that provides sustainability.

We have a plan to de-inventory Lawrence Livermore, which I think makes sense in the long run from a cost standpoint. And so we are starting to move plutonium out of Livermore.

At the same time, I don't have consensus—I will say Congress broadly, if you will, I mean, from an appropriations process, that this replacement capability at Los Alamos will get built.

So at some point, either myself or the person that follows me in this job will have to decide, do we need to stop consolidating special nuclear material, because we don't—we can't get consensus to rebuild that plutonium capability at Los Alamos, and therefore I have got to go with my next best facility, and that is one in California.

But that goes against some other things about what is right for—from a safety and security standpoint. So plutonium infrastructure

is one that kind of bubbles—is always in my top five at any given point in time.

You are absolutely right on the continued aging of our stockpile. In an unclassified setting, I could—I can say that we—and the lab directors will comment on this specifically—but that, you know, things do age, and we do have problems that come up every year. And right now, we are able to address those, but there will—there may come a time that we don't know if we will be able to address all of our problems.

Right now, we can, and it is actually because of the support this committee has given over a number of years that has allowed us to bring in the tools and the people to make sure we can do that.

Mike or George?

Dr. MILLER. I would just step back to an earlier theme. My biggest concern is sustaining the investment in the science and technology infrastructure, because that underpins everything.

You know, the people at these three laboratories provide the ability to make decisions about plutonium, or uranium, or facilities, or the stockpile.

Now, that intellectual capability is the fundamental basis. Mike and I have both over the last 2 years lost over 2,000 people each.

Dr. ANASTASIO. Each.

Dr. MILLER. Each. A substantial number of those are people with critical skills that are relevant Under Secretary D'Agostino's mission. That infrastructure, as many infrastructures are, is fragile.

And so that is my biggest concern, is sustaining that infrastructure because it is the underpinning of the country's policy, whatever direction it chooses to go.

Dr. ANASTASIO. Could I just add to that, Madam Chairman?

Ms. TAUSCHER. Yes.

Dr. ANASTASIO. I agree with what George said completely that the premise of stockpile stewardship in the absence of nuclear testing to minimize our need ever to go back was to have a more fundamental science-based understanding to guide our insights and judgments.

And what I fear is the trend, is to move away from that at the same time—and this is the part I would like to add—is that if you look at the stockpile—and we had a classified discussion with this subcommittee some months ago, and I think you got to see some of the specifics.

But as time goes on, as these weapons systems age, as we go and act—take action to—to deal with those issues as they come, we are moving further and further away. We are making small changes that are accumulating.

Even if we do Life Extension Programs, as that progresses forward, I worry that the stockpile legacy—Cold War stockpile we continue to try to refresh will be harder and harder for us, will require more and more science to be able to have that confidence when you have systems that were designed to be low-margin.

And as our uncertainty about the changes we are making starts to grow over time and accumulates, I worry that we should be increasing the science focus in that kind of a world, and yet the trend feels as if we will be moving in the opposite direction.

And so it is the two things together, I think, that worry me the most.

Mr. FRANKS. Well, thank you all very much.

And thank you, Madam Chair.

Ms. TAUSCHER. I think Tom just wanted to say something quickly.

Dr. HUNTER. Yes, and I will be very brief. Thank you, Madam Chairman.

I don't know if there is a time that is predictably, but I know there is an indicator of the time when we have passed the point when it is due, and that is when we have leadership in the laboratories who do not have the intellectual and intuitive sense about what it takes to honestly assess and certify weapons. They do not have the incentive or the value-base to make factual, objective opinions.

Ms. TAUSCHER. I think Mr. Reyes has some questions.

Mr. REYES. Yes, just on a couple of issues.

The first one, just to follow up on Dr. Hunter's comment in terms of diversity and particularly, you know, in STEM fields—science, technology, engineering and math—which is a—has been a priority for Congress, I am one of the co-chairs of the Diversity Caucus that is working to facilitate programs and efforts to get more minorities into STEM.

And I know, having had the opportunity to visit all the labs, that you work with historically black colleges (HBCs) and Hispanic-serving institutions (HSIs). Are you doing—and this is for the directors—are you doing any more in—by way of outreach to the HBCs and HSIs to increase that?

And second, we are probably going to have some hearings—the Tri-Caucus Group, the Asian-American, the Hispanic Caucus and the Black Caucus together—on how we can work on this issue. And we may ask you to come and testify. So we will be in touch.

It probably won't be this year because of the election year and—but we have that on the radar scope.

The other question that I have is—deals with energy. And whether we are talking about nuclear, or getting better gas mileage, or whatever, are our labs doing anything in that area?

And if you would answer, I would appreciate that.

Dr. HUNTER. Thank you, Congressman. It is a very important question, but it gets back to this comment that all of us made earlier about the labs having this inherent science and engineering foundation that can contribute in other areas of national security, of which energy is a dominant one, I think.

Yes, we are actively engaged in energy. We anticipate more programs in that area. We are working everything from the details of the combustion process and how to make cars more efficient and better environmentally compatible, to making engines work better, to using sunlight to helping nuclear energy be safe and secure and more proliferation-resistant—a broad range of programs.

But these laboratories are uniquely positioned to contribute in many of those areas because of the skillbase that has been developed in nuclear weapons and applied to those other areas.

Dr. MILLER. Yeah, I think the answer to both of your questions is yes. We are continuously expanding our interactions with the historically black colleges and Hispanic colleges.

We bring faculty to the labs for summer—for summer research, and so we have a very broad set of problems—projects and outreaches to a wide segment of the university community.

And as Tom said, we have very, very broad programs in energy, again, using supercomputers to design more aerodynamically efficient trucks and cars, all the way to the use of the National Ignition Facility as a source of—as a source of energy, doing the research that would allow us to meet that promise, and essentially everything in between.

So we have a lot of—today they are small programs because the government's investment is typically small. They were very large in the 1970's when there was an energy crisis.

But the fundamental point is the one that Tom made, which is the underlying science and technology is ideally suited to take on these broader set of national issues.

Dr. ANASTASIO. If I could add to those things, and then I would—I think Steve Younger has some comments, as well.

On your first question about the diversity, yes, we are actively working with the historically black and Hispanic colleges. In northern New Mexico, we are also doing additional things, like our math and science academies as an example.

We are trying to get to the students when they are younger to try to encourage them to consider math and science and engineering as a field. And so for me, a key is to try to get the teachers in the middle schools and high schools who teach science and math.

We have them come—as an example, come to the lab and get engaged with our scientists and to try to get that passion and excitement about what modern science is like and help them come with modules that they can use in the classroom to teach students at whatever level they are teaching at. I think that is also a fruitful way—and again, in northern New Mexico we deal with a very diverse population and are trying to get them interested in these careers—a lot of scholarship programs, et cetera.

Back to the other question about our participation, I agree with my colleagues on that. I would just add another thought, which is that I think these laboratories are rather unique in the country in another way.

We have breadth and depth in science and engineering that is hard to find anywhere else. But we have one other thing—is we are institutions that span discovery, fundamental science, all the way through applied science to building demo products that can be transferred to industry.

That full spectrum of activity goes on at these institutions, and they are—now that we don't have a Bell Labs anymore and those kinds of places in industry, these are some of the few places left in the country that have that kind of capability.

And so when you are thinking of these ideas of energy or other related kinds of things, not only do we have that breadth and depth of talent, but we know how to take discovery science and translate it all the way into a real product that American industry could go use for the advantage of the American people.

Dr. YOUNGER. Congressman, I created and continue to chair the Diversity Council, Nevada Test Site. It is interesting that very early on, we focused on education as the dominant concern of diversity. And we have taken a comprehensive approach, starting with elementary schools, building science labs in local schools that never had them, particularly in impoverished areas.

We bring high school interns into the company to show them what it is like to have a technical job to interest them in going into a technical field.

When they get to college, we provide a large scholarship program to the local community and also to the children of our employees.

And we have also started an employee scholarship program focused on minorities that will help them get the education sometimes they haven't been able to get because of their economic circumstances.

We serve on advisory boards of black colleges and universities, and those with large Hispanic content. So we go everywhere, from kindergarten through graduate school, to encourage people to go into fields that are relevant to the national security—focus on.

Mr. REYES. Thank you.

Thank you, Madam Chair.

Ms. TAUSCHER. Tom.

Dr. HUNTER. Mr. Congressman, I didn't mean to not respond to your other question about—I think your question was about minority engagement. I thought we had closed that topic, but let me just say, you ask a very important question.

And my simple response would be that we are very aware of the situation nationally. We are very engaged in the national scene. We are doing a lot, but not enough, and we would be happy to support your efforts in a broader committee framework.

Mr. REYES. Thank you.

Ms. TAUSCHER. Under Secretary D'Agostino, thank you for your appearance today.

And, gentlemen, thank you very much for your appearance today. Please extend, on behalf of the committee, our thanks to the thousands of people—patriotic, hard-working Americans—that work in the complex, our very best thanks, and tell them to continue their hard work, please.

And behind you, many of you, are your staffs that have—that provide the committee and the members with constant support while you are back at your facilities. We want to thank them very much. We know that they had a lot to do with your appearances today and the great testimony we had.

We have a second panel that we are about to see, so thank you again very much, Under Secretary.

We are going to take a strategic pause to change out our folks, and if we could ask the second panel to come forward, please.

Thank you very, very much.

Mr. D'AGOSTINO. Thank you, Madam Chair. I really appreciate it. Thank you.

Ms. TAUSCHER. Our pleasure.

We are about to start our second panel. We thank the panel, the second panel, for their indulgence.

We had, as you know, a lot of people on the first panel. But we want to make sure that you understand how important we think you are, too. And we very much thank you for coming to testify before the committee.

I want to welcome our expert witnesses on the second panel. We have Mr. Gene Aloise, Director of Natural Resources and Environmental Division of the General Accountability Office (GAO).

My constituent and friend, Marylia Kelley, Executive Director of Tri-Valley CAREs.

And Ambassador Paul Robinson, President Emeritus of the Sandia Corporation.

As this panel demonstrates, the subcommittee is determined that our conversations about these critical national issues are inclusive and dynamic.

Mr. Aloise, the floor is yours. We have your prepared statement, so we welcome any summary of your remarks that you might have.

Mr. ALOISE. Thank you, Madam Chair.

Ms. TAUSCHER. The floor is yours.

STATEMENT OF GENE ALOISE, DIRECTOR, NATURAL RESOURCES AND ENVIRONMENT DIVISION, GOVERNMENT ACCOUNTABILITY OFFICE

Mr. ALOISE. Madam Chairman and members of the subcommittee, I am pleased to be here today to discuss the National Nuclear Security Administration's plans to transform the Nation's nuclear weapons complex.

Over the past decade, NNSA has invested billions of dollars sustaining the Cold War nuclear weapons stockpile and maintaining the aging and outdated facilities that make up the nuclear weapons production infrastructure.

Modernizing the complex to be more responsive to a smaller nuclear deterrent offers NNSA the potential to save billions of dollars by consolidating special nuclear material into fewer facilities and avoiding operations and maintenance (O&M) costs by vacating buildings that are well past their design life.

Transforming the complex, however, will be a daunting and expensive task. Existing facilities that maintain the current stockpile must remain operational during the transition to new facilities. NNSA must also take steps to minimize the potential safety, security and environmental impacts of relocating operations and constructing new infrastructure.

In the face of these challenges, we believe that there are four actions that are critical to successfully transforming the weapons complex.

First, DOD will need to establish clear, long-term requirements that define the types and quantities of nuclear weapons needed in the stockpile.

Second, after DOD establishes its requirements, NNSA will need to develop accurate estimates of the costs of transformation.

Third, NNSA will need to develop and implement a transformation plan with measurable milestones.

And fourth, NNSA's Office of Transformation must have the authority to enforce its decisions and be held accountable for them.

With regard to clear requirements for the stockpile, in our view, before any plans for a new weapons complex can be finalized, DOD and NNSA must determine the number and types of warheads that are needed.

While DOD and NNSA have considered a variety of scenarios for the future composition of the stockpile, including new warhead designs, a final decision on the size and composition of the future stockpile has not been made.

With regard to cost estimates for transformation, our work shows that NNSA had difficulty developing realistic, defensible cost estimates, especially for large, complicated projects.

For example, in March 2007 we reported that 8 of the 12 major construction projects DOE and NNSA were managing had experienced cost increases ranging from almost $80 million to $8 billion. These increases resulted largely from poor management and contractor oversight.

Regarding a transformation plan, we do not yet know whether NNSA will decide to rebuild the complex at its existing sites or to consolidate operations at new locations.

Regardless of its choice, however, NNSA will need to develop a plan with clear, specific and realistic milestones that it can use to evaluate progress and that the Congress can use to hold NNSA accountable.

Finally, we have found that a key practice for successfully transforming an organization is to ensure that top leadership sets the direction, pace and tone for the transformation.

Although NNSA has organized an Office of Transformation to oversee its efforts, it remains to be seen whether the office has sufficient authority to enforce its decisions.

In conclusion, Madam Chairman, regardless of the approach chosen to modernize the weapons complex, any attempt to change such an extremely complicated enterprise must be based on solid analysis, careful planning and effective leadership.

Tracking NNSA's progress in these four critical actions that we have identified provides a framework for the Congress to continue its vigilant oversight and to hold NNSA accountable for its efforts.

Madam Chairman and members of the subcommittee, this concludes my statement. I would be happy to respond to any questions you may have.

[The prepared statement of Mr. Aloise can be found in the Appendix on page 120.]

Ms. TAUSCHER. Thank you, Mr. Aloise.

Before I give the floor to Marylia Kelley, I would like to commend you for your leadership on the issues before us today.

Additionally, you have been a tireless advocate for the former Department of Energy workers who seek compensation from the Government for the illnesses they contracted in the course of their service to the Nation.

You are, frankly, a force of nature. And at home in Livermore, you are someone that I enjoy working with, and I really appreciate you being here. It has been a pleasure to work with you on the environmental and quality of life issues that you bring to the floor constantly on behalf of my constituents.

The floor is yours.

STATEMENT OF MARYLIA KELLEY, EXECUTIVE DIRECTOR, TRI-VALLEY CARES

Ms. KELLEY. Thank you, Madam Chairperson, and thank you to the subcommittee for inviting me here.

I am Marylia Kelley. As mentioned, I am executive director of the Livermore, California-based Tri-Valley CAREs and have been since the group was founded in 1983.

I ask that my written testimony be entered into the record.

Ms. TAUSCHER. Without objection, so ordered.

Ms. KELLEY. And I am going to attempt to summarize and excerpt here today.

My testimony will focus on three areas. First, the National Nuclear Security Administration's Preferred Alternative for Complex Transformation.

Second, a stockpile management alternative that will better assure the safety and reliability of the existing nuclear weapons stockpile at lower cost, reduced scientific risk and superior nonproliferation benefit.

And third, some specific alternative and recommendations for the future of nuclear materials and specific sites.

The NNSA has stated that Complex Transformation is the agency's "vision for a smaller, safer, more secure and less expensive nuclear weapons complex."

Beneath the rhetoric, Complex Transformation calls for a significant revitalization of the nuclear weapons complex. The plan's centerpieces include a new larger plutonium complex at the Los Alamos lab in New Mexico and a new Uranium Processing Facility at the Y–12 plant in Tennessee.

According to the draft 2008 Programmatic Environmental Impact Statement (PEIS), Complex Transformation is based—based—on the 2001 Nuclear Posture Review (NPR). Yet Congress has already mandated that the next Administration prepare a new posture review.

Thus, the NNSA's plan, when it is completed will be dead on arrival, based on yesterday's policy, not forward-looking vision.

The NNSA calls its Complex Transformation plan "more secure." But as I will discuss in the Livermore lab section that follows, this plan keeps thousands of pounds of plutonium and highly enriched uranium in a vulnerable, untenable situation at Livermore lab until 2012.

Then NNSA proposes to move the plutonium twice in service of Complex Transformation. This is not a plan that appropriately prioritizes the security of nuclear materials.

Finally, the NNSA insists that the plan will be less expensive. But as you heard in the previous round of questioning, they don't have a cost estimate. And in fact, the Programmatic Environmental Impact Statement does not contain a cost estimate. Independent cost estimates begin at about $150 billion and go up from there. The NNSA has said that the Reliable Replacement Warhead program, or RRW, "will be the enabler for stockpile and infrastructure transformation." Since Congress has prudently cut the RRW budget since then, the NNSA has begun submerging the role of RRW in Complex Transformation.

Make no mistake, however. The development of new and/or significantly modified nuclear weapons remains at the heart of the Complex Transformation approach, whether through RRW or a successor design program.

The plan end-runs both the Commission that this subcommittee was instrumental in enabling through the National Defense Authorization Act (NDAA) of 2008 and the aforementioned new Nuclear Posture Review coming up.

The NNSA has received between 115,000 and 120,000 public comments, spoken comments, comment letters on the draft Programmatic Environmental Impact Statement for Complex Transformation. This outpouring of comments represents a public referendum against the Preferred Alternative.

In sum, Complex Transformation is wrong policy, enabling new nuclear weapons programs that run counter to U.S. nonproliferation aims; wrong direction, building unneeded nuclear weapons facilities; wrong priorities, costing $150 billion or more, and failing to quickly secure the Nation's most vulnerable nuclear materials; and wrong timing, putting the cart of new bomb-building capabilities before the horse of new policy and posture reviews.

The public has roundly rejected this plan. Congress has cut funds for some of its aspects. And the NNSA tells me it will release the final PEIS and execute a record of decision this fall. That is also what you heard from Administrator D'Agostino.

In so doing, the NNSA willfully ignores an alternative approach to managing the nuclear weapons stockpile that is technically, politically, environmentally and fiscally superior to the agency's Preferred Alternative.

So let me say a few words about curatorship. Curatorship focuses—it is an alternative. It focuses on careful surveillance, analysis and refurbishment of the actual weapons in the arsenal rather than pushing the envelope on new research and development, as is the case with the present Stockpile Stewardship Program and, to an even greater extent, the proposed RRW path.

Under curatorship, only if NNSA's surveillance activities demonstrate compelling evidence that a component had degraded or would soon degrade, and further analysis indicated that such degradation would cause significant loss of safety or reliability, would NNSA replace that affected part.

The replacement would be remanufactured as closely as possible to the original design, so changes to weapons would be minimized using the curatorship approach.

One significant outcome of curatorship is that less uncertainty would be introduced into the stockpile over time than is the case with the present RRW program—I am sorry, the present Stockpile Stewardship Program or with RRW.

And you heard Los Alamos Lab Director Mike Anastasio say that he is worried that the incremental changes that are introduced into the weapons with stockpile stewardship over time may cause certification problems. Curatorship would minimize this by minimizing changes.

The curatorship will reduce the NNSA's environmental footprint and its operating costs. Under curatorship, NNSA would close numerous facilities that use high explosives, tritium and other haz-

ardous materials beyond what is in the Complex Transformation Preferred Alternative.

Curatorship would rein in costs. Right now, if you look at the annual budget, the NNSA spends about 50 percent of the Weapons Activities budget each year on R&D. Under curatorship, that would drop to about 20 percent.

The curatorship approach to managing the nuclear weapons stockpile builds on an impressive lineage that I want this subcommittee to understand.

It stands on basic concepts advocated by Norris Bradbury, who was the Los Alamos Lab Director from 1945 to 1970; Carson Mark, the former head of Los Alamos Lab's Theoretical Division; Richard Garwin, former nuclear weapons designer and current JASON and occasional testifier before this and other committees; Ray Kidder, senior staff scientist and former weapons designer at Livermore lab, and others.

In recent years, the curatorship approach has been further developed by Dr. Robert Civiak, who some of you know, because he was with the Office of Management and Budget (OMB) until 1999.

And it has also been evaluated recently by Livermore lab staff, including Dr. Roger Logan, who served as head of the lab's stockpile work until recently.

I would further ask that Tri-Valley CAREs' much more detailed 42-page comment on curatorship and Complex Transformation be entered into the record.

Ms. TAUSCHER. Without objection, so ordered.

[The information referred to can be found in the Appendix on page 156.]

Ms. KELLEY. Thank you.

I would like to quickly end with a sample of alternative approaches and recommendations for specific sites. And first, Livermore lab.

As Madam Chairwoman knows, but maybe the rest of you don't know, my community as well, the main site at Livermore sits on little more than one square mile, with homes and apartments, including my home, built right up to the fence line. Suburban neighborhoods lie only about 800 yards from the lab's Superblock and thousands of pounds of plutonium and highly enriched uranium.

Tri-Valley CAREs has long held concerns regarding the safety and security of nuclear materials at Livermore lab. This spring, the Department of Energy undertook a series of security drills at Livermore lab, including a force-on-force test, in which a tactical security team played the role of an attacking force in order to see how the lab's security would respond.

The mock terrorist team's objective was to get to the nuclear material and hold the ground long enough to construct an improvised nuclear device. A second scenario involved the would-be attackers stealing plutonium for use at a later date.

While NNSA has yet to respond to Tri-Valley CAREs' Freedom of Information Act request for unclassified records regarding that security drill, the information we have gathered from multiple sources so far is that the mock terrorists succeeded in both of objectives.

Remember, you have got 10,000 people on one square mile—that the Livermore lab workforce and subcontractors—1,000 or so people across the street at Sandia, and thousands of us in the community right up to the fence line. Imagine what that means.

Tri-Valley CAREs concludes that the plutonium and highly enriched uranium at Livermore lab is not secure, nor can it be made secure due to the compactness of the site, its 600 buildings that are cheek-to-jowl, and the close proximity of the densely populated neighborhood.

We oppose the NNSA proposal to leave these materials at Livermore lab through 2012, as outlined in the draft Complex Transformation PEIS.

Our colleagues at the Project on Government Oversight (POGO) have released a report that suggests they should get it out by—and can get it out by 2009. Our research shows early 2010 at the earliest in terms of safe packaging and removing that material.

In addition to removing special nuclear material from the lab, any forward-looking plan for the future of the complex would conclude that there is no need to maintain two full-service nuclear weapons design labs. It is entirely feasible to transition Livermore lab to new missions.

This is the path, in my organization's view and in my own, and based on the numerous conversations I have had with Livermore lab folks, this is the true path to jobs and job security, is diversifying and changing the mission.

Nonproliferation, research on global climate change, non-polluting renewable energy technologies and other science in the national interest would replace weapons R&D at Livermore.

Livermore would maintain a small weapons footprint with about a two dozen select staff supporting curatorship, about the same number, about two dozen, providing that peer review that was discussed in the first panel on certification and doing certification tasks.

The security costs would plummet. This is very necessary in making Livermore lab competitive in attracting research projects. My understanding is for every $100,000 FTE right now, it costs about $400,000 to $450,000. We need to reduce the security footprint in order to make Livermore lab a competitive place to do other science in the national interest. And I am convinced that that can be done.

Next, very quickly, Los Alamos lab—Tri-Valley CAREs opposes Complex Transformation's proposal to expand Plutonium Pit Production at Los Alamos lab from the current 20 pits per year to up to 80 plutonium bomb cores per year. And in this regard, we note that the proposed CMRR nuclear facility portion should not be built. If the Nation is doing curatorship for a declining arsenal, no additional capability is needed. So likewise, at Y–12, the Uranium Processing Facility should not be built.

I want to conclude——

Ms. TAUSCHER. You are really over time, so if you can conclude soon.

Ms. KELLEY. Okay. I will conclude with a couple of sentences from my paragraph on the Kansas City Plant.

Here, the NNSA is poised to privatize a key part of the nuclear weapons complex which will circumvent the ability of Congress to authorize—this committee's ability to authorize—and also Congress' ability to appropriate funds.

The plan is to build and operate a new Kansas City Plant under a leaseback arrangement. Alternatives were given short shrift. NNSA and the General Services Administration (GSA) have undertaken activities that appear to support a predetermined outcome, which is a violation of law.

It also appears that they have violated the OMB antideficiency guidelines, and we ask that Congress ask the GAO to investigate the lease arrangement and agency actions.

Thank you.

[The prepared statement of Ms. Kelley can be found in the Appendix on page 133.]

Ms. TAUSCHER. Thank you very much.

Ambassador Robinson, President Emeritus of the Sandia Laboratories, thank you so much for being with us again. You have appeared before the subcommittee many times. Your service to the American people is significant and very much appreciated.

Your statement has been submitted for the record, and we would appreciate your summation of your statement, since we are about to have votes in about 15 minutes and we want to be able to get to questions. Thank you very much.

STATEMENT OF AMBASSADOR C. PAUL ROBINSON, PRESIDENT EMERITUS OF SANDIA CORPORATION AND FORMER LABORATORIES DIRECTOR, SANDIA NATIONAL LABORATORIES

Ambassador ROBINSON. Madam Chairman, let me just highlight, then, a couple of issues. I think we are all three here in agreement on one point, and that is the 2001 Nuclear Posture Review does not provide good guidance to move ahead with the complex reconfiguration.

There are some fundamental flaws, I think, in what was done. A mixing of conventional forces and nuclear forces, which really don't mix well, was made and it sort of froze our planners in place, worrying about how do we do that.

Nuclear weapons and our deterrent force is something to prevent war, not to fight wars. And this confusion of a global strike needs to be reconsidered and get us back on the right course of preventing wars as the main reason for this complex.

The time since I have retired, I have served on a number of government panels, including more in the DOD. I am currently serving on the Nuclear Command Control Comprehensive Review. I served on the Nuclear Capability Study, which Johnny Foster and General Welch chaired. And we had a lot to say then about problems both in DOD and DOE, but more in their integration or lack thereof, that I believe is a very, very serious issue for us to draw this complex together. It has always been a problem. It has been good at times. Then it wanders apart. But we are in a particularly bad disconnect between the agencies at the moment.

I did want to say to this committee I was present, I believe, at the birth of the concept of RRW. And General Welch, who is the Chairman of the Strategic Advisory Group for the Commanders

Strategic Command, had challenged the lab directors at a meeting and said, "Look, we are in an interim state where we are all trying to see if we can develop stockpile stewardship so we would not have to test weapons, but there is no proof yet that that is going to work, and there is a safeguard on the table that says if we go into a future President and say, 'Mr. President, we have got a serious problem with the stockpile, we have had to take systems off alert, we believe we are going to have to test to fix whatever problems have been discovered,'" he said, "Well, every President in the future—have to exist that you might be coming in next week with such a conversation."

And the challenge he then gave was, "What could you be doing now that could lessen that likelihood?" And that really began the thinking process to give birth to what is the Reliable Replacement Warhead concept.

I was disappointed that there were discussions in the Congress saying, "Well, these people may be trying to do something to force nuclear testing." I assure you, it was quite the opposite motivation. It is what can we do to forestall the date.

And I believe the approach is a reasonable one—genetic diversity, so that nothing in one leg of the stockpile is likely to fail, that you would have to go in and request permission for a nuclear test. It is a very good strategy and one worthwhile for our Nation to be pursuing in these circumstances in which we are in today.

The question of the Preferred Alternative—I said in my testimony I have mixed reaction. They have done some good things. It is certainly much improved over the plan of the Complex 2030, but still, without specific guidance that only the Defense Department can prepare in detail, what stockpile is it we are going to work with?

And then, last place an emphasis on fixing problems that are going to arise in the stockpile, whatever we do, whether it is life extension, whether it is Reliable Replacement Warheads. These are the oldest components in our history of nuclear weapons, the very oldest today, and they are only going to continue to age.

So what can we do to prepare ourselves in the best position? Our deterrent does remain the best insurance policy for this Nation against a major war, and I am concerned we have got to preserve it for the future. Thank you very much, Madam Chairman.

[The prepared statement of Ambassador Robinson can be found in the Appendix on page 141.]

Ms. TAUSCHER. Thank you.

I am going to reserve my time, and Mr. Larsen, who has not had a chance to ask some questions—I will yield him five minutes.

Mr. LARSEN. Thank you, Madam Chair.

It is Aloise?

Mr. ALOISE. Aloise, yes.

Mr. LARSEN. Aloise. Mr. Aloise, your fourth point in the GAO study regarding successful transformation requires a strong Office of Transformation. Did you make a determination about whether NNSA needs an Office of Transformation at all in order to implement any of these changes?

Mr. ALOISE. Well, yeah, our thinking is we believe it does, but our recommendation was that it report directly to the Administrator. Right now, it reports to the Office of Defense.

Mr. LARSEN. Office of——

Mr. ALOISE. Defense Programs.

Mr. LARSEN. Okay.

Ms. TAUSCHER. DP.

Mr. LARSEN. DP.

Mr. ALOISE. And our thinking was it would have to have the authority and the support of the organization to be worthwhile, the authority to make decisions and the authority—and the responsibility to be accountable for those decisions.

Mr. LARSEN. The office itself?

Mr. ALOISE. Yes.

Mr. LARSEN. And it currently does not?

Mr. ALOISE. It remains to be seen.

Mr. LARSEN. Can you explain that?

Mr. ALOISE. Well, it doesn't report directly to the Administrator, so once it starts making decisions, we will have to take a look at that.

Mr. LARSEN. Okay. And it does seem a difficult thing so long as policymakers and us in Congress and the Administration, presumably the future Administration—we haven't set long-term requirements for the weapons stockpile.

And so I understand the debate we are having here about either going the wrong way, as Ms. Kelley has suggested, or getting it half right, perhaps, as Ambassador Robinson has suggested. Until we decide what we want for a stockpile, it makes it difficult.

Ms. Kelley, I didn't gather from your testimony, though, what specific comments you had with regards to the sprawling complex that we have now. You just said—well, I don't want to characterize it as all negative.

But it sounded to me like your views, and your group's views on where they are headed was all negative, but none of the issues you brought up had to do with the issue that—part of the issue we have is consolidating facilities so that we are not spending money on things we are not using or to be best—money can be better spent if we had things closer together.

Can you address that issue?

Ms. KELLEY. Certainly. One of the things I was trying to get across, and it was difficult with excerpting, is that if the Nation were to go to a strategy that was closer to curatorship, that you could have actually much more consolidation than you have with the Preferred Alternative under Complex Transformation.

The Preferred Alternative under Complex Transformation has significant numbers of new facilities, and I talked specifically about the——

Mr. LARSEN. Right.

Ms. KELLEY [continuing]. CMRR nuclear facility portion in particular and the Uranium Processing Facility.

So my group challenges the idea that you actually need to build these new facilities with all kinds of flexibility, which you heard in the first panel—too expensive, and if you are curating the existing

arsenal and you are going down in the arsenal numbers, they are not needed.

We certainly do not propose leaving the entire complex, as it now exists, in place. So there is a certain starting point agreement that we have with, say, Tom D'Agostino.

But in the name of consolidating, they are moving from eight NNSA sites to eight NNSA sites once this is fully implemented. You still have eight sites. You have plutonium at a couple less sites. You have new facilities. So we are suggesting it is not really the consolidation that the country needs. We need a much more——

Mr. LARSEN. Well, I guess I would also say, moving from eight sites to eight sites doesn't mean there hasn't been consolidation. It is probably not a fair assessment of consolidation.

If there are eight smaller sites, or five smaller sites within that eight, and—and the—and the facilities on those sites are smaller as well, it seems to be moving toward consolidation. I would be careful about comparing eight to eight.

Ms. KELLEY. And we think that—that you could get more consolidation if, for example, the Livermore mission could—could change——

Mr. LARSEN. Change outright.

Ms. KELLEY [continuing]. Could change outright, although we would retain that peer review. We would retain a curatorship force of a couple dozen specialists and also——

Mr. LARSEN. With the—I am sorry.

Ms. KELLEY [continuing]. A certification force.

Mr. LARSEN. With the short time I have left, Ambassador Robinson, can you give me some perspective that you have on consolidation and the curatorship idea?

Ambassador ROBINSON. Well, the program that was started in the early 1990's with the proposal to go under a test-ban moratorium——

Mr. LARSEN. Right.

Ambassador ROBINSON [continuing]. Science was at its core. It was science-based stockpile stewardship. There are a number of things that are empirical in nuclear weapons.

We do not have an adequate explanation to be able to depend upon large supercomputers and modeling codes. And everyone dedicated themselves to trying to develop that science understanding.

The curatorship approach would throw that out and say, "Well, we just won't worry about whether we understand it or not. We will just try the best we can do to not make any changes and hope for the best." I don't think that is the right approach.

I think that is not likely to lead to a suitable outcome and make it more likely that we would have doubts in our strategic deterrent force and more likely that we would be requesting the ability to test to prove out the force.

Mr. LARSEN. Just quickly, Mr. Aloise, in conclusion, have you looked at—were you responsible at all for looking at any of the alternatives that NNSA looked at as they prepared their—their impact statement?

Mr. ALOISE. No, sir, we didn't.

Mr. LARSEN. Okay. All right.

Thank you.

Ms. TAUSCHER. Thank you, Mr. Larsen.

Mr. Everett.

Mr. EVERETT. Thank you, Ms. Chairman.

Dr. Robinson, the military has a—in the world that we live in, in the foreseeable future, with almost every country we know getting involved in nuclear weapons, and with many of our allies such as Britain, France, others like China, the military continues to need a—have a requirement for a more responsive infrastructure with more reliable, safe and secure weapons, I believe.

Let me ask you, if we would like to do something about bringing down the stockpile even further—we have done a good job for the Moscow Treaty. And if we would like to get to the hedge weapon, would it not make sense that we—and I don't want to put words in your mouth. I am asking you the question.

Would it make sense for us to continue down the path of RRW that does—absolutely does not increase yield or anything like that, that guarantees a safe weapon?

Would the military—they don't want to give up those hedge weapons right now, and I can understand why. But if they had something like RRW, would this not be a way to further reduce the stockpile of hedge weapons?

Ambassador ROBINSON. I believe that was our intent from the first, yes, sir.

I should have probably added, I had the bitter experience when I headed the nuclear weapons program at Los Alamos early in my career—I had to make such a call to the commander of then Strategic Air Command to take a certain class of weapons off-alert and targeting because of a serious problem that had been uncovered. I remember every second of that day and relive it—would not like to relive it again.

We need some alternatives that we can have confidence that we are not betting our country on a system we can't be sure of. I believe having a variety of designs will instill confidence to make sure we aren't taking a full deterrent force off-alert.

I do have problems about the strategy besides the 2001 Nuclear Posture Review. The weapons we developed were for a different time and place. The yields of most of our weapons are so high today that we are self-deterred from even considering their use. And so some of the things you can do with a RRW program—and we have done it with the existing weapon force in the past with secondaries—is go to lower yields, more appropriate to deter some of the rogue states which are now becoming nuclear.

I think the Cold War stockpile is incredible to consider as a deterrent force for that. But we can do that without having to do nuclear tests. You can go lower in yield. You just can't go higher.

Mr. EVERETT. Finally, just a comment. I do worry about the rogue states. I also worry about the non-actor—non-actor states——

Ms. TAUSCHER. Non-state actors?

Mr. EVERETT [continuing]. Terrorists, especially when we get to a point where we get launch vehicles such as the ones SpaceX is working on that—for $7 million to $10 million, and which can reach low orbit with a nuclear weapon and destroy basically an

awful lot that this—the United States in particular depends on more than any other country, both—not our—not only our military but our economy also.

I do worry about that, as well as rogue states. And I will have some questions for the record.

Thank you.

Ms. TAUSCHER. Thank you, Mr. Everett.

Mr. Aloise, thank you for your great work. We really appreciate it. If one assumes a relatively flat budget line for the NNSA Weapons Activities, are the NNSA's Complex Transformation plans affordable and executable?

Mr. ALOISE. Well, if you look at the Preferred Alternative—we look at that basically as modernization in place.

Ms. TAUSCHER. Right.

Mr. ALOISE. And the first thing they are going to have to do is get their stockpile requirements. They are going to have to know—NNSA has to know what it needs to right-size to before it does anything.

While it is doing that, it has to maintain the current complex. And if there are cost increases and schedule delays in the Life Extension Program, like there has been in the past, that is going to affect funding in the future.

And there are red flags already with the CMRR and the UPF. Two years ago when I testified on this subject, it was—the CMRR estimate was $840 million. Today, it is $2 billion. We don't have any confidence in those estimates.

The UPF ranges from $1.4 billion to $3.5 billion. We don't have any confidence in those estimates. So, the NNSA has to come up with good, supportable, verifiable cost estimates based on a—stockpile numbers.

Ms. TAUSCHER. I appreciate that.

Ambassador Robinson, in your statement you state that the primary purpose for nuclear weapons must be for deterring conflicts, while the purpose of conventional forces is fighting. I agree with that.

If the mission of the nuclear weapons is limited to deterrence—and I agree with it—do you see opportunities to reduce the number of deployed weapons below the level specified by the Moscow Treaty? And do you have any idea what those constraints might be?

Ambassador ROBINSON. The Moscow Treaty only limits a particular class of weapons, and there was a new counting rule put into place that strategically deployed systems, or systems that are not on alert, and the full class of tactical nuclear weapons, which are very, very large——

Ms. TAUSCHER. Very large.

Ambassador ROBINSON [continuing]. In Russia, are not covered. I think we need to look at the whole counting scheme in your question, and we have not done that yet.

Ms. TAUSCHER. I agree with you.

Ms. Kelley, in your testimony you stated, "Under curatorship, only if the NNSA's surveillance activities demonstrated compelling evidence that a component had degraded or could soon degrade, and further analysis indicated that such degradation could cause a significant loss of safety or reliability would NNSA replace the af-

fected part. The replacement would be remanufactured as close to the original design as possible."

That sounds like the Life Extension Program to me. If you don't think it is the Life Extension Program, what do you think curatorship is, and why isn't it the Life Extension Program?

Ms. KELLEY. We believe that curatorship is the Life Extension Program as it should be, not as it presently is.

Ms. TAUSCHER. Tell me the difference.

Ms. KELLEY. Yes. And I want to start by showing—and I realize it is pretty difficult from here—a view graph. This is from the Sandia stockpile life study. The curatorship really depends, at its heart, on a really good program.

You said what do I like—a really good program that is headquartered at Sandia, Albuquerque, at Livermore, Los Alamos, and Pantex also participate in the DOE surveillance and evaluation program, or now NNSA surveillance and evaluation program.

And this is 30 years worth of actual experience with U.S. nuclear weapons in the stockpile. And it shows without a doubt that the most problems—and they are called "actionable defects"—that is the lingo—which are the ones that could impact safety or reliability, and so you do go out and fix them—that you get between 61 and 29 of them the first 3 years.

So, any time you make a significant change or put a new design in the arsenal, you have to fix a lot of things, because mostly these are design flaws or production flaws and not sort of aging flaws.

And then as the arsenal ages, you are talking about one to seven, one to nine per year. And you notice after 30 years, it is not a bathtub curve going back up—so that curatorship would really depend much more heavily than the Stockpile Stewardship Program does—it includes it but doesn't really depend on it heavily—the surveillance and evaluation program.

And it would do the actionable defects. It would——

Ms. TAUSCHER. I still don't understand.

Ms. KELLEY. Okay. So——

Ms. TAUSCHER. The only time a weapon is—is tinkered with, so to speak, is when there is something wrong with it.

Ms. KELLEY. And——

Ms. TAUSCHER. So if there is only—so you are effectively changing the name. You are saying your program is called curatorship. We are saying we have got that. It is called lifetime—Life Extension Program.

Ms. KELLEY. Okay. And——

Ms. TAUSCHER. But I don't understand what—it seems to me you are suggesting that life extension—I don't want to put words in your mouth, but it seems you are suggesting that life extension does more than what you are characterization curatorship does, and what I am telling you is your curatorship is life extension.

Ms. KELLEY. Administrator D'Agostino sort of briefly, in his answer in the first panel said that there are times when new parts are put into a warhead because we are taking advantage of advances in certain kinds of technologies.

Ms. TAUSCHER. What he said was——

Ms. KELLEY. And he——

Ms. TAUSCHER [continuing]. Because we don't make vacuum tubes anymore——

Ms. KELLEY. Yes.

Ms. TAUSCHER [continuing]. Because we don't, you know——

Ms. KELLEY. And under curatorship you would—you would sort of hew to the design—the original design more closely. For example, in the unclassified literature for the W76——

Ms. TAUSCHER. So you are suggesting that you would keep vacuum tubes in a weapon system.

Ms. KELLEY. Or you would do something that would—that would hew more closely to the original design, for example. In the unclassified literature——

Ms. TAUSCHER. So answer this question. Vacuum tubes—unavailable. What do you—and so you are going to take them out.

Ms. KELLEY. And so you are going to look at that and you are either going to do vacuum tubes or something more like it.

Ms. TAUSCHER. Can't get vacuum tubes.

Ms. KELLEY. In the W76, the unclassified literature suggests that they are changing the height of burst. So he said it doesn't—that they are not changing the yield, and that may be, but there are significant changes that are——

Ms. TAUSCHER. But that is not a performance criteria. That does not change the performance of the weapon. It is something that is an effect of having to put new machinery in because what is in there is obsolete, not available, not reliable, can't find it, you know, whatever.

Ms. KELLEY. And what I am trying to say is that in the name of doing that there are changes that do not need to be made to weapons systems as they go through the Life Extension Program.

Ms. TAUSCHER. But I think that that——

Ms. KELLEY. And that curatorship would——

Ms. TAUSCHER. But that is a mistake. To assert that there are things being done to these weapons that are not responsive to some obsolescence of a part, some degradation of a part, some question of its performance I think is wrong, because that is not what Life Extension Programs do.

And keeping in mind that the fences around life extension are pretty enormous—no change to the mission, no change to the platform, no change to the yield, no change to the constitution of the weapon—i.e., no change of performance.

So life extension can't be—cannot be asserted by anybody to be a program that enhances the performance of the weapon. That is not what it does. It enhances the reliability of the weapon.

Ms. KELLEY. I think that if—if you think that changing the height of burst of a weapon isn't changing its performance, that that is—you know, it is difficult to talk about these issues, but that is debatable.

Ms. TAUSCHER. Well, let me ask Dr. Robinson, hypothetically.

Ambassador ROBINSON. Height of burst is something the military controls, and it is completely within their control at all times and always was. So, it is not an inherent part of the weapon. And we haven't changed the height of burst spectrum. It was all available. It is still available today.

As I listen to this conversation, one of the things that I think could help enrich it is the fact that a modern U.S. weapon, nuclear weapon, has about the same number of parts as a new Toyota, about 3,800—3,800 parts. I can't give you the exact number here, but it is something under 50 parts are with the nuclear system itself, the so-called physics package, and the rest are all Sandia responsibilities for the maintenance, the non-nuclear package, the arming, fusing, firing and an enormous——

Ms. TAUSCHER. Radar.

Ambassador ROBINSON [continuing]. Plethora of safety devices to make sure they never go off in an accident.

We do test all of those other parts than the nuclear parts, and that is why most of the actions are taken, is when we see a problem we do, indeed, fix it. And that is the bulk of the work that goes on in life extension.

Ms. TAUSCHER. But life extension inherently is not performance enhancement.

Ambassador ROBINSON. Correct.

Ms. TAUSCHER. It is reliability assurance.

Ambassador ROBINSON. And safety assurance, yes.

Ms. TAUSCHER. Right. Okay.

And that is, I think—I think that is an issue where we should—we should try to find congruence. You know, I think that what you are proposing as curatorship is life extension.

And I think that if we could agree on that, then there are lots of other things where we could work, certainly on removing plutonium and things, where this subcommittee has worked significantly to accelerate, to add money, to make demands and move the plutonium, for example, out of Livermore.

We could work significantly on that. But I don't think it is productive for us to take life extension, which is the most enormously successful program that we have had to maintain the deterrence of our nuclear weapons, which is still part of the military requirement of this country, as of now and probably into the not-too-distant future, and—and quibble around the edges of it, when I think that there is a lot of work that really needs your energy and your attention.

Ms. KELLEY. Well, part of the difference in the two approaches is the—is that the science-based stockpile stewardship approach places such a premium on pushing the envelope of nuclear weapons science, and curatorship—I mean, we actually said, "Well, what does the weapon need?" We understand what the weapons scientists want. What does the weapon need?

And it is a program that tries to look at that issue, and so that you get a program that is based more on the test data, more on modeling that has to do with conformance to the test data. It is much more focused on the weapons themselves.

And that distinction, when you play it out in terms of—of what kind of new facilities or modernized facilities has an impact. So we are not trying to come up with a program that has a different moniker for the same thing.

We are really trying to look more narrowly at what the weapon needs to maintain the existing safety and reliability, to maintain it as close as possible to the warhead that was fully tested in Ne-

vada as a method for ensuring that we don't return to nuclear testing, so you don't lock the weapons away and also lock the codes away, and potentially get into a situation some years down the road where they are a bit bollixed up.

Ms. TAUSCHER. Well, I would join with my comments—with the comments of my esteemed and distinguished ranking member that he was teasing out of Ambassador Robinson. I think that you have to take this to its natural conclusion.

When we have this military requirement, when we have the moratorium, which I certainly support—I would be supportive of the Comprehensive Test Ban Treaty (CTBT) being ratified.

Ms. KELLEY. Right.

Ms. TAUSCHER. Probably not going to happen any time soon.

But while we have these weapons, and while we are taking them down—and I think we are doing a lot of good work in dismantling them. We have issues about tactical and what are we going to do with the Moscow Treaty.

While we have this military requirement, and we have this deterrent strategy, which I support, you have to have weapons that the military is going to believe are going to do their mission.

If you are not going to have a science-based program that extends their life while at the same time not enhancing performance, but does what we believe stockpile stewardship does, what concerns me is that what you are proposing looks more like a hospice program than it does keeping their life going.

And what worries me is that you are going to find that you are going to have a military that stands up and says, "You better test." And that is not where we want to go.

Ms. KELLEY. And I am worried——

Ms. TAUSCHER. So there is a sweet spot—there is a sweet spot here that—that I think we are trying to find, and once again, I encourage your work. I encourage you to consider, you know, pushing the envelope.

But I think that—I am not sure it is productive, as some of the other things that you have done, to quibble about curatorship versus life extension, when life extension is the gold standard.

Right now, we are concerned about in the next generation that we are going to be able to maintain without testing, but it has worked for a very long time. It is, I think, where most people want to be until we make a decision we don't need weapons.

We are not going to unilaterally disarm in a multilateral world where weapons are proliferating, but I think—I think that this is, once again, a very important conversation.

We have got votes. I apologize that we are going to have to close the hearing. Thank you so much for coming. Thank you very much for your service. Thank you very much for your testimony.

Ms. KELLEY. Thank you. I am honored that you invited me, and thank you very much.

Ms. TAUSCHER. Of course. Of course. Thank you.

The hearing is adjourned.

[Whereupon, at 12:55 p.m., the subcommittee was adjourned.]

A P P E N D I X

JULY 17, 2008

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

JULY 17, 2008

Statement of Thomas P. D'Agostino

Under Secretary for Nuclear Security and Administrator

National Nuclear Security Administration

U.S. Department of Energy

On
Complex Transformation

Before the
House Committee on Armed Services
Subcommittee on Strategic Forces

JULY 17, 2008

Thank you for the opportunity to discuss U.S. nuclear weapons policies and programs. My remarks focus on our efforts to transform the nuclear weapons complex into a 21st century national security enterprise. I will highlight our efforts to assure the safety, security and reliability of the U.S. nuclear weapons stockpile while at the same time transforming the stockpile and the current "Complex" that supports it.

Before I begin, I want to remind you of the tremendous progress made over the past few years in reducing the size of our nuclear weapons stockpile. As you recall, in 2002, President Bush and President Putin signed the Moscow Treaty, which will reduce the number of our operationally deployed strategic nuclear warheads to 1,700 to 2,200 by 2012. In 2004, the President issued a directive to cut the entire U.S. nuclear stockpile—both deployed and reserve warheads—in half by 2012. But this goal was later accelerated and achieved 5 years ahead of schedule in 2007. As of the end of 2007, the total stockpile was almost 50 percent below what it was in 2001, when the President took office.

On December 18, 2007, the White House announced the President's decision to reduce the nuclear weapons stockpile by another fifteen percent by 2012. This means the U.S. nuclear stockpile will be less than one-quarter its size at the end of the Cold War—the smallest stockpile in more than 50 years.

In the eighth year of this Administration, with the support of Congress, NNSA has achieved a level of stability that is required for accomplishing our long-term missions. Our fundamental national security missions for the United States--in addition to assuring the safety, security and reliability of the U.S. nuclear weapons stockpile while at the same time transforming the stockpile and the nuclear weapons complex that supports it--also includes reducing the threats posed by nuclear proliferation, and providing safe and reliable nuclear reactor propulsion systems for the U.S. Navy.

Some individuals have questioned whether this Administration has articulated an underlying strategy for our strategic posture. In July 2007, the Secretary of Energy joined the Secretaries of Defense and State in sending to Congress the Bush Administration's nuclear weapons strategy entitled "National Security and Nuclear Weapons: Maintaining Deterrence in the 21st Century." This document not only describes the history of nuclear deterrence during the Cold War, but also reinforces how deterrence applies to present and future security threats, and what a nuclear stockpile of the 21st Century will need to look like in order to meet those threats.

As a follow-up, Secretaries Bodman and Gates provided Congress a far more detailed classified white paper in March 2008 entitled "National Security and Nuclear Weapons in the 21st Century." This document describes what type of deterrent strategy is needed in the 21st century; articulates the size and nature of a stockpile to correspond to that strategy given certain scenarios and potential technological improvements; and articulates the type of infrastructure needed to support this type of stockpile into the future. It is interesting to note, that while some claim we should not pursue an effort to modernize our nuclear enterprise, we are the only declared nuclear state that is in fact not currently modernizing its essential infrastructure or stockpile. We look forwarded to providing an unclassified redacted version in the very near future that will allow broader public discussion of these important issues.

In addition, over the past three years we have been on a very public course of analyzing, describing, and performing environmental studies associated with the type of infrastructure we believe we will need for the future, an effort integral to the future ability to sustain our deterrent called Complex Transformation. Just this year alone, we have conducted 20 public meetings on the Complex Transformation Supplemental Programmatic Environmental Impact Statement, and more than doubled the amount of time required by law to allow for public input into our plans. My intention is to make a decision this year on this three year effort, in order to move forward and ensure we are to continue on a viable path to support the nation's strategic deterrent.

Where we are Today

Before I describe our Complex Transformation vision, I want to review where we are today. Nuclear weapons remain the backbone of United States national security policy, providing the ultimate guarantor of our national defense. I am very proud of the accomplishments by people in the Complex who over the preceding decades enabled us to fulfill our vital stockpile mission. With the end of the Cold War and the dawn of the 21st Century, our national security investments in support of strategic deterrence must now advance to address an unpredictable international environment, persistent proliferation dangers, and emerging nuclear capabilities that could threaten vital American interests and international peace and security. In addition, our employees must have access to a responsive nuclear weapons complex that, in partnership with the Department of Defense (DoD), will ensure we have capabilities to address these future challenges.

The United States will continue to require nuclear forces for the foreseeable future, and the NNSA fundamental mission responsibility to *provide safe, secure, and reliable nuclear warheads in support of the nation's deterrent* remains and guides our future actions. To accomplish our mission, we must retain and exercise fundamental capabilities to design and certify nuclear warheads at world-class facilities that apply leading-edge computing, simulation, and other science-based competencies to unique challenges; to manufacture one-of-a-kind weapon parts, such as plutonium and uranium components, in responsive and less-costly production plants; and to safely and securely assemble, disassemble, and transport warheads as needed to support our surveillance, life-extension, and dismantlement objectives. We need to accelerate the fundamental transformation of our Complex over the next 10 years to sustain these capabilities and to assure a safe, secure and reliable nuclear deterrent -- one that does not require underground nuclear testing; that resolves current stockpile and production challenges; and preserves our deterrent with fewer weapons.

Regarding the timing of current actions, we are not embarking upon a new strategy in the final days of an Administration. Even though many talk about Complex Transformation as a new initiative, transformation of the Complex has been underway for some time. Past transformational activities include closing the Pinellas, Florida plant and consolidating non-nuclear operations at our Kansas City Plant; closing our pit production facility at Rocky Flats, Colorado; closing operations at Mound, Ohio; and ending special nuclear material production at Hanford, WA, Oak Ridge, TN, and Savannah River, SC. Also in the 1990s, we initiated development of major new research and development (R&D) facilities, such as the National Ignition Facility, required to support our Stockpile Stewardship Program without the historical tool of underground testing. These earlier actions significantly changed the face of our nuclear weapons complex. Today's nuclear weapons enterprise consists of eight geographically separated sites that comprise the R&D and production capabilities of the complex. Our production plants were reduced in number during the 1990s but many of the remaining facilities are old, too large, and very expensive to maintain. We propose to continue this transformation to better serve the American people in the post-Cold War and post-September 11th world. By all accounts transformation is an evolution. We are continuing to consolidate non-nuclear component manufacturing through our Kansas City Responsive Infrastructure Manufacturing and Sourcing initiative that, over the next 5 years, will reduce the costs, square footage, and number of personnel required for this essential function. Our new Tritium Extraction Facility at the Savannah River Site is operational and providing us with replacement tritium supplies for the first time in nearly twenty years. Soon, the Highly-Enriched Uranium Materials Facility under construction at our Y-12 Site in Oak Ridge will consolidate uranium storage while simultaneously improving security and lowering storage costs. These are just a few examples of the continuing transformation of the physical face of the Complex.

While addressing physical infrastructure needs, Complex Transformation also addresses our most important resources--our people. We are able to accomplish great tasks, solve complex problems, and improve on our national security capabilities because we have scientific and technical talent beyond comparison. The people at our national

laboratories and production plants are truly world leaders in the science and technology that sustain our nuclear deterrent that helps keep America safe from hostile threats. Enabled by our core weapons-related programs, these same individuals throughout the Complex are able to also harness their skills in other areas of national security importance, such as nonproliferation research and development, nuclear forensics, threat reduction technology, and analytical nuclear counterterrorism support to the intelligence community.

The recent dislocations and involuntary separations that have impacted the weapons complex have affected employee morale and the retention of younger staff members. This past December when I announced the release of the Complex Transformation Supplemental Programmatic Environmental Impact Statement, I took careful note to highlight that scientific and engineering expertise are essential for the 21st Century mission of our deterrent and nonproliferation missions. As resources and attention focus on production capability issues, we must be vigilant to ensure the robustness of our scientific, technical and engineering expertise and facilities. To further demonstrate our commitment, last month, the Secretary of Energy signed a "Lab Vision" paper[1] setting forth the strategic mission of NNSA's three laboratories and the test site to enable NNSA to respond to the evolving 21st Century global security threats, and bring our science, technology and engineering enterprise to bear on solving significant national security challenges. This document will allow me to further engage my interagency counterparts on national security diversification at our sites which will capitalize on the skills of our workforce into the future.

The Good News

Today, our national security laboratories and production plants ensure that American nuclear weapons are safe, secure and reliable. The Stockpile Stewardship Program that allows us to maintain a nuclear weapons stockpile continues to evolve and improve with experience we have gained over the past decade. To date, problems identified in the stockpile are being resolved by Stockpile Stewardship Program scientific tools without underground testing, and existing fixes have been incorporated into planned warhead Life Extension Programs (LEPs).

A tactical risk we took in the 1990s was transferring our plutonium production capability from the Rocky Flats Plant to the Los Alamos National Laboratory. After ten years of effort, we reconstituted a limited W88 pit manufacturing capability at Los Alamos and have successfully delivered newly-manufactured plutonium pits to the stockpile. This recent success has shown us the major challenges of rebuilding a capability after it has been lost.

We are also having great success in our nonproliferation commitments to reduce the size of the stockpile, as we exceeded our dismantlement goal for 2007 by nearly 150 percent. Combined with the reduction of the overall stockpile, this sends the right message to the rest of the world that the United States continues to lead in its commitment to Article VI of the Nuclear Non-Proliferation Treaty.

[1] The "Lab Vision" paper is provided.

Complex at a Crossroads

Today the Complex is at a crossroads. Although there may be debate on the size and role of our nuclear deterrent, one fact is clear—as long as other countries possess nuclear weapons the United States must maintain a reliable nuclear deterrent. Maintaining a viable deterrent means retaining an essential set of capabilities in the nuclear weapons complex to support the stockpile. While we are meeting safety, security, and basic DoD requirements today, the present Complex is too inefficient, too old, and too costly to sustain. Special nuclear materials (SNM) are present at more sites than we believe necessary. After September 11th, security has been enhanced and SNM is becoming more and more expensive to secure. Some facilities sized to support a large Cold War-era stockpile are no longer necessary or affordable. Without transformation, ever-increasing funds will be required to secure a greater perimeter than needed, maintain more square footage than is efficient, and sustain out-dated facilities well beyond their economic lifetime.

Our challenge is to *move from a nuclear complex designed for the Cold War to a 21st century national security enterprise that is at the forefront of science and technology and responsive to future national security requirements.* Several of the specific challenges we face are:

- Our uranium facilities date back to the Manhattan Project of the 1940s. Securing these facilities against terrorist threats is increasingly difficult and costly. Future warheads, whether refurbished through life-extension programs or through warhead replacement, will require a uranium component production or recycling capability. Our Y-12 uranium facilities in Oak Ridge, TN, are where our increased dismantlement work is also completed on warhead secondaries. Given the long lead times necessary to design and construct new facilities, decisions concerning uranium facilities must be made soon. In addition, the sooner that these existing, antiquated facilities are replaced, the sooner we will be able to reap the full security and cost benefits of consolidating of uranium activities into a smaller security and facility footprint.

- Restoring a limited production capability for W88 pits took ten years. Our pit manufacturing capability relies on Los Alamos nuclear facilities that were originally built to support R&D activities. The newest plutonium facility is thirty years old and one Los Alamos research building (Chemistry and Metallurgy Research) dates from the early 1950s and has served well beyond its economic lifetime. During the height of the Cold War the now-closed Rocky Flats pit manufacturing facility produced thousands of pits a year. Last year, an interim capability at Los Alamos produced 11 certifiable pits for the W88 warhead; this year 6 pits are slated to be produced. Sustaining this capability is both complex and technologically challenging. Furthermore, this cannot be done anywhere outside of the NNSA nuclear weapons complex. America needs a sustained level of pit production and plutonium capability for several reasons, listed below.

- First, maintaining the deterrent requires a capability to conduct advanced plutonium research and manufacture plutonium pits. This is a core competency that must be retained. Independent of the number of pits needed in the future, we need the Chemistry and Metallurgy Research Replacement – Nuclear Facility to maintain our plutonium capabilities at Los Alamos as we remove Category I/II quantities of plutonium from Lawrence Livermore National Laboratory's "Superblock," close the existing Chemistry and Metallurgy Research (CMR) facility, and consolidate weapons-related operations into one plutonium site. Moreover, if a major problem develops in the stockpile related to pits, we currently have an insufficient capacity to make replacement pits. During the Cold War, five major sites, now closed and dismantled, conducted plutonium research and manufacturing. Today, our plutonium research and pit manufacturing is consolidated at one site –Los Alamos—and we must ensure the safety and viability of that site.

- Second, maintaining a responsive infrastructure means maintaining the skills of the people who understand plutonium and plutonium manufacturing and analysis. In the end, we are best served by exercising the capability to conduct advanced plutonium research and to manufacture plutonium pits in facilities designed to meet 21st Century security, safety and health requirements.

- Our stockpile is aging, with some warheads designed and constructed over 40 years ago. We have increasing concerns about our ability in the long-term to certify the safety and reliability of these warheads without nuclear testing. That is the impetus for our consideration of a Reliable Replacement Warhead (RRW) approach which could introduce significant safety and security enhancements and allow the best opportunity for a smaller stockpile. Alternatively, and absent congressional support for RRW, we will rely on a life-extension approach of the legacy stockpile for an extended period. Neither approach would introduce new military capabilities to the stockpile, although an LEP approach because of the already beyond design life of our current stockpile, could prove too costly and may ultimately not be viable should we require our deterrent throughout this century. Some of the technologies and capabilities in our Complex, required for either the LEPs or RRWs, have atrophied or will atrophy and may have to be completely reconstituted if we do not take action now. We must ensure that we sustain essential nuclear capabilities.

- Security, both physical and cyber, will continue to require substantial resources. The current Complex, including some Manhattan Project facilities, is not optimized to provide both a robust and cost-effective security posture.

- Similarly, assuring nuclear safety of our Complex will become increasingly challenging and more costly until we improve our risk management practices and replace aging facilities with new ones built to modern standards with more

engineered safety features included. Thus, construction of new uranium and plutonium facilities is a key element of our long-term strategy to enhance nuclear safety and security at a sustainable cost.

In addition to the fundamental technical challenges of maintaining a nuclear deterrent, the costs simply to maintain the *current* infrastructure continue to rise; we cannot afford the status quo. We must transform the Complex to a smaller, more integrated and interdependent enterprise that accomplishes our existing and future national security missions at an affordable cost.

Transformation Vision

Our Complex Transformation vision for the future is a *smaller, safer, more secure and less expensive enterprise that leverages the scientific and technical capabilities of our workforce to meet all our national security requirements.*

Our future deterrent won't be based on the Cold War model of a large number of weapons. The Cold War model is not appropriate to address the 21st Century international security environment. We are reducing the size of our nuclear weapons stockpile. Instead, it will be based upon the *capability* and *flexibility* to respond to varying national security situations and produce those weapons if and when required. Complex Transformation is critical not only to accomplish our nuclear weapons mission in partnership with DoD, but also to better leverage our scientific and technical know-how needed to support other national security partners in the areas of non-proliferation, nuclear incident response, nuclear forensics, and support to the intelligence community.

Our approach to achieve Complex Transformation rests on four pillars:

- Transform the nuclear stockpile through the Stockpile Stewardship Program in partnership with the Department of Defense.
- Transform to a modernized, cost-effective nuclear weapons complex to support needed capabilities in our physical infrastructure.
- Create an integrated, interdependent enterprise that employs best business practices to maximize efficiency and minimize costs.
- Advance the science and technology base that is the cornerstone of our nuclear deterrence and remains essential for long-term national security.

Why Transform Now – Why Not Wait?

Complex Transformation must take place regardless of the size or composition of our future stockpile. Even with a smaller stockpile, maintaining required capabilities has a greater impact on the minimum size of our facilities than throughput capacity. Neither our workforce numbers nor facility square footage scale linearly with the size of the stockpile. In today's era of small stockpiles, the required square footage in a modern, well-designed facility to provide an essential capability frequently provides sufficient minimum capacity for our work. For example, the Uranium Processing Facility (UPF) is

being designed to function within various through-put ranges which are directly tied to any future stockpile projections. The UPF is being designed to fulfill the modest requirements of today. However, with minimal cost impact, it can be modified within the existing design floor space to accommodate additional national security requirements which may arise. This basic facility is instrumental in consolidating the current uranium missions for Naval Reactors fuel production, Defense Nuclear Nonproliferation's highly-enriched uranium blend-down, and work for others including medical isotope production. Thus, we are confident that many aspects of Complex Transformation can proceed while a more precise size and composition of our stockpile is defined in the coming years.

Complex Transformation must take place with or without RRW and the facilities we have proposed are required for either outcome. We will be hard pressed to meet our LEP commitments without successfully implementing Complex Transformation. If an RRW were authorized by the next Administration and Congress, its concepts could enhance the efficiency and responsiveness of the Complex compared to an LEP-only approach. The RRW concept increases intrinsic security in the weapons themselves, employs fewer exotic and hazardous (and more environmentally benign) materials, and could mean eventual lower lifecycle costs by eliminating some processes needed to support today's weapons, such as the need to machine and handle conventional high explosives. Additionally, if RRW meets the promise of allowing a smaller nuclear stockpile, additional savings could be achieved.

Physical Infrastructure and the Complex Transformation Supplemental Programmatic Environmental Impact Statement (SPEIS)

This period of change for the nuclear weapons complex began with the end of the Cold War and the initiation of the Stockpile Stewardship Program. The decisions related to the Stockpile Stewardship Program were announced in a 1996 record of decision that was based on analyses in the *Stockpile Stewardship and Management Programmatic Environmental Impact Statement (SSM-PEIS)* and other information. Since early 2002 when the Administration's Nuclear Posture Review was sent to Congress, NNSA has focused on establishing a responsive infrastructure to enable opportunities for stockpile reductions. A number of other reviews including Department of Defense assessments and Task Force reports in 2005 from both the Defense Science Board and Secretary of Energy Advisory Board subsequently identified shortcomings with the current Complex and emphasized a more urgent need to transform.

In 2006, NNSA proposed a planning scenario for the future Complex. Release of that planning scenario is part of NNSA's process of evaluating alternatives for transforming the Complex and identifying the environmental impacts, costs, risks and benefits of these alternatives. One of our primary objectives was to restructure facilities containing large quantities of Special Nuclear Material (SNM) that are costly to secure. Restructuring of major R&D facilities is also being evaluated in order to eliminate unnecessary redundancy across the Complex. To inform our decisions, we are preparing an environmental impact statement. Given that the current proposals would continue the transformation announced in the 1996 record of decision and analyzed in the SSM-PEIS, the current NEPA analysis is structured as a supplement to the SSM PEIS and is referred

to as the *Complex Transformation Supplemental Programmatic Environmental Impact Statement* or "SPEIS."[2]

I announced NNSA's intent to move forward on the SPEIS on December 18, 2007. The draft SPEIS evaluated alternatives for continuing transformation of the Complex. The document analyzed many different scenarios regarding how the Complex might be structured to best achieve our mission. It describes NNSA's "preferred alternative" for transforming the Complex that would rely on distributed centers of excellence focusing on core competencies, eliminating redundancies, and maximizing consolidation of SNM that requires high levels of security.

As set out in the preferred alternative, ***modern production "centers of excellence"*** for plutonium, uranium, tritium, and assembly/disassembly of weapons would be created to support the enduring stockpile. To preserve intellectual competition and robust, rigorous peer review, ***two independent design/certification "centers of excellence"*** would be maintained for nuclear weapons development and assessment. We would reduce the amount of space protected by high-security perimeters, the acreage of testing sites, and square footage of buildings in today's Complex. The facilities that provide our future warhead stewardship and production capabilities would be modern, agile, safe, and secure. The Complex of the future would have an integrated set of laboratories and manufacturing plants that apply leading-edge science and technology to maintain nuclear forces sufficient to deter future adversaries or to respond to foreign technological breakthroughs.

Over the next ten years, we would:

- Consolidate the SNM now at seven sites to five sites by 2012, with a significantly smaller high-security security perimeter footprint at those sites by 2018;
- Close or transfer from weapons activities funding about 600 buildings or structures, many by 2010;
- Reduce NNSA operational responsibilities and areas at two major testing sites supporting our laboratories by 2015;
- Reduce the square footage of facilities supporting weapons missions by more than 9 million square feet; and
- Reduce the workforce supported by weapons activities funding by 20-30% over the course of a decade or so. Our preference, with the support of Congress, is to achieve this workforce reduction through attrition, or by moving people from weapons work to other important and related national security work.

The Draft Complex Transformation SPEIS was published and posted online; and NNSA notified the public that it was available for review on January 11, 2008. A 90-day comment period was to close on April 10, 2008. However, in response to requests from

[2] A copy of the executive summary for the SPEIS is provided.

the Congress and the public, NNSA extended the comment period until April 30, 2008. More than 2000 people attended 20 public hearings across the United States. We received more than 600 oral comments during more than 80 hours of hearings, and more than 100,000 e-mail and written comments.

We are in the process of considering the comments we received and revising the SPEIS. We plan to release the final SPEIS this fall. NNSA would issue the first record of decision based on the final SPEIS no sooner than 30 days after the final SPEIS's Notice of Availability appears in the *Federal Register*.

Science and Technology Base

Maintaining the science and technology base provided by our national security laboratories and plants is essential. For more than a decade, a comprehensive science-based approach – the Stockpile Stewardship Program – has been the foundation for the continued viability of the stockpile. While focusing on this core weapons mission, our labs and plants have also provided many technological solutions to broader national security challenges. These solutions were derived from the capabilities developed as part of our weapons mission. The scientific capabilities resident in our highly-skilled workforce and infrastructure are a unique and very valuable resource for the nation.

Some have expressed concern that Complex Transformation may damage this essential science and technology base. There is a need for vigilance to prevent the unintended weakening of our scientific foundation. However, we believe that the greatest potential for long-term damage to our scientific capabilities arises from taking no action. Simply stated, the overhead costs of maintaining our existing infrastructure are just too large, and growing. Over time, this reduces the funds available for direct mission work including our science base. We must fund some near-term capital investments to solve this problem for the long-term. This requires a re-distribution of some funds within the Complex. Since the national security laboratories receive a majority share of NNSA weapons funding, this re-distribution must be done with great care to minimize impacts to science and technology activities.

Over the past two years, we have increased our science and engineering planning to ensure that we protect essential scientific capabilities during consolidation and change. As noted earlier, the Secretary of Energy, myself and the Directors of our National Laboratories recently announced a "Laboratory Vision for the Future" to address some of these concerns. I recently appointed a senior science advisor who reports directly to me. He is to focus on sustaining our science base. We are actively seeking strategic partnerships with other Department of Energy entities and federal agencies to better leverage and sustain critical competencies at our laboratories. While we share the concerns about adverse impacts to our science and technology base during Complex Transformation, we are aggressively taking action to avoid them.

With regards to the workforce restructuring which has occurred over the past year as a result of the FY08 appropriations, I feel it is important to emphasize to the Committee that I do not take these actions lightly and that we have applied great scrutiny and care to

ensure that we are taking these actions consistent with our future plans in terms of human capital and workforce expertise. It is important to remind ourselves that our Defense Programs activities are formulated based on national security requirements and meeting those deliverables to our partners in the Department of Defense.

Going Forward

The preferred alternative for Complex Transformation offers the lowest overall cost and risk. We propose to implement transformation within our FYNSP projections, assuming, of course, that savings from early transformation actions (e.g., supply chain management center, SNM consolidation, and non-nuclear production transformation) are available to be reinvested. Additionally, we would minimize the risk of production shortfalls for items that support the existing stockpile during the transition to a transformed complex.

We propose to pay for transformation through a combination of the following:

- Infrastructure savings through footprint reductions, replacement of buildings that are long past their economic lifetime, and updated cost-sharing models for work-for-others customers;
- Reduced overhead costs through contract reforms, improved risk management strategies, greater business practice uniformity, improvements in product assurance processes, and commodity purchase savings through a supply chain management center;
- Negotiations with DoD on alternative stockpile augmentation strategies;
- Reductions in staff supporting weapons activities through attrition and reassignment to other national security missions; and
- Optimization of federal staffing enabled by contract reform and improved line oversight of contractor assurance systems.

In short, Complex Transformation forces us to reform our current business practices and consolidate the nuclear weapons enterprise while we ensure that our most important resource – our people – are energized and challenged.

What if we don't transform?

What will happen if we do not transform and just maintain the status quo? The short answer is *we will reach the point where NNSA will be unable to maintain America's nuclear deterrent*. Every year the costs to maintain, operate and secure our physical infrastructure continue to rise. The JASONs, an independent group of scientists that advises the government, the Defense Nuclear Facilities Safety Board (DNSFB), the Defense Science Board and the Secretary of Energy Advisory Board have all issued reports or findings over the past several years highlighting the need for NNSA infrastructure improvements and modernization. Delay in beginning this phase of transformation will only increase the costs and risks of maintaining the nuclear deterrent.

We cannot continue to do 21st Century national security business with a 50-year-old Cold War infrastructure. The need for sustaining future plutonium and uranium capabilities are without question. One common thread among all these experts is the agreement that we will need these capabilities to maintain our nuclear deterrent. Take the 50-year-old Chemistry and Metallurgy Research (CMR) Facility at Los Alamos, for example. The DNSFB has clearly stated that the CMR has significant safety issues which cannot be addressed in the existing structure. Similar issues exist at Y-12 with regards to Building 9212 which currently houses many of our legacy uranium processing operations. The country can not afford to wait any longer.

Conclusion

As Administrator, I am responsible for sustaining our capabilities that support the Nation's commitment to maintain the lowest number of nuclear weapons consistent with U.S. national security requirements. In this role, I support adopting a flexible posture that allows "back up" to be provided by an infrastructure capable of confronting a threat rather than warheads held in reserve. A reduced stockpile and consolidated, efficient design and production capability, will be a more cost-effective means to maintain the U.S. nuclear deterrent. Since my first day as acting Deputy Administrator for Defense Programs, I have taken a long hard look at the nuclear weapons complex, and where we need to be. I am convinced that what I have outlined here is the best path. And I also feel that the need for change is urgent. We must act now to adapt for the future and stop pouring money into an old, Cold War weapons complex that is too big and too expensive.

This will not be easy, but the key to successfully meeting our mission and transforming the Complex is to ensure that we become a *smaller, safer, more secure, and less expensive enterprise that leverages the scientific and technical capabilities of our workforce to meet all our national security requirements.* We need buildings, methods and materials that are safer for our workers than those used during the Cold War.

Our dedicated workforce is the key to transformation and its success. They will be the agents of transformation and their insights, experience and proven dedication will be needed to carry it out. Their expertise constitutes a key element of our nation's national security.

Thank you, I'll be happy to take your questions.

STOCKPILE STEWARDSHIP AND COMPLEX TRANSFORMATION

Hearing of the House Committee on Armed Services
Subcommittee on Strategic Forces

July 17, 2008

Dr. George H. Miller, Director
Lawrence Livermore National Laboratory

Opening Remarks

Madam Chairman and Members of the Committee, thank you for the opportunity to provide my perspective on the continuing importance of the Stockpile Stewardship Program and the Preferred Alternative for transforming the nation's Nuclear Weapons Complex. I fully support transformation of the complex to make it more cost effective, smaller, safer, more secure, and responsive to stockpile requirements to meet 21st-century deterrence needs. I want to thank Congress and especially this Committee for your strong interest in the future of the nation's nuclear weapons enterprise, as evident from this hearing and your leadership in establishing the Congressional Commission on Strategic Posture of the United States. My testimony emphasizes three points:

- The Stockpile Stewardship Program is providing the basis for confidence that the nation's nuclear weapons stockpile remains safe, secure, and reliable without requiring nuclear tests. Sustaining the investments in stockpile stewardship is critical to both maintaining confidence in a likely increasingly smaller stockpile and providing the science and technology foundations that allow the Laboratory to confront the defining issues of the 21st century—the threats of proliferation and terrorism to global security and the needs for abundant energy and environmental quality, improved human health, and U.S. industrial competitiveness.
- The Preferred Alternative provides a vision for transforming the complex by consolidating missions and capabilities at existing sites. It is an ambitious undertaking, developed with recognition of the challenge of balancing investments between human capital and new facilities. Livermore is working toward the success of the Preferred Alternative and the specific goals identified for our Laboratory.
- The path forward for the Preferred Alternative will greatly benefit from timely agreement by the Administration and Congress on essential elements of a nuclear weapons policy, deployment strategy, and stockpile requirements. Actions required by the FY 2008 Consolidated Appropriations Act and the FY 2008 National Defense Authorization Act will help this process. With such agreement, NNSA can build on the Preferred Alternative to refine planned investments in manufacturing, maintaining, and dismantling nuclear weapons while sustaining the underlying intellectual and human capital.

Budget Realities and NNSA's "Preferred Alternative"

The future of NNSA's nuclear weapons program and Nuclear Weapons Complex builds on the successes of the Stockpile Stewardship Program. The program provides the basis for confidence that the nation's nuclear weapons stockpile remains safe, secure, and reliable in the absence of further nuclear testing. It has been successful to date because of

the continuing investment the nation is making in people and the tools needed to understand the underlying science and engineering issues central to nuclear weapons performance. This understanding is required to recognize issues as they arise in an aging nuclear weapons stockpile, decide how to deal with them, assess and certify without nuclear tests the performance of weapons after necessary modifications, and provide national leaders confidence in the assessment/certification processes and the weapons. This investment is critical regardless of the details of the path forward.

Continuing investments in stockpile stewardship are bringing on line vastly improved experimental and computational capabilities—tools that NNSA scientists and engineers are using to resolve arising issues about the stockpile, which will grow more challenging as weapons continue to age. Confidence in the stockpile relies on these scientists and engineers and their judgments. Failure to sustain these activities would over time erode nuclear weapons expertise and lower confidence in the stockpile.

The draft *Supplemental Programmatic Environmental Impact Statement* (SPEIS), issued in January 2008, describes NNSA's vision for transforming the Nuclear Weapons Complex to become more cost effective, smaller, safer, more secure, and responsive to stockpile requirements to meet 21st-century deterrence needs.

The transformation aims to consolidate special nuclear materials to five sites by the end of 2012 and significantly reduce square footage and the workforce directly supporting the weapons program over the next decade. Duplicate facilities will be largely eliminated and more efficient and uniform business practices will be implemented across the complex. NNSA also aims to reestablish a plutonium-parts production capability and accelerate the dismantlement of retired weapons. The ambitious plan faces a variety of programmatic and technical challenges. Livermore is working toward the success of the Preferred Alternative and the specific goals identified for our Laboratory. In the Preferred Alternative, which features distributed centers of excellence with consolidation of missions and capabilities, Livermore shoulders key responsibilities. These include:

Center of Excellence for Nuclear Design and Engineering. Preserving the essential and highly successful two-laboratory approach, both Livermore and Los Alamos national laboratories are to serve as centers of excellence for nuclear design and engineering. They will provide necessary intellectual independence while coordinating programmatic work and sharing facilities, technical information, and best business and operations practices.

Livermore will retain its special responsibilities for nuclear warhead design and development, including ensuring the safety, security, and reliability of its designated stockpiled weapons and certification of changes made through life-extension programs. With the aging of weapons, risks are growing that safety, security, or reliability issues will arise, and modifications to extend the stockpile lifetime of weapons are likely to become more complex and challenging to certify. The computational and experimental tools and methods used for weapons certification must continue to be refined to improve the quality of assessments. I strongly support implementation of a more comprehensive peer review process to strengthen the Annual Assessments process by having both Livermore and Los Alamos provide complete assessments of the entire stockpile.

Better assessments and certification of an aging nuclear weapons stockpile depend on increased knowledge of the details of nuclear weapons performance—in particular, key

issues about the performance of weapons in the nuclear phase that previously had only been accessible through nuclear testing: boost, energy balance, and secondary performance. Progress in resolving these "grand challenges"—and eliminating principal reasons why a future nuclear test might be needed—are only now possible with the computational and experimental capabilities that are now coming on line.

Supercomputing Platform Host Site. Outstanding successes in the Advanced Simulation and Computing (ASC) program are turning simulation into an exceedingly capable tool of predictive science. Key discoveries made through vastly improved simulations are reducing sources of uncertainty in weapon performance. Livermore's Terascale Simulation Facility is home to two of the world's most powerful supercomputers, ASC Purple and BlueGene/L. Livermore has pioneered the approach by which these machines are effectively being used by all three NNSA laboratories for stockpile stewardship.

Roadrunner (at Los Alamos) and Sequoia (at Livermore) are important investments for the future of ASC. These machines take different approaches to the difficult problem of integrating computer architecture and simulation codes. The need for further advances in simulation to resolve the remaining weapons performance issues and improve assessment capabilities is too great to pursue only one approach. Based on the successful BlueGene/L approach, Sequoia aims to achieve a higher level of performance than Roadrunner—10 quadrillion operations per second (petaflops) peak speed, with sustained performance of 1+ petaflop—and apply it to full weapons-physics simulation codes.

The National Ignition Facility (NIF) as a Center of Excellence. Construction of NIF and commissioning of its 192 laser beams will be completed in March 2009, and the first ignition experiments will begin in FY 2010. NIF is the only facility capable of creating in a laboratory the conditions necessary to experimentally access the physics regimes of all nuclear-phase operations important to modern nuclear weapons. The National Ignition Campaign (NIC), which includes a consortium of laboratories, encompasses all development activities for the ignition campaign and the transition of NIF to routine operations by 2012 as a user facility with unique, highly flexible capabilities. NIF will be used to explore high-energy-density physics (an important, exciting frontier area of science) and inertial confinement fusion as a possible future source of clean energy.

Because they are critical to the success of stockpile stewardship, continued support of NIF and NIC is crucial. Key uncertainties in the thermonuclear performance of weapons present grand challenges; their resolution depends on data and insights from NIF experiments to develop and validate simulation models. More generally, NIF experiments will teach critical skills and test the capabilities and judgment of the scientists and engineers that the nation will depend on to ensure the continued safety, security, and reliability of the nuclear weapons stockpile.

The High-Explosive Research and Development Center of Excellence. With the High Explosives Applications Facility (HEAF), Livermore will serve as a Center of Excellence for High Explosive Research and Development (in amounts up to 10 kilograms). HEAF is a state-of-the-art explosives research facility for formulating, characterizing, processing, and testing energetic materials. Some supporting activities currently conducted at Site 300, the Laboratory's remote testing site, will require continuing support for consolidated set of facilities at Site 300 or construction of an annex to HEAF.

Plutonium Research and Consolidation of Special Nuclear Materials. Plutonium is an extremely complex material, fundamental to the performance of the U.S. nuclear stockpile, and understanding its detailed properties is a major scientific challenge. Livermore scientists will continue research activities to better understand plutonium, improve plutonium part manufacturing processes, and provide surveillance of stockpiled weapons. However, large-scale work with special nuclear materials at Livermore's Superblock will be phased out. Funding permitted, all Category I/II quantities of special nuclear materials will be removed from Livermore by the end of 2012 and consolidated elsewhere. Three shipments of material have already been completed. Category III amounts of nuclear materials will remain for small-scale experiments. To meet mission responsibilities, Laboratory researchers will use other NNSA facilities for larger-scale activities. To this end, it is essential that the nation proceed with the Chemistry and Metallurgy Research (CMR) Building Replacement Project at Los Alamos.

Hydrodynamic Testing and Livermore's Site 300. Hydrodynamics testing provides valuable data to diagnose the performance of primaries in weapons before they enter the nuclear explosive phase of operation. In accordance with a National Hydrotest Program, such experiments are currently conducted at the Contained Firing Facility (CFF) at Site 300 and the newly commissioned Dual-Axis Radiographic Hydrodynamic Test Facility (DARHT) at Los Alamos. Long-term plans call for significantly reduced NNSA support for Site 300 and closure of CFF in the 2015 timeframe when its use for hydrotesting is no longer programmatically necessary. Livermore scientists and engineers will then carry out their hydrodynamic experiments at other sites. Accordingly, it is critically important that there be sufficient funding to fully utilize DARHT's new capabilities.

Facility and Infrastructure Consolidation. NNSA anticipates a 30 percent reduction in support for buildings and infrastructure at the Laboratory's main site (up to 90 percent at Site 300) over the next decade. The Laboratory has been consolidating facilities and is accelerating the process through a Strategic Space Consolidation Initiative. The goal is to remove up to two million gross-square-feet (of 7.2 million) by the end of FY 2010.

Workforce Reductions. A complex-wide 20 to 30 percent reduction in employees supported by NNSA Defense Programs is expected over the coming decade. Livermore has already downsized considerably. From a workforce of nearly 9,600 in FY 2003, LLNL will decline to approximately 7,000 heads by the end of FY 2008. Nearly 2,000 of these reductions have come in the last two years. Our focus is on reducing support costs and preserving programmatic capabilities, yet more than 500 of those that have recently left the Laboratory are highly-trained scientists and engineers.

Livermore's strategy for absorbing further reductions in the NNSA Defense Programs-supported workforce includes two key elements. First, the Laboratory is striving to increase operational efficiency and workforce productivity to provide sponsors high-quality work at lower cost. Second, Livermore is striving to expand its existing programs that support other pressing national needs in areas that build on and contribute to the core missions and strengths of the Laboratory. In doing so, Livermore will apply its unique capabilities in multidisciplinary, large-scale science to support our nation's defense, energy, environmental, and economic security. These strategies will take time to implement, and further dramatic cuts in the Laboratory's workforce in the near term could irreparably harm our ability to execute our nuclear weapons mission.

Challenges and the Path Forward for NNSA's "Preferred Alternative"

The path forward for Nuclear Weapons Complex transformation faces many challenges, largely stemming from resources constraints and the need to recapitalize enduring production facilities while sustaining investments in human capital—the stockpile stewards whose analyses and critical judgments provide the basis for confidence in the nation's nuclear deterrent.

A key step in the path forward will be the Administration and Congress reaching an agreement on essential elements of nuclear weapons policy, deployment strategy, and stockpile requirements that define the composition and size of the "new/modified weapons stockpile." The size and/or makeup of the "new/modified weapons stockpile" must be such that the cost of sustaining the stockpile and the underlying human capital, tools, and capabilities will fit within the provided budget.

Agreement on the essential elements of the "new/modified weapons stockpile" will permit detailed planning, the design of new facilities, the phasing of personnel actions, and transfer of operations within the complex in a timely manner. In particular, NNSA can build on the Preferred Alternative to refine planned investments in manufacturing, maintaining, and dismantling nuclear weapons while sustaining the level of stockpile stewardship activities necessary to sustain confidence in the stockpile. The phasing of the new facilities and re-structured site missions can be integrated, planned, and executed over a 10+ year period and appropriately meshed with stockpile stewardship requirements to remain within budget constraints.

At the NNSA laboratories, the demands on the workforce and human capital planning will be extraordinary. The challenge of sustaining confidence in the nation's aging nuclear weapons stockpile in the absence of nuclear testing remains difficult. There is much to be done: sustain advances in weapons physics; support the Centers of Excellence; conduct rigorous assessments/certification; address issues arising in the stockpile; pursue life-extension programs or develop reliable replacements as required; continue to develop highly qualified staff; and provide intellectual leadership in determining how to most effectively meet stockpile requirements through advanced technologies and improved manufacturing processes.

With the projected continued decline in nuclear weapons support for the underlying fundamental science and technology, maintaining core competencies and a skilled workforce at the NNSA laboratories will require a strategic partnership across the country's broad national security enterprise. The laboratories have unique capabilities that are being broadly applied to the nation's most pressing issues. These efforts can be strengthened and expanded as priorities evolve—but only if the underlying science and technology "infrastructure" is sustained. Sustaining this infrastructure or capability is in my view the most significant challenge for the Preferred Alternative.

Livermore is supportive of the vision of transformation and prepared to face the challenge. Our success in meeting transformation goals will depend on your continuing support for our Laboratory and our important national security missions.

Testimony of Dr. Michael R. Anastasio

Laboratory Director
Los Alamos National Laboratory

before the
Committee on Armed Services
Subcommittee on Strategic Forces
U.S. House of Representatives

Hearing on
"Nuclear Weapons Complex Modernization"

July 17, 2008

Introduction

Chairman Tauscher, Ranking Member Everett, and Members of the Subcommittee, thank you for the opportunity to appear before you today to discuss the Transformation of the Nuclear Weapons Complex. I am Dr. Michael Anastasio, the director of the National Nuclear Security Administration's Los Alamos National Laboratory, and it is a pleasure to be before you again this year. Our earlier February briefing on the status of our nuclear weapons stockpile presented to you the issues that we face as NNSA laboratory directors working to assess the stockpile, and that briefing serves as an effective backdrop for today's topic of how best to transform the Complex.

The entire weapons enterprise must transform itself into a more efficient operation that can continue to maintain the nation's strategic deterrent while minimizing the need to return to underground nuclear testing.

This morning, I will briefly describe my view of transformation, focusing first on the overall Complex and then discussing its effects on Los Alamos. Second, building on our briefing from February, I will discuss the challenges that we face in our annual assessment of the nuclear stockpile, because this process helps determine the requirements for transformation. And, last, I will highlight what I see as the major challenge for the enterprise in the future: sustaining the science of the Complex as a whole, and of Los Alamos.

Part I: The Need to Transform the Complex

I fully support NNSA's vision to transform the Nuclear Weapons Complex into a smaller, safer, more secure, more modern, more agile, and less expensive complex that leverages the scientific, technical, testing, and production capabilities of its workforce. By achieving this vision and, for example, demonstrating that the enterprise can respond rapidly to stockpile problems, the United States can potentially further reduce the number of reserves in the nuclear weapon stockpile.

To implement this vision, it is important to understand that the Complex is largely a fixed-cost enterprise. This means that no matter the size of the nuclear weapons stockpile, whether it is a few weapons, or thousands of weapons, the nation needs to support an overall capability to ensure the safety, security, and reliability of the stockpile. And as long as we have a legacy Cold War stockpile we must retain the full Cold War production capabilities. From this standpoint, we really don't have a choice but to seek ways to reduce costs by avoiding duplication and operating more efficiently within a shrinking budget. The NNSA plan for Complex Transformation will take important steps to do just this.

At LANL, we are providing significant leadership in NNSA's effort to achieve integration across the Complex, e.g., encouraging NNSA-wide business processes for increased efficiency. Internally, we have spent the past two years working toward consolidation and high efficiency. We face considerable challenges with our infrastructure in that we maintain more than 9 million square feet of facilities, with over one-third of that space more than 40 years old. We are working to reduce our physical footprint by roughly 2 million square feet (more than one-quarter of the reduction has been completed in the last year and a half). We are consolidating the number of high-explosive firing sites across the Laboratory. We have internally absorbed the higher

operating costs associated with the new contract structure. We will continue these efforts and more as part of Complex Transformation.

The Laboratory has also had to make tough decisions and significant reductions in staffing levels. Since the beginning of fiscal year 2006, the overall Laboratory workforce has been reduced—through attrition, limited hiring, and a voluntary reduction program—by more than 2,100 individuals, 46 percent of whom were part of the technical workforce.

From the national perspective, the NNSA preferred alternative selection confirms that Los Alamos is first and foremost a national security science R&D laboratory. Specifically, NNSA's preferred alternative calls for LANL to continue its role, along with Lawrence Livermore, as the country's nuclear weapons design and engineering laboratory, and as a center of excellence in supercomputing. Additionally, the plan calls for LANL to serve as the nation's center of excellence for plutonium research, development, and manufacturing.

NNSA's preferred alternative also will reduce Complex-wide the workforce supported by weapons activities funding by 20-30 percent over the course of a decade or so. At Los Alamos, we have already seen our nuclear weapons program personnel reduced by nearly 15 percent since Los Alamos National Security, or LANS, LLC started operations in June 2006.

Los Alamos is committed to carrying out our role in the preferred alternative. Critical to establishing LANL as the nation's plutonium R&D center is the nuclear infrastructure required for this mission, namely maintaining the Laboratory's ability to conduct plutonium chemistry and metallurgy R&D, which is currently done at our aging Chemistry and Metallurgy Research facility (CMR). As laboratory director, one of my most critical infrastructure priorities is to replace the CMR building. The CMR building was completed in the early 1950s to support scientific research of plutonium and other actinide elements. Work in this facility supports not only the nation's nuclear deterrent but also space exploration, energy research, nuclear nonproliferation, and nuclear counterterrorism.

Our work in the CMR is safe and secure, and our Laboratory staff has done a remarkable job further reducing risks by closing several wings in a short time. However, this will become ever-more challenging as we must meet the increasing safety and security expectations. Congress and the NNSA have authorized and appropriated funds to begin construction of the new CMR Replacement, known as CMR-R, which, when complete, will be more than 100,000 square feet smaller than the existing facility.

I should highlight that the new CMR-R is <u>not</u> planned to be used as a pit production facility. It will allow for the consolidation of category I and II special nuclear materials from Lawrence Livermore National Laboratory. CMRR will also enable the nation to continue to train IAEA inspectors, provide power sources for U.S. satellites, research and build next-generation nuclear detection equipment, and train various United States personnel on how to prevent and deal with the potential for nuclear terrorism.

Another infrastructure priority for the future of Los Alamos, as called out in NNSA's Complex Transformation plans, is the refurbishment of our linear accelerator, the Los Alamos Neutron Science Center, or LANSCE. We rely heavily on the capabilities that are available only from LANSCE, including proton radiography, fundamental cross-sections, and properties of classified

subsystem materials under extreme conditions. LANSCE also enables us to carry out a broad range of basic science that supports everything from biology to nuclear forensics and attribution. The refurbishment of LANSCE, known as LANSCE-R, will allow the facility to continue to support the nation for another 20–30 years, as well as form the foundation for a new science facility to attract and retain the next generation of scientists.

Part of the future that we see for LANL in experimental science is focused on materials science and test capability, MaRIE (Matter-Radiation Interaction in Extremes). MaRIE will be designed to create and exploit extreme radiation fluxes and probe matter to tackle the toughest materials challenges, ranging from weapons aging to improved solar cells to longer-lasting nuclear fuel rods. When coupled with modern facilities and equipment and our role as a high-performance computing center (our Roadrunner supercomputer is the latest example), this facility would help ensure our access to the best scientific talent well into the future.

Part II: Maintaining the Legacy Stockpile

Transforming the Complex now is critical because facilities are aging and in need of recapitalization, while the overall budget is shrinking. To make matters more challenging, the nuclear weapons laboratories have determined that the aging stockpile needs increasing attention in the future to ensure its safety, security, and reliability.

As the NNSA laboratory directors discussed back in February, it is increasingly difficult to sustain the legacy stockpile, which is characterized by high yield-to-weight systems with relatively low-tolerance margins and exotic materials. Exact remanufacture of warheads cannot be done for a variety of reasons ranging from today's environmental constraints and changed production processes to loss of specialized knowledge. In fact, many of the processes and technologies used originally to manufacture the warheads no longer exist. As we introduce small changes into the warheads, we move further away from the "as-tested design," adding additional risks and challenges to our understanding of warhead safety and performance.

The approach of Stockpile Stewardship, begun in 1995 as an ambitious effort to sustain the nuclear weapons stockpile while minimizing the need for nuclear testing, relies on developing and validating through interlaboratory peer review a more fundamental scientific and engineering understanding of the performance, safety, and security of weapon operations. This fundamental approach is based on a much more extensive range of nonnuclear aboveground testing and a vastly improved simulation capability. Ultimately, expert judgment and rigorous peer review assure that critical conclusions are drawn from the best available data, appropriate high-resolution simulation, and a suite of evolving testing capabilities. Sound science is the core of our confidence.

I remain confident in the United States nuclear deterrent and believe that the tools envisioned for the Stockpile Stewardship Program have so far provided the data needed to assess the state of the U.S. stockpile. The programmatic successes have been a major factor in allowing the United States to reduce overall the size of the nuclear stockpile by roughly 75 percent from its peak to a level below that during the Eisenhower administration.

These increasing risks for the future to confidence in the legacy stockpile require sustained efforts to utilize and advance our basic scientific and engineering understanding. Yet with the needs to recapitalize the infrastructure and the growing operational costs from the ever-increasing safety, security, and environmental standards, it is extremely difficult to maintain, use, or enhance the Stockpile Stewardship tools so necessary to preserve our deterrent.

Compounding my concerns is the decline in the number of technical staff at Los Alamos, and within the complex, especially for those who have significant experience in weapon design, manufacture, and production. Our capability ultimately resides in the experience, knowledge, and skills of our scientists and engineers. The ability to maintain a pipeline of the best scientific and technical staff through robust programs and facilities is essential.

Part III: Health of Science

In Part I, I discussed the infrastructure issues that Los Alamos faces and the similar issues across the Complex. Coupling those with the increasing effort that must be devoted to the legacy stockpile creates the biggest challenge for Complex Transformation and for the future of the Complex. In addition to CMRR, NNSA must address how to fund several other major nuclear facilities including the Uranium Production Facility (UPF), the Pit Disassembly and Conversion Facility (PDCF), and the Mixed Oxide Fabrication Facility (MOX). All of these requirements are hitting at the same time that the available budget will be shrinking.

My concern is that we will continue to see funding for nuclear weapons science, and hence science in general, squeezed at the national laboratories. This is the same science infrastructure that enables our success in helping address other national security and emerging energy security challenges. This concern applies both at Los Alamos and nationally.

When we started Stockpile Stewardship, it was clear that in order to reduce the likelihood of having to return to testing, we would need to do more science, not less. Now, we see that many of the investments of Stewardship are coming to fruition, notably the Dual-Axis Radiographic Hydrotest Facility (DARHT) at Los Alamos, NIF at Livermore, and the MESA facility at Sandia. Just as the nation needs to reap the benefits of these investments, we are not able to fully utilize those tools to solve the latest challenges of Stewardship.

From a Los Alamos perspective, I am concerned about the future of science. And, it's essential to understand the very tight linkage between nuclear weapons funding and our ability to carry out a broader set of scientific research and development efforts to meet other national needs. Approximately 55 percent of our funding comes from NNSA's Office of Defense Programs, but it is virtually the only source of infrastructure investment. So the weapons program builds facilities and capabilities critical for nuclear weapons work, which can also be used to meet other needs of the country. A current example is our new Roadrunner supercomputer, which will be applied in its first six months to unclassified problems ranging from climate change to better understanding disease.

Let me emphasize again that the squeeze on science funding jeopardizes the future of the Laboratory because it is this strong science base that enables us to attract and retain the best and brightest scientists. I want to highlight just a few of our recent scientific accomplishments at Los Alamos:

- Working with the Air Force, we developed and fielded a wide-area persistent surveillance capacity called Angel Fire for the U.S Marine Corps. The system provides warfighters with real-time situational awareness.
- We demonstrated the potential for increases in solar energy efficiency using nano-scale semiconductors through an effect called carrier multiplication.
- We rapidly and effectively supported the national response to the North Korean nuclear test. We provided the sole technical support from the Department of Energy at the Six-Party Talks in Beijing on implementation of the North Korean denuclearization commitments.
- We recovered more than 1,750 U.S.-origin radiological sources in fiscal year 2007, including the first-ever disposal of radium-226 sealed sources.
- We won more than a hundred major science awards from major organizations.
- We developed the first high-resolution climate model for ocean circulation, which allows us to better understand such climate effects as El Niño and La Niña.
- We completed the one-hundredth genetic sequence for DOE's Joint Genome Institute.
- We've received 107 R&D 100 awards over the past 30 years. The two that we earned this year were for developing the 3-D tracking microscope that can follow the motion of nanometer-sized objects process and for the Laser-Weave to synthesize high-strength inorganic fibers.

When I talk about science being squeezed at the laboratories, I am concerned about our primary nuclear weapons mission but also about other areas where we have capabilities to serve the nation. Because of our ability to address complex scientific problems, LANL is poised to assist the nation further with larger concerns such as global climate change and energy security. I see Los Alamos taking a leading role in understanding global climate change through detailed modeling and validation, developing the next generation of energy storage technology, and studying ways to verify carbon emissions worldwide. These are areas where we already do work, but I believe we can do more to meet the nation's needs.

Conclusion

In conclusion, I want to reiterate my support for the vision of NNSA's Complex Transformation plan, and I believe that Los Alamos can serve the nation well as a national security science laboratory, focused on nuclear weapons design and engineering, supercomputing, and plutonium R&D and manufacture.

I am very proud of the role and accomplishments of Los Alamos National Laboratory in protecting the national security interests of this country. I remain concerned, however, that science is being squeezed out, which increases future risks to our confidence in the stockpile and our ability to support other national missions.

I look forward to further engaging with Congress and the national policymakers as a new path is charted for the Nuclear Weapons Complex. I believe that the backbone of our capability as a nation is the science and technology base embodied in the national laboratories. Los Alamos stands ready to continue to provide the science that underpins our strategic deterrent, as well as the science that can be applied to the many challenges the nation now faces in energy, climate, nonproliferation, defense, and intelligence.

Statement of Dr. Thomas O. Hunter
President and Director
Sandia National Laboratories

United States House of Representatives
Committee on Armed Services
Subcommittee on Strategic Forces
July 17, 2008

Introduction

Madam Chairman and distinguished members of the Committee, thank you for the opportunity to testify. I am Tom Hunter, President and Director of Sandia National Laboratories. Sandia is a multiprogram national security laboratory owned by the United States Government and operated by Sandia Corporation for the National Nuclear Security Administration (NNSA).

My statement responds to the Committee's request to discuss three closely related issues: (1) the national security rationale for the Stockpile Stewardship Program and the complex that supports it; (2) the Preferred Alternative for Complex Transformation that NNSA has proposed; and (3) other alternatives for securing the continued effective execution of the Stockpile Stewardship Program.

The National Security Rationale for the Stockpile Stewardship Program

Clearly, a vigorous national policy discussion concerning the future role of nuclear weapons is occurring today. This is a necessary and important discussion, and it demonstrates the vitality of our form of government. NNSA's job—and the job of its laboratory directors— will be to implement the nuclear weapon mission as determined by the nation's policy makers. The nuclear weapon stockpile will no doubt be different as we move forward. Its composition and size will likely be altered, and it will be increasingly older.

Regardless of how policy may change, the fact that nuclear weapons and a nuclear weapon knowledge base exists in the modern world creates important challenges that must be managed over the long term. The NNSA complex will continue to have principal mission responsibility for meeting those challenges.

Nuclear weapons continue as a key element of U.S. national defense policy. Consistent with existing policy, the NNSA laboratories are implementing the Stockpile Stewardship Program, which is the essential mechanism for maintaining the nuclear weapons stockpile. It is a challenging mission.

The NNSA laboratories serve several key purposes through the Stockpile Stewardship Program:

- First and foremost, the laboratories support the weapons currently in stockpile. We do this through stockpile evaluation and assurance activities, which permit the laboratories to inform the Secretaries of Energy and Defense about the safety, reliability, performance and military effectiveness of the stockpile every year. The law requires that this assessment be submitted to the President and the Congress without change.

- Issues inevitably arise as a consequence of aging or other factors. The laboratories resolve these issues when they occur, and upgrade aging subsystems as legacy technology becomes obsolete.
- The weapons science competencies that reside in the laboratories position the nation to evaluate and respond to unanticipated developments in the international environment or in the weapons technology of other nations. It is important that laboratories retain the capability to perform a warhead system development, if warranted by a future change in policy.
- The laboratories continually evaluate weapon surety systems and provide enhancements as necessary. Safety and security of warheads must be vigilantly maintained. Thus we constantly push the state of technology to reduce risk a far as practical.
- The laboratories maintain a deep foundation of scientific and engineering competencies, which is an essential component of our nation's deterrent—as well as a resource for national leadership in technology to address broad national security challenges.

The Stockpile Stewardship Program must continue to be structured in such a way that the laboratories can provide the flexibility that will be required to respond to changes in nuclear weapon policy. If Stockpile Stewardship focuses exclusively on the legacy stockpile of the Cold War, it may not have the flexibility to adapt efficiently to new policy requirements. Moreover, indefinitely maintaining legacy weapons may require a more costly nuclear weapons complex over the long term. We need to maintain a balance of investment in scientific and technical competencies for design and assessment with those needed for the production complex.

Leadership in science and engineering is important for ensuring an effective stockpile. The laboratories must attract and retain high-quality staff and maintain key scientific facilities. System engineering programs, technology development, and advanced scientific and engineering research are important for sustaining the quality of our technical talent.

The Committee should be aware that reductions proposed in the House markup for appropriations in Weapons Activities would have a significant impact on the NNSA laboratories' ability to perform their responsibilities in Directed Stockpile Work and the science, engineering, and computing campaigns that support stockpile assurance. Similarly, Laboratory-Directed Research and Development is marked for a reduction by half, which would impact the laboratories' capability for scientific and engineering innovation that benefits all of our national security missions.

In my opinion, an essential characteristic of the Cold War's resolution and a fundamental element of deterrence going forward is the strength and resiliency of the NNSA laboratories. Their scientific capabilities have deterred our adversaries, contributed mightily to the nation's technological leadership, and seen many significant applications in support of national security. It is essential to recognize the ongoing need for a vital scientific foundation to support the evolving national security policy.

The Preferred Alternative For Complex Transformation

In January, NNSA released its draft Supplemental Programmatic Environmental Impact Statement (SPEIS) for transforming the nuclear weapons complex. Complex Transformation is a vision for a smaller, safer, more secure, and less expensive complex. The SPEIS outlines a

Preferred Alternative utilizing distributed centers of excellence, and it proposes to consolidate some missions and facilities within the existing NNSA sites.

We at Sandia recognize the need for changes in the nuclear weapons complex. We support NNSA in its effort to transform the complex into a modern enterprise for efficient and cost-effective stewardship of the nuclear deterrent.

We have long supported and see great benefit in the Preferred Alternative's proposal to consolidate Category I and II special nuclear materials (SNM). We are so committed to that concept, and to the improvements in security posture and the complex-wide cost savings associated with it, that in February we completed the removal of all discrete Category I and II SNM from Sandia sites.

Implementation of the Preferred Alternative must be carefully managed so that essential capabilities remain strong and can continue to support the core products for which we are responsible. Sandia's core products for the Stockpile Stewardship Program include engineered and integrated warhead systems; arming, fuzing, and firing systems; neutron generators; gas transfer systems; and surety systems.

The capabilities that we regard as essential for enabling our core products include major environmental testing, radiation effects science, computational simulation, microsystem technologies, materials science, and the engineering sciences. Many of these capabilities are synergistic with those in industry and at research universities; however, they do not exist in those sectors in the specialized forms required for stockpile stewardship nor as an integrated enterprise. These capabilities are also important to the nation's broader science and technology agenda.

Under the Preferred Alternative, Sandia would continue to be the center of excellence for science and engineering for warhead non-nuclear systems and components and for major non-nuclear environmental testing. Sandia would also develop a revised flight testing strategy for gravity weapons at the Tonopah Test Range and would have a different role in NNSA's high-performance computing program. Sandia's California laboratory would continue to perform the non-nuclear systems engineering for nuclear weapons designed with the Lawrence Livermore National Laboratory, and it would also transition to a multi-agency resource. We are developing a plan to guide the transition of our California site to that vision.

High-Performance Computing under the Preferred Alternative

Under the Preferred Alternative for Complex Transformation, NNSA plans to consolidate operation of high-performance computing platforms at the Lawrence Livermore and Los Alamos sites. It is important to recognize that state-of-the-art capability computing is an essential foundation of all three laboratories. In fact, it was these laboratories, especially Sandia, that brought the nation to a leadership position in supercomputing—leadership in effective systems architectures, algorithms, and applications. High-performance computing is at the heart of the capability for all laboratory missions.

In order to remain a key participant in NNSA's high-performance computing program, Sandia negotiated a memorandum of understanding with Los Alamos National Laboratory that will bring together the two laboratories' computer science and operational capabilities for high-performance computing. Under this agreement, Sandia will lead in providing the architecture and engineering expertise for capability platforms, and Los Alamos will lead in deployment and operations. Teams will be formed from both laboratories to provide an unparalleled computa-

tional resource for future NNSA capability platforms.

This partnership is not without risk to both institutions. It is too soon to tell whether it will maintain the expertise that has provided the foundation for the nation's preeminent global position in computing. It will be essential for NNSA to execute a strategy that supports the Sandia/Los Alamos partnership with a platform procurement in fiscal year 2010 that meets the established requirements for maintaining and refurbishing the nuclear weapon stockpile.

In this regard, high-performance computing at NNSA is also challenged by a proposed reduction of $66 million in the Advanced Simulation and Computing Campaign in the House markup of the Energy and Water Appropriations bill for fiscal year 2009. A reduction of that magnitude will call into question the viability of the Sandia/Los Alamos partnership.

Sandia's California Laboratory Site under the Preferred Alternative

Consistent with the Preferred Alternative for Complex Transformation, we are implementing an initiative at Sandia's California site in Livermore that is designed to sustain the core expertise for California-designed nuclear weapons while also applying those scientific and engineering assets to other national security, homeland security, energy security, and environmental challenges.

This transformation will exploit the utility of the California location, recognizing the role of the State of California in the nation's future energy, environmental, and national security needs. It also will take advantage of the other Department of Energy multiprogram laboratories in California (Lawrence Berkeley National Laboratory and Lawrence Livermore National Laboratory) and will serve as a pilot Energy Innovation Hub seeking to develop mechanisms for translating DOE-generated science into real-world applications. This approach creates an opportunity to work jointly with Lawrence Livermore National Laboratory to establish an open corridor accessible to industry and academia so that the expertise of both laboratories can be applied to unclassified issues of national importance.

This transformation pilot for Sandia's California laboratory may require a new management model within the Department of Energy that supports the mission activities of multiple program offices at a single site. The Department of Energy is working with us to define a model that recognizes the Department's overarching responsibility for a variety of national security missions while sharing institutional stewardship costs and governance responsibilities with other offices and agencies.

Alternatives for Effective Execution of the Stockpile Stewardship Program

NNSA's Preferred Alternative is a workable and prudent approach for realizing efficiencies in the nuclear weapons complex. It represents a rational way to deal with the nuclear weapon stockpile and the complex that supports it. There is, though, another factor that I think should be addressed, which applies to all future complex alternatives. That factor is the way in which the complex is managed.

As I mentioned earlier, the vitality of the NNSA laboratories is an essential element in assuring a safe, secure nuclear deterrent. These laboratories must assure that a strong science and engineering capability exists to properly respond to evolving national policy and maintain an aging legacy stockpile. Yet there is, in my judgment, an equally important element which addresses the role and character of these institutions. The laboratories must—above all—be

committed to the nation's service. The singular responsibility to objectively evaluate and inform the nation's leaders about the state of health of our nuclear deterrent is just cause to rise above all other interests and incentives for these institutions. The leadership of these laboratories must always subordinate any personal, corporate, or financial-return concerns to serve first in the national interest. This must also be the prevailing ethos for all employees in the laboratories.

This essential value system in the laboratories has been long in development, yet it is increasingly fragile as it confronts the future. It is a commodity that cannot be bought at any price, but losing it could result in a cost that we would ultimately regret.

These institutions need to feel accountable for their important national roles and for superior performance in delivering results. The entirety of each institution must be managed in a way to be continually more effective, ever stronger in scientific and engineering capability, and increasingly cost-efficient. As the complex transforms, it is imperative that accountability—with the commensurate authority for action—be maintained in our laboratories and their leaders. Potential confusion around roles and responsibilities that move beyond "what" and more toward "how" could also serve to erode the character of national service at the laboratories. As we move forward in this necessary transformation of the complex, it is my earnest hope that this important—perhaps most important—element not be overlooked.

Another important concept to help guide the transformation of the complex is to encourage synergistic multiprogram, multi-agency activities under the integrated management of each laboratory. Today's national security challenges are more complex than they were during the Cold War. Challenges in cyber security, homeland security, energy security, and other emerging threats are formidable, and the agencies addressing those challenges need access to the multidisciplinary scientific and engineering resources that exists at NNSA laboratories.

The NNSA laboratories are uniquely positioned to contribute to the solutions of today's complex national security challenges. Moreover, the laboratories will increasingly depend on diverse national security programs to enhance their critical capabilities. It makes sense, therefore, for Complex Transformation to facilitate more intensive use of the NNSA laboratories by multiple sponsors. Sandia's California laboratory is a perfect setting for testing the viability of a multi-agency model for NNSA institutions as the nuclear weapons program approaches a reduced level of effort.

Conclusion

Nuclear weapons remain a key element of U.S. national defense policy. The Stockpile Stewardship Program must continue to be structured in such a way that the NNSA laboratories can exercise the flexibility that will be required to respond to changes in nuclear weapon policy.

I support NNSA's plan for changes in the nuclear weapon complex. Implementation of the Preferred Alternative must be carefully managed so that essential capabilities remain strong and the laboratories can continue to support the core products for which they are responsible. I do have concerns about the implementation of Complex Transformation with respect to Sandia's interests in high-performance computing and our California laboratory. I am also concerned that proposed reductions in appropriations affecting the Stockpile Stewardship Program will impact our ability to perform the mission. However, if these concerns can be addressed, then I see no reason why the Preferred Alternative for Complex Transformation cannot succeed.

WITNESS DISCLOSURE INFORMATION

Witness name: Thomas O. Hunter

Capacity in which appearing: Representative of a government-owned, contractor-operated entity

Name of entity being represented: Sandia National Laboratories

Position held: President and Director

Parent organization (management and operating contractor): Lockheed Martin Corporation

Federal contract: Management and operating contract between Sandia Corporation and U.S. Department of Energy, DE-AC04-94AL85000.

FY2006 cost: $2,302,377,109; negotiated fee: $24,306,799

FY2007 cost: $2,411,647,000; negotiated fee: $23,214,830

FY2008 estimated cost: $2,313,723,190; estimated fee: *up to* $25,142,810

Curriculum Vitae:

Dr. Thomas (Tom) O. Hunter is director of Sandia National Laboratories, with principal sites in Albuquerque, New Mexico, and Livermore, California. Dr. Hunter joined Sandia in 1967 and became president and director in April 2005.

Before assuming his role as director, Dr. Hunter was the senior vice president for defense programs. His management role included oversight of research programs in microelectronics, materials science, engineering science, computer science, and pulsed power; nuclear weapon engineering; information systems and technology; and production and manufacturing. He also had responsibility for the Laboratories' effort in advanced computing, computational science, environmental testing, corporate information systems, and systems integration.

From October 1995 to March 1999, Hunter served as vice president of Sandia's California laboratory. Responsibilities included managing programs in nuclear weapon research and development, nonproliferation, advanced manufacturing technology, information systems, environmental technology, and energy research. He also served as corporate leader for the development of nonproliferation, arms control, and materials management programs.

Earlier in his Sandia career, Dr. Hunter directed Sandia's activities in energy development and environmental quality and emphasized international energy and environment development and supporting information systems. Hunter had a leadership role in establishing cooperative programs in the former Soviet Union to support nonproliferation. He also directed Sandia's nuclear waste management and transportation programs and activities for the Yucca Mountain Project and the Waste Isolation Pilot Plant.

Dr. Hunter is a member of the Engineering Advisory Board for the University of Florida, Council on Foreign Relations, American Nuclear Society, and the U.S. Strategic Command's Strategic Advisory Group. He has served as a member and chair of the Board of Visitors for the dean of the College of Engineering at the University of California, Davis, on various review groups with other Department of Energy laboratories, guest lecturer at Massachusetts Institute of Technology on nuclear waste management, and as an adjunct professor at the University of New Mexico. He is the author of numerous technical papers and presentations. He is a recipient of the 2007 New Mexico Distinguished Public Service Award.

Dr. Hunter earned a bachelor of science degree in mechanical engineering from the University of Florida, a master of science degree in mechanical engineering from the University of New Mexico, and master's and Ph.D. degrees in nuclear engineering from the University of Wisconsin.

House Armed Services Committee
Strategic Forces Subcommittee
July 17, 2008

Testimony of
Stephen M. Younger
President, National Security Technologies, LLC

Thank you for the opportunity to discuss an issue vital to the future national security of the United States – the transformation of our nuclear deterrent and the suite of capabilities that will ensure its safety and reliability for years to come. I strongly believe that these transformations can only be done following a rigorous analysis of the requirements for nuclear weapons in a rapidly changing world. There are four key questions that must be addressed:

- What is the mission for nuclear weapons in the twenty-first century?
- What weapons are required to meet this mission?
- What is required to sustain these weapons?
- How can this capability be provided at minimum cost and risk?

I will address each of these in turn.

Nuclear Weapons in the Twenty-First Century

The fundamental role of nuclear weapons is the same today as it was during the Cold War – to provide an unassailable deterrent force that assures any aggressor that they cannot win a military engagement that threatens the survival of the United States. While the basis of deterrence remains intact, the means by which we support that deterrence will certainly change. Some missions, such as holding at risk mobile missiles containing weapons of mass destruction, no longer require nuclear weapons for their success. Advanced conventional weapons on long-range delivery platforms can accomplish the same thing without the use of nuclear explosives. However, there are other assets, such as deeply buried weapons facilities and very large targets, that are beyond the capabilities of any conventional weapon. Only a nuclear weapon can hold these targets at risk and fulfill the fundamental mission of deterrence by assuring an adversary that they cannot shield offensive capability that could be used against us.

Types and Numbers of Nuclear Weapons

We will need fewer nuclear weapons in the future due to changes in the geopolitical environment and because non-nuclear weapons can replace nuclear weapons in certain missions. However, I believe that a rigorous analysis of nuclear missions may reveal that current weapons are ill-suited to future missions for two reasons. First, the high yields of some current weapons are not required for most future missions. Second, the very sophisticated nuclear weapons designs of the past are difficult to maintain and lack desirable security and safety features. High performance nuclear weapons are no different from high performance automobiles in this respect – each requires care and maintenance to avoid mission failure.

It would be counterproductive to maintain an arsenal of very high yield weapons when smaller, safer weapons are actually better tuned to the mission. This does not mean that we should make more "usable" weapons. I strongly believe that the United States should be among the last nations to use a nuclear weapon for the simple reason that our superb conventional forces can handle military contingencies short of all-out strategic war on several fronts. Indeed, the United States should do everything that it can to reinforce the mystique surrounding nuclear weapons and the notion that any nuclear use would cross a fundamental threshold in international affairs. Nuclear weapons – regardless of their yield - are weapons of last resort designed to deter or destroy an existential threat to our interests.

Sustaining Our Nuclear Deterrent

All of the nuclear weapons in our arsenal were designed during the Cold War. None were intended to last for the very long periods currently anticipated and none are able to be remanufactured "just the way we made them" due to changes in material availability and manufacturing.

I do not believe that the United States will be able to sustain its current nuclear arsenal indefinitely without nuclear testing. There are three alternatives:

1. Accept lower confidence in our current weapons
2. Replace our current arsenal with more robust designs
3. Return to some level of underground nuclear testing.

Nuclear weapons are extraordinarily complex objects that achieve conditions found nowhere else in nature outside of exploding stars. They are highly compact and were designed to employ the minimum amount of nuclear materials to achieve their mission. Some of the materials and processes that were used in their manufacture are no longer available – either because they were deemed a risk to health and safety or because we no longer have the capability to make them. Using new materials and manufacturing processes is certainly possible, but doing so introduces small changes into the weapon, the effects of which we can only estimate. We can be confident of the safety and performance of our nuclear arsenal today – the issue is how long that confidence can be maintained.

An alternative to maintaining old designs is to introduce new ones that are easier to maintain and have larger margins than our existing weapons. The Reliable Replacement Warhead is a step in this direction. It is intended to improve our ability to maintain an existing military capability; hence it is not a new nuclear weapon. It is based on tested designs so it has a demonstrated pedigree. And it is capable of being manufactured and maintained into the future. However, the RRW is only a step toward the transformation of the nuclear stockpile, one that depends on the requirements analysis discussed above.

I see no specific technical issue that would demand a return to nuclear testing, but I also appreciate that science – including the science behind nuclear weapons - proceeds through an interchange between theory and experiment, between hypotheses and the testing of hypotheses. NNSA's Advanced Strategic Computing program has achieved extraordinary progress since its inception – we now have supercomputers that can perform over one thousand trillion calculations per second, enabling unprecedented levels of detail to be included in a computer simulation of a nuclear explosion. But science requires a balance of theory and experiment. Any experienced scientist will tell you that it is entirely possible for even the most powerful computer

to get the wrong answer because of gaps in our understanding of underlying phenomena. The National Ignition Facility will play a vital role in accessing conditions close to those occurring in a nuclear weapon, but we must also maintain an ability to perform experiments on weapons-scale quantities of plutonium and high explosives: experiments that can only be performed at the Nevada Test Site.

The Role of the Nevada Test Site in Maintaining the Nuclear Deterrent

The Nevada Test Site (NTS) is a 1375 square mile NNSA facility located approximately 60 miles northwest of Las Vegas, NV. Originally established as a continental test site during the early years of the nuclear weapons program, it has evolved into a unique multi-function national security asset.

NTS is the only location that can perform experiments with weapons-relevant quantities of plutonium and high explosives. These do not involve a nuclear explosion, hence the term "sub-critical experiments", but they can include all of the engineering and material features involved in a real weapon. For example, scientists can take a newly-manufactured plutonium pit and high-explosive assembly, place a measuring device at its center, and compare the quality of the implosion of remanufactured components to original factory-produced items. They can measure the subtle effects of aging on weapons implosions. In a subcritical experiment, everything happens as it would in a nuclear detonation – the high explosive is detonated and the plutonium is imploded - but the assembly never goes critical and hence produces no nuclear energy. These experiments are conducted safely and securely in our U1a facility, located 963 feet below the desert floor 76 miles from Las Vegas.

The Device Assembly Facility (DAF) at NTS was intended as a facility in which to build nuclear explosives for underground tests. It is a modern facility with outstanding security. Approximately one third of DAF will be occupied by the Critical Experiments Facility, which will house nuclear experiments moved from TA-18 at Los Alamos National Laboratory. This leaves over 40,000 square feet of nuclear-certified space for other national missions at a time when new nuclear space costs on the order of $65,000 per square foot to construct.

The JASPER gas gun at NTS is a high-precision cannon that fires projectiles at small samples of plutonium to measure plutonium's response to intense shock waves, such as are found in an operating nuclear weapon. We know that we don't know enough about plutonium and JASPER is filling in key aspects of our understanding.

NNSA's Complex Transformation plan envisions moving all open-air high explosive testing to NTS. Our Big Explosives Experimental Facility (BEEF) currently conducts a wide range of high-explosives experiments safely and far from residential areas. (The closest residence to BEEF is in the small town of Amargosa Valley, 36 miles away.)

The Non-Proliferation Test and Evaluation Complex (NPTEC) can release toxic materials such as chlorine into the air to measure vital parameters associated with a possible terrorist attack involving chemicals. At the other extreme, the chemically clean nature of our desert environment enables NPTEC to test sensors for detecting minute quantities of materials associated with foreign WMD activities. Industrial firms come to NTS to train their personnel in realistic chemical environments, improving their ability to respond to real-world emergencies.

NTS is the only place where substantial quantities of special nuclear materials can be brought out into the open to test nuclear detectors for the Department of Homeland Security and others. Detectors being considered for placement at border crossings and other locations were tested at NTS.

NTS has trained over 60,000 first responders in how to deal with a radiological emergency. We work closely with organizations as diverse as the New York City Police Department and United States Central Command to enable detection and neutralization of threats to our country and our troops abroad. Much of our work in the area is classified, but field commanders have repeatedly noted that technology provided by NTS saves lives in Iraq and Afghanistan.

Complex Transformation

Nuclear weapons are not scientific curiosities - they are real objects that require maintenance and occasional remanufacture. The weapons fabrication capability in the United States is in dire need of refurbishment. Some buildings, dating from the early 1950's, are literally falling down and simply need to be replaced. Others require substantial modifications to comply with modern safety and security regulations. NNSA's Complex Transformation plan uses current military requirements to define a weapons complex that can satisfy future needs at minimum cost. However, this plan was based on a large stockpile of weapons that may not represent the best picture of the future. It is vital that the United States conduct an "end to end" review of its nuclear needs and the capabilities required to meet those needs. Only after we know how many and what types of weapons we must maintain for national security, and then identify those activities – science, engineering, and manufacturing - needed to ensure the deterrent, can we identify the facilities required to perform those activities.

There is a base set of capabilities that must be maintained no matter how many weapons we require. NNSA must maintain a capability to manufacture plutonium pits, a capability that employs unique skills and technology and one that is unique to the nuclear weapons mission. While the production capacity will depend on the size of the stockpile, the time required to effect a significant build, and the anticipated life of existing pits, the existence of a production line is essential, just as it is in maintaining other special-purpose productions lines such as those related to submarines. A similar argument can be made for maintaining a uranium production capability, ability to manufacture high explosives, and assembly/disassembly operations on weapons.

While part of the nuclear weapons complex is old and expensive to maintain, other facilities are new, capable, and underutilized. Before building new buildings and machines, we should ensure that those currently available are fully utilized. This may require shifting missions from one site to another, always a difficult proposition, but the alternative is to spend billions of dollars to maintain a capability at a specific site while other space stands idle.

The United States is at a crossroads in its nuclear forces. The geopolitical environment has changed with the breakup of the Soviet Union and the proliferation of nuclear weapons to other countries. New technologies have arisen that reduce the need for a large nuclear weapons stockpile. We have the opportunity to redefine the notion of deterrence in the post Cold-War period and size the NNSA complex to meet the needs of the future. Thank you again for the opportunity to share these thoughts with you.

DISCLOSURE FORM FOR WITNESSES
CONCERNING FEDERAL CONTRACT AND GRANT INFORMATION

INSTRUCTION TO WITNESSES: Rule 11, clause 2(g)(4), of the Rules of the U.S. House of Representatives for the 110th Congress requires nongovernmental witnesses appearing before House committees to include in their written statements a curriculum vitae and a disclosure of the amount and source of any federal contracts or grants (including subcontracts and subgrants) received during the current and two previous fiscal years either by the witness or by an entity represented by the witness. This form is intended to assist witnesses appearing before the House Armed Services Committee in complying with the House rule.

Witness name: Stephen M. Younger

Capacity in which appearing: (check one)

__Individual

X Representative

If appearing in a representative capacity, name of the company, association or other entity being represented: National Security Technologies, LLC

FISCAL YEAR 2008

federal grant(s)/ contracts	federal agency	dollar value	subject(s) of contract or grant
DE-AC52-06NA25946	U.S. Dept. of Energy	~$515M	Management & Operation of the Nevada Test Site

FISCAL YEAR 2007

federal grant(s)/ contracts	federal agency	dollar value	subject(s) of contract or grant
Same as above		$536M	

FISCAL YEAR 2007

Federal grant(s)/ contracts	federal agency	dollar value	subject(s) of contract or grant
Same as above		$250M	
Contract Start Date: 7/1/2006			

Federal Contract Information: If you or the entity you represent before the Committee on Armed Services has contracts (including subcontracts) with the federal government, please provide the following information:

Number of contracts (including subcontracts with the federal government:

Current fiscal year (2008): One ;
Fiscal Year 2007: One ;
Fiscal Year 2006: One .

Federal agencies with which federal contracts are held:

Current fiscal year (2008): U.S. Dept. of Energy ;
Fiscal Year 2007: U.S. Dept. of Energy ;
Fiscal Year 2006: U.S. Dept. of Energy .

List of subjects of federal contract(s) (for example, ship construction, aircraft parts manufacturing, software design, force structure consultant, architecture & engineering services, etc.):

Current fiscal year (2008): Management & Operation of ;
Fiscal Year 2007: the Nevada Test Site ;
Fiscal Year 2006: .

Aggregate dollar value of federal contracts held:

Current fiscal year (2008): ;
Fiscal Year 2007: ;
Fiscal Year 2006: .

Federal Grant Information: If you or the entity you represent before the Committee on Armed Services has grants (including subgrants) with the federal government, please provide the following information: **N/A**

Number of grants (including subgrants) with the federal government:

Current fiscal year (2008):_____;
Fiscal Year 2007:_____;
Fiscal Year 2006:_____.

Federal agencies with which federal grants are held:

Current fiscal year (2008):_____;
Fiscal Year 2007:_____;
Fiscal Year 2006:_____.

List of subjects of federal grants(s) (for example, materials research, sociological study, software design, etc.):

Current fiscal year (2008):_____;
Fiscal Year 2007:_____;
Fiscal Year 2006:_____.

Aggregate dollar value of federal grants held:

Current fiscal year (2008):_____;
Fiscal Year 2007:_____;
Fiscal Year 2006:_____.

Statement of J. Greg Meyer

President and General Manager
Babcock &Wilcox Technical Services Pantex, LLC

On
Nuclear Weapons Complex Modernization

Before the
Subcommittee on Strategic Forces
Committee on Armed Services
U.S. House of Representatives

JULY 17, 2008

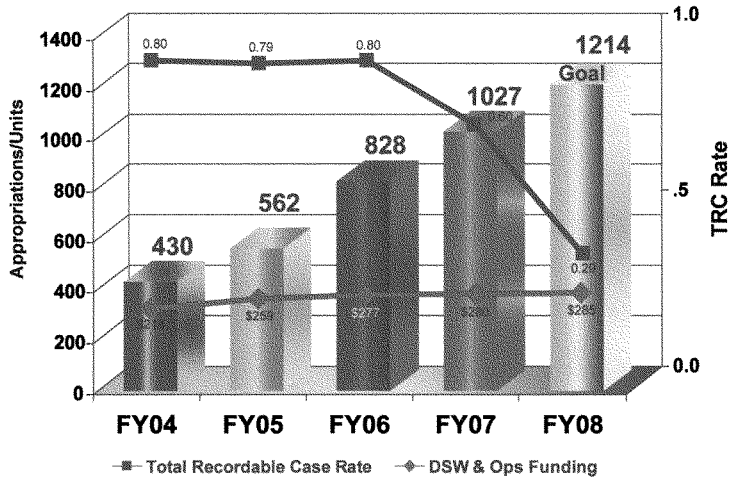
Thank you for the opportunity to speak about Pantex Plant's unique capabilities and how the site will play a strong role in the National Nuclear Security Administration's (NNSA) plan to transform the nuclear weapons complex.

Babcock &Wilcox Technical Services Pantex (B&W Pantex) is the management and operating contractor for the Pantex Plant located in Amarillo, Texas, and is responsible for the site's daily operations. In support of primary mission responsibilities, Pantex safely and securely fabricates chemical high explosives for nuclear weapons, assembles and performs maintenance and surveillance of nuclear weapons in the stockpile, disassembles nuclear weapons being retired from the stockpile, and provides interim storage of plutonium components from dismantled weapons.

B&W Pantex believes the NNSA's Complex Transformation plan will ensure the complex retains long-term viability as a responsive, flexible and cost-effective asset for national defense programs. Pantex Plant is prepared to support the roles outlined by the plan. We believe that continuing the work that we do currently and accepting the proposed activities would capitalize on the significant expertise, experience and infrastructure already funded, proven and available at the Pantex Plant.

The NNSA's Supplemental Programmatic Environmental Impact Statement (SPEIS) preferred alternative names Pantex Plant as the Center of Excellence for Assembly and Disassembly of Nuclear Weapons. Pantex is currently the only nuclear weapons site performing assembly and disassembly, and is the only viable option for this work. Over the last several years, our production output has steadily increased while manpower levels have remained essentially flat and budgets have remained fairly stable. Through efficiencies, using general industry methods such as Six Sigma and Kaizen Events in collaboration with both the national laboratories and other production plants, we have reduced the cost per unit by 54 percent since 2004. During the last fiscal year, B&W Pantex exceeded the production goal and demonstrated that the site has the

capability and capacity to complete between 1,000 and 1,200 deliverables on an annual basis. This capacity will vary depending on the workload mix but will meet all existing Production and Planning Directive (P&PD) scenarios for NNSA. We were able to accomplish this while achieving world-class safety levels that were recognized by the NNSA and private industry.



No other site in the complex has the facilities or work force needed to support the Nation's nuclear weapons production goals. The Pantex Plant is the only NNSA site ready to meet the FY05 Design Basis Threat this fiscal year. Building at another site to meet the needs of the Stockpile Stewardship Program would be cost prohibitive and increase the footprint of the Nuclear Weapons Complex (NWC). Maintaining the current mission, the infrastructure and workforce at Pantex is the best alternative for the Nation. Continued funding, specifically the Readiness of Technical Basis & Facilities (Operations of Facilities) and Safeguards and Security accounts, is required to maximize the efficiency of the site and provide the most value to the taxpayer.

The NNSA's preferred alternative also names Pantex Plant as the High Explosives (HE) Production and Machining Center of Excellence. Currently, Pantex has cradle to grave responsibility for high explosives production. The site synthesizes HE, formulates it for individual weapons programs, then presses and machines it for use in weapons. Pantex also tests high explosives in indoor and outdoor facilities and disposes of HE no longer needed in the stockpile. We are consolidating operations from World War II-era HE facilities to existing or new HE manufacturing facilities to provide more energy-efficient facilities, a safer working environment and more agile responses to mission requirements. A new High Explosive Pressing Facility, a currently authorized but not completely funded project, is a critical part of this consolidation. The demolition of the World War II facilities will result in footprint reductions.

Facility and equipment upgrades, coupled with continuous process improvements, will ensure that Pantex is positioned to support ongoing and projected nuclear weapons work. Pantex also will be able to provide HE to other government agencies, and to provide HE to non-government customers in "Work for Others" projects. These changes will improve our safety posture and will provide significant cost savings to the NNSA.

Other planned changes will consolidate the Pantex Plant infrastructure into a modern, efficient, smaller and less expensive site to operate and manage. Although B&W Pantex's stewardship has yielded a 98.5 percent facility utilization rate, we have developed strategies that will make the infrastructure even more responsive. These strategies include reducing the number of Firing Sites, consolidating administrative and technical operations into a new facility complex, and deactivating, decommissioning, and demolishing facilities that are no longer required. Also included is the consolidation of Special Nuclear Material (SNM) and weapons into an underground storage facility inside the main operations area where the actual work is performed. This will improve the efficiencies of operations. The current storage facility, which is in a different zone, would be closed. This would eliminate the need for a separate storage facility, and the associated security and on-site transport costs.

The Weapons Surveillance Facility (WSF) is one of several new buildings planned for the site. The WSF will increase existing capacities and provide new capabilities for the surveillance, evaluation, and re-acceptance of weapons and weapon components. B&W Pantex currently conducts a portion of the weapons surveillance activities; however, the weapons are transported to Los Alamos National Laboratory for further evaluation. The WSF will allow all evaluations to be performed at the Pantex site. The additional bays planned for the WSF and new enhanced Non-Destructive Evaluation (NDE) equipment will provide much needed capacity without reducing bays available for weapon operations. New capabilities will meet the increasing demands for higher diagnostic precision and analysis of weapons and components by employing current technology and modern equipment. In addition, the consolidation of weapons surveillance activities at Pantex will significantly reduce the need to move components between sites for evaluation and testing, thus reducing risks and costs associated with shipments.

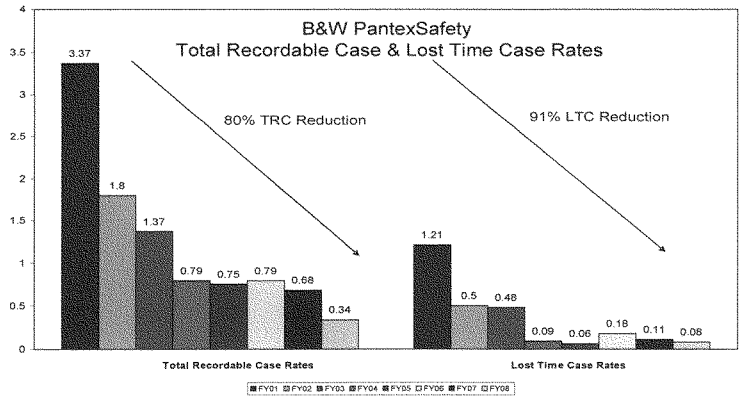
SNM activities are an integral part of weapons surveillance. B&W Pantex is conducting pit diagnostics, testing and refurbishment, which allow the pits to be reused. B&W Pantex has successfully processed pits through the Special Nuclear Material Component Requalification Facility (SNMCRF). B&W Pantex consolidated SNM activities into one division to capture the expertise needed to support and strengthen this program. This initiative provides the NNSA with the potential to realize a substantial cost savings.

Under the NNSA's leadership, B&W Pantex participated in a complex-wide initiative to improve weapons production. The Pantex Throughput Improvement Plan (PTIP) identified constraints to production throughput, and defined and implemented process changes that created significant improvements to production deliverables. In an effort to recognize further costs savings, B&W Pantex and B&W Y-12 are working together to optimize mission, laboratory and business operations through cooperative inter-site initiatives. Additionally, B&W Pantex continues to support and implement the NWC Supply Chain Center (SCC) and Information Resource Management (IRM) initiatives to consolidate, streamline and reduce business process costs. The

SCC initiative is already providing benefit to the Pantex Plant. B&W Pantex has utilized the NWC Supply Chain Center to acquire materials and services that represent 12 % of the sites procurement budget.

The company's focus on Integrated Safety Management (ISM) will continue to seamlessly integrate safety, security and quality into work processes. Of course, none of these accomplishments would be possible without a well-trained work force. Amarillo has a strong local job market, and we have created an alliance with local educational institutions for the training of production technicians and the availability of advanced degrees in Engineering and Business Administration. B&W Pantex has maintained critical skills including engineering, manufacturing, radiation safety, emergency response, nuclear safety and production. The company also has an established training and certification program that has been recognized by the Society for Training & Development (ASTD) in both 2007 and 2008.

The Pantex Plant has a strong safety culture that we have developed through well-designed and aggressive safety management techniques such as improved hazard recognition, hazard correction and employee involvement. Safe performance has been a primary focus of B&W Pantex since the company assumed the contract in February 2001. As a result, safety performance at the site has improved even as weapons maintenance and dismantlement activities have increased. We have seen an 80 percent improvement in our recordable injuries rate and a 91 percent improvement in lost time case rate. B&W Pantex was named one of America's Safest Companies by Occupational Hazards magazine in 2007. We have also received four awards from the National Safety Council in the past year and the Occupational Achievement award from the American Society of Safety Engineers (ASSE). We have posted more than 3 million continuous work hours without a lost time injury in both 2007 and 2008. Although we are very proud of our safety record, our goal is zero accidents and zero injuries.



I want to also recognize the strong relationship we have developed with the communities surrounding Pantex. The Plant has been involved in community activities since employees began the Christmas Card project more than 50 years ago. Today, B&W Pantex sponsors a wide variety of community and educational projects partnering with local businesses, schools and charitable organizations. Most of our senior managers sit on boards for community organizations such as the United Way, the Amarillo Area Center for Advanced Learning and the High Plains Food Bank. Our employees are encouraged to participate in community activities and several serve in elected city and county positions. We are proud that for the past few years our employees have provided 10 percent of the contributions for the local United Way organization. B&W Pantex also has a number of Memorandums of Understanding (MOUs) with surrounding communities and counties for the exchange of fire and emergency medical services. We work closely with our neighbors to keep them informed about Plant activities, and we have developed an on-going interaction with local interest groups such as Panhandle Area Neighbors and Landowners, STAND (Sustainability in Technologies, Agriculture, and Nature's Diversity) and the Peace Farm. Although we have differing opinions, we believe the relationships are amicable. Since assuming the Pantex contract in 2001 and as part of our ongoing efforts to protect public health and the environment and communicate those activities with the neighbors and community, we have informed them about our continued efforts to remediate the subsurface groundwater from legacy site activities and prevent contamination of the Ogallala Aquifer. The State of Texas Commission on Environmental Quality recently recognized our environmental stewardship efforts by awarding us Gold Level membership status in their Clean Texas Program for environmental accomplishments.

In closing, I can assure you that B&W Pantex can incorporate the NNSA's preferred alternatives into its current mission work and can sustain that capacity if funding is appropriated. B&W Pantex will support the schedule detailed in the NWC Transformation Integrated Master Schedule for preferred scenario transformation activities contingent upon the availability of transition and transformation funding. Schedules for the recommended additional new missions for B&W Pantex that are not in the preferred scenario will be developed as the SPEIS Record of Decision is finalized.

Thank you for this opportunity to speak. I will take any questions.

DISCLOSURE FORM FOR WITNESSES
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Witness name: J. Greg Meyer

Capacity in which appearing: (check one)

___Individual

X Representative

If appearing in a representative capacity, name of the company, association or other entity being represented: B&W Pantex

FISCAL YEAR 2008

federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
1	DOE/National Nuclear Security Administration	$552,029,000 (Cum $3,691,906,975)	(See Attached)

FISCAL YEAR 2007

federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
1	DOE/NNSA	$510,480,000 (Cum $3,139,877,975)	(See Attached)

FISCAL YEAR 2006

Federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
1	DOE/NNSA	$456,667,000 (Cum $2,629,397,975)	(See attached)

Federal Contract Information: If you or the entity you represent before the Committee on Armed Services has contracts (including subcontracts) with the federal government, please provide the following information:

Number of contracts (including subcontracts) with the federal government:

Current fiscal year (2008): 1 (one) (Multi-year);
Fiscal year 2007: 1 (one) (Multi-year);
Fiscal year 2006: 1 (one) (Multi-year).

Federal agencies with which federal contracts are held:

Current fiscal year (2008): DOE/NNSA;
Fiscal year 2007: DOE/NNSA,
Fiscal year 2006: DOE/NNSA.

List of subjects of federal contract(s) (for example, ship construction, aircraft parts manufacturing, software design, force structure consultant, architecture & engineering services, etc.):

Current fiscal year (2008): See Attached,
Fiscal year 2007: Same as above;
Fiscal year 2006: Same as above.

Aggregate dollar value of federal contracts held:

Current fiscal year (2008): $552,029,000 (Cum. Value $3,691,906,975)
Fiscal year 2007: $510,480,000 (Cum. Value $3,139,877,975);
Fiscal year 2006: $456,667,000 (Cum. Value $2,629,397,975)

Federal Grant Information: If you or the entity you represent before the Committee on Armed Services has grants (including subgrants) with the federal government, please provide the following information:

Number of grants (including subgrants) with the federal government:

Current fiscal year (2008): Not Applicable;
Fiscal year 2007: _____;
Fiscal year 2006: _____.

Federal agencies with which federal grants are held:

Current fiscal year (2008): Not Applicable;
Fiscal year 2007: _____;
Fiscal year 2006: _____.

List of subjects of federal grants(s) (for example, materials research, sociological study, software design, etc.):

Current fiscal year (2008): Not Applicable;
Fiscal year 2007: _____;
Fiscal year 2006: _____.

Aggregate dollar value of federal grants held:

Current fiscal year (2008): Not Applicable;
Fiscal year 2007: _____;
Fiscal year 2006: _____.

Written Statement of Vincent L. Trim

President, Honeywell Federal Manufacturing & Technologies (FM&T)

On

Complex Transformation

Before the
Committee on Armed Services
Subcommittee on Strategic Forces

July 17, 2008

Honeywell Federal Manufacturing & Technologies (FM&T) appreciates the opportunity to submit written testimony to the Members of the Committee on Armed Services' Subcommittee on Strategic Forces regarding the National Nuclear Security Administration's (NNSA) vision for Complex Transformation.

Background

Honeywell FM&T operates the Kansas City Plant (KCP) on behalf of the NNSA under a Management and Operations (M&O) contract and is a minority partner in the M&O companies that manage the Pantex and Savannah River sites. FM&T has played a key role in past transformational activities including the consolidation of various non-nuclear operations into the KCP from sites in Florida, Colorado and Ohio.

The KCP produces non-nuclear components for the nuclear weapons stockpile and performs national security work for other government agencies. The vast size and breadth of capability in both technology and human capital make the KCP one of the most unique manufacturing facilities in the United States. The KCP is the nation's primary repository of manufacturing and supply chain knowledge related to non-nuclear component product realization. The plant represents 60,000+ years of integrated specialized manufacturing knowledge.

Kansas City Responsive Infrastructure Manufacturing and Sourcing (KCRIMS) Initiative

FM&T is actively supporting the NNSA's Complex Transformation vision through the Kansas City Responsive Infrastructure Manufacturing and Sourcing (KCRIMS) initiative. This initiative will lead to savings of roughly $100 million per year on an NNSA plant budget of approximately $400 million per year. Contractor-led budget reductions of this magnitude in a "fee on cost" environment reflect the sense of urgency generated by NNSA leadership to fundamentally change the way we perform our mission.

KCRIMS supports NNSA's vision for Complex Transformation by delivering:

- **A vastly smaller, more modern manufacturing facility** – The proposed new facility will be roughly one third the size of the present facility and will be constructed to optimize energy efficiency and minimize infrastructure-related costs. It is configured for optimum flexibility to meet the Complex's changing manufacturing needs.

- **Streamlined commercial business processes that will reduce overhead costs by 30 percent over the next 4 years** – Business process transformation is moving the KCP to more commercial-like practices by making business processes more efficient, effective and integrated for maximum impact. FM&T has identified transformation improvements using assessments against the Baldrige criteria and other "best in class" performance standards.

- **Effective KCRIMS program execution within budget and on schedule** – FM&T has created an Integrated Project Plan (IPP) to capture interdependencies, assumptions, and risks across the enterprise in order to maintain our performance in cost, schedules, and customer satisfaction during the transition. Major activities include producing build ahead components and assemblies to prevent downtime, implementing workforce transformation plans to ensure that needed skill sets are maintained, shifting certain work to U.S. suppliers, and the application of lean principles throughout the manufacturing process.

The Special Programmatic Environmental Impact Statement (SPEIS)
FM&T supports the NNSA's Complex Transformation plans described in the SPEIS. The preferred alternative comprehends the importance of retaining vital human capital and attendant experience while addressing an aging infrastructure and ever increasing support costs. That said, FM&T remains on a more aggressive timeline to reduce overhead support costs at the KCP consistent with KCRIMS objectives.

Transformation is correctly focused on reductions in infrastructure and overhead costs but the NNSA is also addressing the need to reduce procurement costs. The Complex has demonstrated through the recently established Supply Chain Management Center (SCMC) that collaborative efforts among all NNSA sites to leverage purchasing power yields savings that can be used to partially fund transformation. Since its inception the SCMC has generated cost savings of $14 million that will increase to well over $30 million by year's end. The SCMC approach gives suppliers the opportunity to participate in Complex Transformation.

Conclusion
Transformation is more than a fiscal imperative. Like other contractors, FM&T is concerned about demographic realities that are changing the face of the Nuclear Weapons Complex. Talented scientists, engineers and manufacturing technologists are retiring at an increasing rate as the Cold War hiring wave plays itself out. The Complex will likely struggle to attract comparable talent in the future if we don't invest in the transformation of facilities, processes and weapons systems today.

FM&T remains committed to the Transformation vision outlined by Mr. Thomas D'Agostino and will continue to leverage opportunities to team with other production plants and laboratories to meet NNSA goals and objectives for the future – to ensure that America's nuclear stockpile is safe, secure and reliable.

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Witness name: Vincent L. Trim

Capacity in which appearing: (check one)

___Individual

_X_ Representative

If appearing in a representative capacity, name of the company, association or other entity being represented: Honeywell Federal Manufacturing & Technologies, LLC

FISCAL YEAR 2008

federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
DE-AC04-02AL66850	DOE/NNSA	$480 Million	NNSA Kansas City Plant

FISCAL YEAR 2007

federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
DE-AC04-02AL66850	DOE/NNSA	$484 Million	NNSA Kansas City Plant

FISCAL YEAR 2006

Federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
DE-AC04-02AL66850	DOE/NNSA	$465 Million	NNSA Kansas City Plant

Federal Contract Information: If you or the entity you represent before the Committee on Armed Services has contracts (including subcontracts) with the federal government, please provide the following information:

Number of contracts (including subcontracts) with the federal government:

Current fiscal year (2008): One;
Fiscal year 2007: One;
Fiscal year 2006: One.

Federal agencies with which federal contracts are held:

Current fiscal year (2008): DOE/NNSA;
Fiscal year 2007: DOE/NNSA;
Fiscal year 2006: DOE/NNSA.

List of subjects of federal contract(s) (for example, ship construction, aircraft parts manufacturing, software design, force structure consultant, architecture & engineering services, etc.):

Current fiscal year (2008): NNSA Kansas City Plant;
Fiscal year 2007: NNSA Kansas City Plant;
Fiscal year 2006: NNSA Kansas City Plant.

Aggregate dollar value of federal contracts held:

Current fiscal year (2008): $480 Million;
Fiscal year 2007: $484 Million;
Fiscal year 2006: $465 Million.

Federal Grant Information: If you or the entity you represent before the Committee on Armed Services has grants (including subgrants) with the federal government, please provide the following information:

Number of grants (including subgrants) with the federal government:

Current fiscal year (2008): N/A;
Fiscal year 2007: N/A;
Fiscal year 2006: N/A.

Federal agencies with which federal grants are held:

Current fiscal year (2008): N/A;
Fiscal year 2007: N/A;
Fiscal year 2006: N/A.

List of subjects of federal grants(s) (for example, materials research, sociological study, software design, etc.):

Current fiscal year (2008): N/A;
Fiscal year 2007: N/A;
Fiscal year 2006: N/A.

Aggregate dollar value of federal grants held:

Current fiscal year (2008): N/A;
Fiscal year 2007: N/A;
Fiscal year 2006: N/A.

Statement of Darrel P. Kohlhorst

President and General Manager
Babcock &Wilcox Technical Services Y-12, LLC

On
Modernization of the Nuclear Weapons Complex

Before the
Subcommittee on Strategic Forces
Committee on Armed Services
U.S. House of Representatives

July 17, 2008

Thank you for the opportunity to submit this statement regarding the National Nuclear Security Administration's (NNSA) plans for transforming the nuclear weapons complex and the role of the Y-12 National Security Complex (Y-12), located in Oak Ridge, Tennessee, in those plans.

Babcock &Wilcox Technical Services Y-12 (B&W Y-12) is the management and operating contractor for Y-12, a vital production component of today's nuclear weapons complex. Today, the Y-12 missions include manufacturing, dismantlement, and assessment of nuclear weapon secondaries, cases, and other weapons components; safely and securely storing and managing highly enriched uranium (HEU); supplying HEU for use in naval reactors; promoting international nuclear safety and nonproliferation; and reducing global dangers from weapons of mass destruction. We are committed to increased productivity while maintaining a focus on continued safety improvement and workforce restructuring.

B&W Y-12 fully supports NNSA's desire and approach to accelerate the fundamental transformation of the nuclear weapons complex over the next 10 years and, more specifically, endorses NNSA's preferred alternative contained in the *Draft Complex Transformation Supplemental Programmatic Environmental Impact Statement* (SPEIS) released in December 2007. That preferred alternative, the distributed centers of excellence, names Y-12 as the Uranium Center of Excellence with the continuation of our currently assigned missions. It also endorses completion of construction and operation of the Highly Enriched Uranium Materials Facility (HEUMF) and design of the Uranium Processing Facility (UPF). The relocation of the Y-12 mission to another site would require a major, upfront facility investment; the establishment and training of a new workforce; overlapping operations to ensure a proper transition and mission continuation; relocation of special nuclear material, fixtures, and tooling; and the initiation of a full shutdown, decommissioning, and demolition program for Y-12. Studies and analyses performed to date indicate that Y-12 represents the least cost, lowest risk approach for transforming NNSA's uranium mission.

I'd like to specifically address the need for transformation at Y-12. Most of the uranium facilities at Y-12 were constructed in the 1940s and 1950s and were not designed to meet today's nuclear safety and security standards. They are oversized to support the stockpile of today and the future. While Y-12 operates in a safe and compliant manner today, it requires ever-increasing operations and maintenance funding with increasing risk to the mission as the facilities continue to exceed normal operating lifetimes. Compliance with today's more stringent security requirements demands a manpower-intensive approach, because decades ago the facilities were not designed to address security concerns. From an overall transformation perspective, Y-12 has been referred to as the "poster child" for the aging nuclear weapons complex, but we have also been recognized for our aggressive approach to transformation. Y-12 has created a clear path to resolve these infrastructure issues and we are well on our way to the future.

The Y-12 transformation plan that is being implemented focuses on downsizing, consolidating, and rebuilding mission-critical facilities with a special emphasis on health, safety, environmental, and security solutions. Construction of HEUMF will be completed this summer, and the preliminary design of UPF is well under way. Completion of these two facilities, which will house all enriched uranium production and storage operations, will lead to a 90% reduction (from 150 acres to 15 acres) in the high security area and a 60% reduction in the nuclear facility footprint. In addition, it will lead to a reduction of approximately $200M per year in operations, maintenance and security costs. In light of the age and condition of our existing enriched uranium facilities and the opportunity for substantial savings in annual operating costs, it is imperative that we keep UPF on an aggressive schedule.

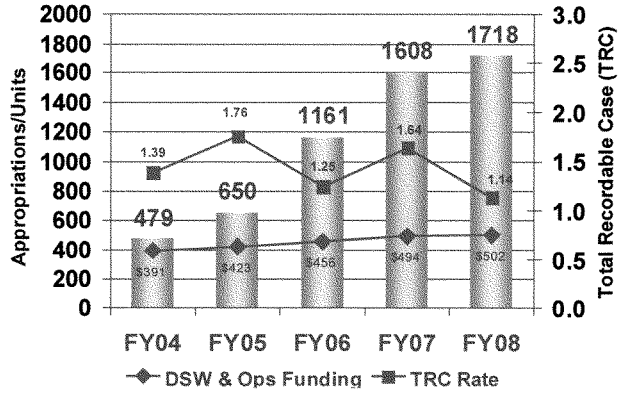
During the past 3 years we have consolidated our surveillance and depleted uranium metal cycle operations from four facilities to two, allowing us to cease operations in two 1940s production facilities encompassing approximately 900,000 sq ft. We have demolished more than 1 million sq ft of Cold War-era structures and consolidated technical and administrative functions into two new facilities eliminating the use of 35 Cold War-era facilities. One of our two new technical and administrative facilities is LEED (Leadership in Energy and Environmental Design) certified and is one of only eight such facilities in Tennessee. We are proactively addressing legacy facilities that have or will become excess to NNSA by teaming with Department of Energy-Oak Ridge Operations Environmental Management and Oak Ridge National Laboratory on an Integrated Facilities Disposition Project (IFDP) that will disposition 15 major facilities at Y-12, many of which are process contaminated, totaling approximately 3.8 million sq ft. The Critical Decision 0 (approval of mission need) for IFDP was approved in 2007, and Critical Decision 1 (approval to start preliminary design) was submitted for approval in June 2008.

Investments made through the Facilities and Infrastructure Recapitalization Program (FIRP), the Readiness Campaign, and the Plant Directed Research and Development (PDRD) programs are making a great contribution to transformation of the site. FIRP investments have enabled infrastructure upgrades, reduced the deferred maintenance backlog by more than $133M, and supported major renovation to our compressed air, potable water, and steam generation systems. Similarly, Campaigns and PDRD investments have supported replacement of key production equipment and the development and deployment of new technologies such as microwave casting, specialized infrared heating applications, and agile machining to more capably and efficiently

perform our mission. These upgrades will help bridge the gap to the new Y-12 and allow us to take advantage of new technologies contributing to cost reductions.

Y-12 is a recognized leader in its safeguards and security program and is providing innovative solutions for the timely and cost-effective compliance with increasing Design Basis Threat (DBT) requirements. We have been actively dismantling retired systems, consolidating special nuclear material into fewer locations, and implementing physical security improvements that allow us to meet the DBT policy without significant increases in our protective force staff. Our designed denial facility approach for HEUMF and UPF will support the most cost effective approach for the safe and secure management of the U.S. HEU stockpile.

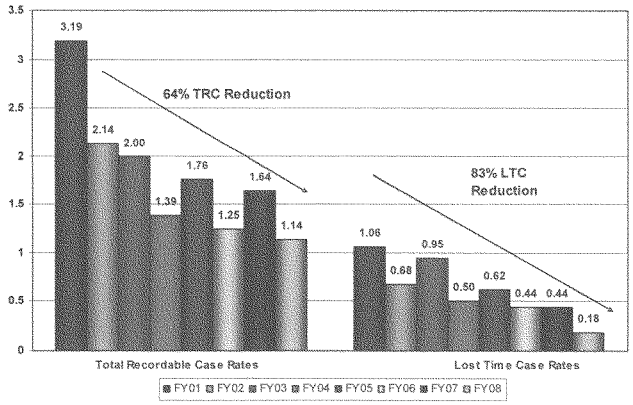
As you can see, we are already well on our way to transforming Y-12 to a smaller, modern, and more responsive complex. At the same time, it's important to note that Y-12 continues to provide and improve critical mission support for weapons refurbishment and dismantlement. We completed the W87 Life Extension Program in FY 2004. This year we will complete the B61 Alt 357 Program, reducing the average cost per unit by approximately 46% of the original estimate, and achieve first production unit and production ramp-up on the W76 Life Extension Program. In FY 2006 we more than tripled weapons dismantlement rates, and in FY 2007 and FY 2008 we sustained these accelerated rates. Savings achieved from these dismantlement efficiencies were used to provide funding for consolidation of our surveillance operations to ultimately achieve greater productivity and reduced cost. These achievements were realized while maintaining safety as our number one priority with modest increases to our annual operating funds.



Y-12 safety, production performance, and funding.

The federal budget profiles for FY 2009 and beyond compel us to accelerate and expand productivity and cost-reduction efforts at Y-12. We are engaging all Y-12 organizations to assess and improve the effectiveness and efficiency of how we create and deliver our products and services. As part of this initiative, I chartered an Indirect Review Board, accountable to me, to foster success in productivity improvement, to properly resource site-wide efforts, and to maximize the value for the U.S. taxpayer funding we receive. By becoming more efficient in every activity, cost savings will support improved site conditions and responsiveness. To achieve further costs savings, B&W Y-12 and B&W Pantex are working together to optimize mission, laboratory, and business operations through cooperative inter-site initiatives. These initiatives include sharing of best business practices and continuation of collaborative improvement programs like the Y-12 Throughput Improvement Plan and the Pantex Throughput Improvement Plan.

A major attribute of Y-12 today is our highly skilled workforce, which cannot be easily replaced. Y-12 is implementing an integrated human capital strategy to recruit, retain, and develop a highly skilled, flexible, and diverse workforce. In addition to expanding on-the-job training and training development, we are increasing our community outreach and manufacturing partnership and apprenticeship programs with labor unions and area schools to create the skilled crafts talent pool for future essential skills. Finally, we are expanding our Knowledge Preservation and Management activities to ensure we do not lose critical scientific, engineering, and manufacturing knowledge. As we downsize and modernize our operations and facilities over the next 10–15 years, we expect to see a 20–30% decrease in the workforce funded by NNSA Defense Programs. If allowed to be managed, most of that change can be achieved through attrition. B&W Y-12 has a strong safety culture which is supported by our workforce. We have seen a 64% improvement in our recordable injuries rate and an 83% improvement in our lost time case rate. Our goal is zero accidents and zero injuries.



Y-12 total recordable case and lost time case rates.

Much of my prior discussion has been associated with NNSA's stockpile stewardship efforts. Y-12 plays a vital role in the U.S. nuclear nonproliferation efforts by managing NNSA's Fissile Material Disposition Program. This program has dispositioned more than 113 metric tons of HEU (uranium enriched to contain 20% or more of the fissionable isotope U-235), down blended more than 97 metric tons to commercial nuclear fuel, and supplied 80% of the world's low enriched uranium research reactors with down blended HEU. Y-12 is also the supplier of HEU feedstock to the US Navy's Nuclear Fleet, supplying more than 18 metric tons of HEU for use by the Naval Reactors Program.

I believe it is important to note the overwhelming support Y-12 is receiving for its transformation efforts and future as the Uranium Center of Excellence from the State of Tennessee, the local community, and our local partners and collaborators. Y-12 is situated in a strong scientific and technical community and enjoys the benefit of working with the Oak Ridge National Laboratory, the Tennessee Valley Authority, the University of Tennessee, the Oak Ridge Associated Universities, and the Tennessee Valley Corridor. These relationships strengthen Y-12's ability to attract and retain a world-class workforce, to team on projects of national security importance, and to share production and technology solutions. Y-12 has long been and continues to be a strong corporate citizen, both giving to and receiving benefit from this thriving community. About one thousand people, mostly in support of transformation, attended the Complex Transformation SPEIS Public Hearings in Oak Ridge early this year.

In closing, I want to reiterate B&W Y-12's strong commitment to NNSA Complex Transformation, to the completion of the ongoing Y-12 transformation plans, and to the continuation of aggressive productivity improvement initiatives that are increasing efficiency and improving product quality. There are six major facilities included in Y-12's transformation plan. Two facilities (Jack Case Center and New Hope Center) are complete, HEUMF will complete construction this summer, UPF is in preliminary design, the Complex Command Center will request Critical Decision 1 this summer, and the Consolidated Manufacturing Complex is in pre-conceptual planning phase. In the meantime, we must manage wisely and invest appropriately in our aging infrastructure to ensure it supports our critical uranium mission until we complete our new facilities. You can see that Y-12 will be ready for the next century; we are up to the challenge and are making visible progress.

Thank you again for the opportunity to submit this statement.

DISCLOSURE FORM FOR WITNESSES
CONCERNING FEDERAL CONTRACT AND GRANT INFORMATION

INSTRUCTION TO WITNESSES: Rule 11, clause 2(g)(4), of the Rules of the U.S. House of Representatives for the 110th Congress requires nongovernmental witnesses appearing before House committees to include in their written statements a curriculum vitae and a disclosure of the amount and source of any federal contracts or grants (including subcontracts and subgrants) received during the current and two previous fiscal years either by the witness or by an entity represented by the witness. This form is intended to assist witnesses appearing before the House Armed Services Committee in complying with the House rule.

Witness name: Darrel P. Kohlhorst

Capacity in which appearing: (check one)

___Individual

__X__Representative

If appearing in a representative capacity, name of the company, association or other entity being represented: B&W Technical Services Y-12 (B&W Y-12)

FISCAL YEAR 2008

federal ~~grant(s)~~ / contracts	federal agency	dollar value Est. Budget	subject(s) of contract or ~~grant~~
DE-AC05-00OR22800	U.S. Depart. of	$790,472,000	Management and Operation of
	Energy/National		the Y-12 National Security
	Nuclear Security		Complex
	Administration (NNSA)		

FISCAL YEAR 2007

federal ~~grant(s)~~ / contracts	federal agency	dollar value	subject(s) of contract or ~~grant~~
Same	Same	$700,000,000	Same

FISCAL YEAR 2006

Federal ~~grant(s)~~ / contracts	federal agency	dollar value	subject(s) of contract or ~~grant~~
Same	Same	$682,699,000	Same

Federal Contract Information: If you or the entity you represent before the Committee on Armed Services has contracts (including subcontracts) with the federal government, please provide the following information:

Number of contracts (including subcontracts) with the federal government:

Current fiscal year (2008): 1;
Fiscal year 2007: 1;
Fiscal year 2006: 1.

Federal agencies with which federal contracts are held:

Current fiscal year (2008): U.S. Department of Energy/NNSA;
Fiscal year 2007: Same;
Fiscal year 2006: Same.

List of subjects of federal contract(s) (for example, ship construction, aircraft parts manufacturing, software design, force structure consultant, architecture & engineering services, etc.):

Current fiscal year (2008): Management & Operation of Y-12 NSC;
Fiscal year 2007: Same;
Fiscal year 2006: Same.

Aggregate dollar value of federal contracts held:

Current fiscal year (2008): $790,472,000;
Fiscal year 2007: $700,000,000;
Fiscal year 2006: $682,699,000.

Federal Grant Information: If you or the entity you represent before the Committee on Armed Services has grants (including subgrants) with the federal government, please provide the following information:

Number of grants (including subgrants) with the federal government:

Current fiscal year (2008): None;
Fiscal year 2007: None;
Fiscal year 2006: None.

Federal agencies with which federal grants are held:

Current fiscal year (2008): None;
Fiscal year 2007: None;
Fiscal year 2006: None.

List of subjects of federal grants(s) (for example, materials research, sociological study, software design, etc.):

Current fiscal year (2008): None;
Fiscal year 2007: None;
Fiscal year 2006: None.

Aggregate dollar value of federal grants held:

Current fiscal year (2008): None;
Fiscal year 2007: None;
Fiscal year 2006: None.

Statement of Dennis Hayes

General Manager, Defense Programs

Washington Savannah River Company

Before the

Committee on Armed Services
Subcommittee on Strategic Forces

July 17, 2008

Thank you for the opportunity to provide this statement in support of today's hearing.

I am here representing the Washington Savannah River Company, which has served as the operating contractor at the Savannah River Site since 1989. Our company is pleased to have helped play a role in NNSA's national security mission, and grateful for all of the stakeholder support that has allowed the missions at SRS to succeed.

Today, the Savannah River Site is home to a complex of facilities that are designed and operated to process tritium, the radioactive form of hydrogen gas that is an essential component of a nuclear weapon. Our operations include reclamation of previously used tritium reservoirs; receipt, packaging and shipping of reservoirs; recycling, extraction and enrichment of tritium gas; and laboratory operations.

We are fully supportive of the Complex Transformation vision, as outlined by Mr. D'Agostino. At Savannah River, we are already adjusting to the changing workload associated with today's stockpile requirements; we also have been full participants in the process to date, helping to develop alternatives in the areas of tritium, plutonium and uranium.

The Savannah River Site tritium facilities have already gone through a transformation since the mid-1990s, and can be seen as one of the models for what can be achieved through transformation. From 1994 through 2007, SRS successfully executed three major line item projects – the Replacement Tritium Facility (1994), the Tritium Consolidation Project (2004) and the Tritium Extraction Facility (2007) – that now make up the core operation.

Through that transformation, which replaced all of the original SRS tritium gas processing capability, we have achieved the following:

-Implementation of state of the art technology.

-Substantial improvements in worker safety and reductions in environmental emissions.

-An overall enhancement to basic capabilities to support the complex and the stockpile, both today and for the foreseeable future.

In that same timeframe, we successfully executed the transfer of the Gas Transfer System Surveillance mission. The Savannah River Site's acceptance of that mission enabled DOE to cease operations at the Mound Site in Ohio, and helped enable the transfer of that site to the local community for reuse efforts.

All of the above efforts support the transformation goal of eliminating redundant capability where it makes sense and when the risks are acceptable.

As suggested in Mr. D'Agostino's testimony, the Savannah River tritium facilities would play a role in transformation as the preferred alternative for the tritium production center of excellence. That designation acknowledges the investment that has been made in the set of facilities described above; it also would allow for the consolidation of tritium research and development work at Savannah River, and the corresponding elimination of redundant capability and facility footprint. From the standpoint of our current operations, we are also implementing change that supports transformation goals. Our Tritium Extraction Facility personnel, for example, are working under a Responsive Operations plan, a plan that acknowledges and adapts to a changing workload, while making the best, most efficient use of a trained, mobile workforce. I would be happy to provide you with additional specific detail if you wish.

In summary, and on behalf of the Savannah River Site, we look forward to a continuing role in the transformed NNSA complex.

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Witness name: Dennis L. Hayes

Capacity in which appearing: (check one)

____ Individual

_X_ Representative

If appearing in a representative capacity, name of the company, association or other entity being represented: Washington Savannah River Company

FISCAL YEAR 2008

federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
DE-AC09-96SR-18500	DOE	1,330,859,000	M&O of SRS

FISCAL YEAR 2007

federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
DE-AC09-96SR-18500	DOE	1,375,946,530	M&O of SRS

FISCAL YEAR 2006

federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
DE-AC09-96SR-18500	DOE	1,551,379,005	M&O of SRS

Federal Contract Information: If you or the entity you represent before the Committee on Armed Services has contracts (including subcontracts) with the federal government, please provide the following information:

Number of contracts (including subcontracts) with the federal government:

Current fiscal year (2008): _____
Fiscal year 2007: _____
Fiscal year 2006: _____

Federal agencies with which federal contracts are held:

Current fiscal year (2008): _____
Fiscal year 2007: _____
Fiscal year 2006: _____

List of subjects of federal contract(s) (for example, ship construction, aircraft parts manufacturing, software design, force structure consultant, architecture & engineering services, etc.):

Current fiscal year (2008): _____
Fiscal year 2007: _____
Fiscal year 2006: _____

Aggregate dollar value of federal contracts held:

Current fiscal year (2008): _____
Fiscal year 2007: _____
Fiscal year 2006: _____

United States Government Accountability Office

GAO

Testimony

Before the Subcommittee on Strategic Forces, Committee on Armed Services, House of Representatives

For Release on Delivery
Expected at 10:00 a.m. EDT
Thursday, July 17, 2008

NUCLEAR WEAPONS

Views on NNSA's Proposal to Transform the Nuclear Weapons Complex

Statement of Gene Aloise, Director
Natural Resources and Environment

GAO-08-1032T

GAO
Accountability · Integrity · Reliability

Highlights

Highlights of GAO-08-1032T, a testimony before the Subcommittee on Strategic Forces, Committee on Armed Services, House of Representatives

July 17, 2008

NUCLEAR WEAPONS

Views on NNSA's Proposal to Transform the Nuclear Weapons Complex

Why GAO Did This Study

Over the past several years, a serious effort has begun to comprehensively reevaluate how the United States maintains its nuclear deterrent and what the nation's approach should be for transforming its aging nuclear weapons complex. The National Nuclear Security Administration (NNSA), a separately organized agency within the Department of Energy (DOE), is responsible for overseeing this weapons complex, which comprises three nuclear weapons design laboratories, four production plants, and the Nevada Test Site.

In December 2007, NNSA issued a draft report on potential environmental impacts of alternative actions to transform the nuclear weapons complex, which NNSA refers to as Complex Transformation. NNSA's preferred action is to establish a number of "distributed centers of excellence" at sites within the existing nuclear weapons complex, including the Los Alamos National Laboratory for plutonium capabilities, the Y-12 Plant for uranium capabilities, and the Pantex Plant for weapons assembly, disassembly, and high explosives manufacturing. NNSA would continue to operate these facilities to maintain and refurbish the existing nuclear weapons stockpile as it makes the transition to a smaller, more responsive infrastructure.

GAO was asked to discuss NNSA's Complex Transformation proposal. This testimony is based on previous GAO work.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Gene Aloise at (202) 512-3841 or aloisee@gao.gov.

What GAO Found

Transforming the nuclear weapons complex will be a daunting task. In April 2006 testimony before the Subcommittee on Energy and Water Development, House Committee on Appropriations, GAO identified four actions that, in its view, were critical to successfully achieving the transformation of the complex. On the basis of completed and ongoing GAO work on NNSA's management of the nuclear weapons complex, GAO remains concerned about NNSA's and the Department of Defense's (DOD) ability to carefully and fully implement these four actions. For this reason, GAO believes that the Congress must remain vigilant in its oversight of Complex Transformation. Specifically:

- NNSA and DOD have not established clear, long-term requirements for the nuclear weapons stockpile. While NNSA and DOD have considered a variety of scenarios for the future composition of the nuclear weapons stockpile, no requirements have been issued. It is GAO's view that NNSA will not be able to develop accurate cost estimates or plans for Complex Transformation until stockpile requirements are known. Further, recent GAO work found that the absence of stockpile requirements is affecting NNSA's plans for manufacturing a critical nuclear weapon component.

- NNSA has had difficulty developing realistic cost estimates for large, complex projects. In September 2007, a contractor provided NNSA with a range of cost estimates for over 10 different Complex Transformation alternatives. However, the contractor stated that (1) its analysis was based on rough order-of-magnitude estimates and (2) NNSA should not use its cost estimates to predict budget-level project costs. In addition, in March 2007 GAO reported that 8 of 12 major construction projects being managed by DOE and NNSA had exceeded their initial cost estimates.

- NNSA will need to develop a transformation plan with clear, realistic milestones. GAO expects that once NNSA decides the path forward for Complex Transformation later this year, NNSA will put forward such a plan. However, GAO has repeatedly documented problems with NNSA's ability to implement its plans. For example, in February 2006 GAO reported problems with the planning documents that NNSA was using to manage the implementation of its new approach for assessing and certifying the safety and reliability of the nuclear stockpile.

- Successful transformation requires strong leadership. In 2006, NNSA created an Office of Transformation to oversee its Complex Transformation activities. However, GAO is concerned that the Office of Transformation may not have sufficient authority to set transformation priorities for all of NNSA, specifically as they affect nuclear nonproliferation programs.

Madam Chairman and Members of the Subcommittee:

We are pleased to be here today to provide our observations on the National Nuclear Security Administration's (NNSA) proposal, known as Complex Transformation, to modernize the nuclear weapons complex. As you know, NNSA, a separately organized agency within the Department of Energy (DOE), is responsible for conducting nuclear weapon and nonproliferation-related national security activities in research and development laboratories, production plants, and other facilities.[1] With the moratorium on underground nuclear testing that began in 1992 and the subsequent creation of the Stockpile Stewardship Program, the mission of the nuclear weapons complex changed from "designing, building, and testing" successive generations of weapons to extending the life of the existing nuclear weapons stockpile through "scientific study, computer simulation, and refurbishment." To carry out its weapons activities, NNSA received about $6.3 billion for fiscal year 2008 and has requested about $6.6 billion for fiscal year 2009. Between fiscal years 2010 and 2013, NNSA is proposing to spend almost $29 billion for these programs.

Over the past decade, NNSA has invested billions of dollars in sustaining the Cold War-era stockpile and upgrading the three nuclear weapons design laboratories with new, state-of-the-art experimental and computing facilities. In contrast, the production infrastructure of the nuclear weapons complex is aging and increasingly outdated. The 2001 Nuclear Posture Review found that the nuclear weapons manufacturing infrastructure had atrophied and needed to be repaired.[2] NNSA estimates that it will cost $2.4 billion to reduce the backlog of deferred maintenance at these facilities to an appropriate level consistent with industry best practices. The 2001 Nuclear Posture Review also called for the development of a "responsive infrastructure" that would support a smaller nuclear deterrent. The United

[1]Specifically, NNSA operates three national nuclear weapon design laboratories—Lawrence Livermore National Laboratory, California; Los Alamos National Laboratory, New Mexico; and the Sandia National Laboratories, New Mexico and California—four nuclear weapons production sites—the Pantex Plant, Texas; theY-12 Plant, Tennessee; the Kansas City Plant, Missouri; and a portion of the Savannah River Site, South Carolina—and the Nevada Test Site.

[2]In section 1401 of the Floyd D. Spence Defense Authorization Act for Fiscal Year 2001 (Pub. L. No. 106-398), the Congress required the Secretary of Defense, in consultation with the Secretary of Energy, to "conduct a comprehensive review of the nuclear posture of the United States for the next 5 to 10 years." The 2001 Nuclear Posture Review was the second post-Cold War review of U.S. strategic nuclear forces. The first one was conducted in 1994.

States subsequently committed to stockpile reductions in the Moscow Treaty with Russia, which was ratified in 2003.

NNSA's Complex Transformation effort seeks to address these issues by transforming to a smaller, more responsive infrastructure—one that will ultimately support a smaller nuclear weapons stockpile—while continuing to maintain and refurbish the existing nuclear weapons stockpile in the interim. In recent years, NNSA and the Department of Defense (DOD) have advocated replacing the existing stockpile with one composed of reliable replacement warheads (RRW), which could potentially be easier to manufacture, maintain, and certify without the need for underground nuclear tests. They believe the RRW program would help transform the complex. In addition, in January 2008 the Congress established the Congressional Commission on the Strategic Posture of the United States, which must conduct a review of nuclear weapons policies and requirements.[3] NNSA and DOD must cooperate with the Commission as it conducts its review.[4]

In December 2007, NNSA issued a draft report on the potential environmental impacts of alternative Complex Transformation actions.[5] NNSA's preferred action is to establish a number of "distributed centers of excellence" at sites within the existing nuclear weapons complex.[6] The individual centers of excellence proposed include the Los Alamos National Laboratory (LANL) for plutonium capabilities, the Y-12 Plant for uranium capabilities, and the Pantex Plant for weapons assembly and disassembly as well as for high explosives manufacturing. In addition, NNSA's preferred action includes the consolidation of significant quantities of special nuclear material. Implementation of the preferred action is supported by two major construction projects: (1) the Chemistry and Metallurgy Research Replacement Facility at LANL, which would provide

[3]Commissioners include William Perry, James Schlesinger, John Foster, Lee Hamilton, Keith Payne, Ellen Williams, Harry Cartland, John Glenn, Fred Ikle, Morton Halperin, James Woolsey, and Bruce Tarter.

[4]National Defense Authorization Act for Fiscal Year 2008 (Pub. L. No. 110-181) §1062.

[5]NNSA, *Draft Complex Transformation Supplemental Programmatic Environmental Impact Statement* (Washington, D.C., Dec. 2007).

[6]According to NNSA, this preferred action is based on the consideration of environmental impacts, as well as consideration of other factors such as mission and infrastructure compatibility, economic analysis, safety, safeguards and security, and workforce training and retention.

upgraded analytical chemistry capabilities to support manufacturing of "pits"—a key nuclear weapons component that contains plutonium; and (2) the Uranium Processing Facility at Y-12, which would provide upgraded capabilities to support manufacturing and processing of weapons components containing uranium. The total costs of these two projects are currently estimated to be as high as $5.5 billion.

Our testimony discusses our concerns with NNSA's Complex Transformation proposal and is based on completed and ongoing GAO work. To carry out our objective, we relied on previous GAO work, including our April 2006 testimony before the Subcommittee on Energy and Water Development, Committee on Appropriations, House of Representatives;[7] a May 2008 report on nuclear weapon pit manufacturing;[8] and our March 2007 report on DOE's management of major construction projects.[9] We conducted the performance audit work that supports this statement in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to produce a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our statements today.

In summary:

Transforming the nuclear weapons complex will be a daunting task. The facilities that maintain and refurbish the legacy nuclear weapons stockpile must remain operational during the transition to a smaller, more responsive infrastructure while minimizing the potential safety, security, and environmental impacts of relocating and constructing this infrastructure. In our April 2006 testimony, we identified four actions that, in our view, are critical to successfully achieving the transformation of the

[7]GAO, *Nuclear Weapons: Views on Proposals to Transform the Nuclear Weapons Complex*, GAO-06-606T (Washington, D.C.: April 26, 2006).

[8]GAO, *Nuclear Weapons: NNSA Needs to Establish a Cost and Schedule Baseline for Manufacturing a Critical Nuclear Weapon Component*, GAO-08-593 (Washington, D.C.: May 23, 2008).

[9]GAO, *Department of Energy: Major Construction Projects Need a Consistent Approach for Assessing Technology Readiness to Help Avoid Cost Increases and Schedule Delays*, GAO-07-336 (Washington, D.C.: Mar. 27, 2007).

complex. We continue to believe these actions must be addressed. Specifically:

- NNSA and DOD will need to establish clear, long-term requirements for the stockpile by determining the types and quantities of nuclear weapons needed;
- After stockpile requirements are developed, NNSA will need to provide accurate estimates of the costs of transformation;
- NNSA will need to develop and implement a plan with clear milestones for measuring progress; and
- NNSA's Office of Transformation must have the authority to make and enforce its decisions on transformation and be held accountable by the Congress for achieving timely and cost-effective results.

On the basis of our review of recent and ongoing GAO work on NNSA's management of the nuclear weapons complex, we remain concerned about NNSA's and DOD's ability to carefully and fully implement these four actions. For this reason, we believe that the Congress must remain vigilant in its oversight of Complex Transformation.

NNSA and DOD Have Not Established Clear, Long-Term Requirements for the Nuclear Weapons Stockpile

The United States' nuclear weapons stockpile comprises nine nuclear weapons types, all of which were designed during the Cold War. Two of these systems—the B61 and the W76—are currently being refurbished to extend their useful lives for up to 30 years through NNSA's Life Extension Program.[10] In May 2008, we reported that, over the past few years, NNSA and DOD have considered a variety of scenarios for the future composition of the nuclear stockpile that would be based on different stockpile sizes and the degree to which the stockpile would incorporate new RRW designs.[11] For example, NNSA and DOD have considered how large the stockpile needs to be in order to maintain a sufficiently robust and responsive manufacturing infrastructure to respond to future global geopolitical events. In addition, NNSA and DOD have considered the number of warheads that will need to be either refurbished or replaced in the coming decades. However, NNSA and DOD have not issued requirements defining the size and composition of the future stockpile.[12]

We discussed one effect of this lack of clear stockpile requirements in our May 2008 report on plutonium pit manufacturing. Specifically, we found that in October 2006, NNSA proposed building a new, consolidated plutonium center at an existing DOE site that would be able to manufacture pits at a production capacity of 125 pits per year. However, by December 2007, NNSA stated that instead of building a new, consolidated plutonium center, its preferred action was to upgrade the existing pit production building at LANL to produce up to 80 pits per year.[13] Although DOD officials agreed to support NNSA's plan, these officials also stated that future changes to stockpile size, military

[10]NNSA has already refurbished the W87. However, as we reported in December 2000—GAO, *Nuclear Weapons: Improved Management Needed to Implement Stockpile Stewardship Program Effectively*, GAO-01-48 (Washington, D.C.: Dec. 14, 2000)—the W87 life extension experienced significant design and production problems that raised its costs by over $300 million and caused schedule delays of about 2 years. We found that one of the main causes for these problems was an inadequate management structure and unclear leadership.

[11]GAO-08-593.

[12]NNSA had planned to complete a detailed design definition and cost study of the RRW during 2008. However, the explanatory statement accompanying the fiscal year 2008 NNSA appropriation stated that the bill provided no funding for the RRW program.

[13]At LANL, pit manufacturing currently takes place within the Plutonium Facility-4 building, which was constructed in 1978 as a multiuse research and development facility. As of September 1, 2007, pit manufacturing and certification operations occupied about 35 percent of this building.

requirements, and risk factors may ultimately lead to a revised, larger rate of production. This uncertainty has delayed NNSA in issuing final plans for its future pit manufacturing capability.

NNSA Has Had Difficulty Developing Realistic Cost Estimates for Large, Complex Projects

Once a decision is made about the size and composition of the stockpile, NNSA should develop accurate estimates of the costs of transforming the nuclear weapons complex. In September 2007, a contractor provided NNSA with a range of cost estimates for over 10 different Complex Transformation alternatives.[14] For example, the contractor estimated that the cost of NNSA's preferred action would be approximately $79 billion over the period 2007 through 2060.[15] This option was also determined to be the least expensive. In contrast, the contractor's estimate for a consolidated nuclear production center—another alternative that would consolidate plutonium, uranium, and weapons assembly and disassembly at one site—totaled $80 billion over the same period.[16] Although these estimates differ by only $1 billion over 53 years, they are based on significantly different assumptions. Specifically, NNSA's preferred action assumes a manufacturing capacity of up to 80 pits per year, and the alternative for a consolidated nuclear production center assumes a capacity of 125 pits per year. In addition, the contractor cautioned that because its cost analysis was not based on any specific conceptual designs for facilities such as the consolidated nuclear production center, it had not developed cost estimates for specific projects. As a result, the contractor stated that its estimates should not be used to predict a budget-level project cost.

Historically, NNSA has had difficulty developing realistic, defensible cost estimates, especially for large, complex projects. For example, in March 2007,[17] we found that 8 of the 12 major construction projects that DOE and NNSA were managing had exceeded their initial cost estimates. One project, the Highly Enriched Uranium Materials Facility nearing

[14]TechSource, Inc., LMI Government Consulting, *Independent Business Case Analysis of Consolidation Options for the Defense Programs SNM and Weapons Production Missions*, preliminary draft, September 2007.

[15]This cost estimate is reported using net present value, base year 2007.

[16]The contractor assumed this consolidated nuclear production center would be constructed at LANL.

[17]GAO-07-336.

completion at the Y-12 Plant, has exceeded its original cost estimate by over 100 percent, or almost $300 million. We reported that the reasons for this cost increase included poor management and contractor oversight. In addition, NNSA's cost estimate for constructing the Chemistry and Metallurgy Research Replacement Facility has more than doubled—from $838 million to over $2 billion—since our April 2006 testimony. This revised cost estimate is so uncertain that NNSA did not include any annual cost estimates beyond fiscal year 2009 in its fiscal year 2009 budget request to the Congress. Finally, the preliminary results of our ongoing review of NNSA's Life Extension Program for this Subcommittee show that NNSA's cost estimate for refurbishing each B61 nuclear bomb has doubled since 2002.[18]

NNSA Will Need to Develop a Transformation Plan with Clear, Realistic Milestones

NNSA does not expect to issue a record of decision on Complex Transformation until later this year. As a result, we do not know the ultimate decision that NNSA will make—whether to modernize existing sites in the weapons complex or consolidate operations at new facilities. We expect that once NNSA makes this decision, NNSA will put forward a transformation plan with specific milestones to implement its decision. Without such a plan, NNSA will have no way to evaluate its progress, and the Congress will have no way to hold NNSA accountable.

However, over the past decade, we have repeatedly documented problems with NNSA's process for planning and managing its activities. For example, in a December 2000 report, we found that NNSA needed to improve its planning process so that there were linkages between individual plans across the Stockpile Stewardship Program and that the milestones contained in NNSA's plans were reflected in contractors' performance criteria and evaluations.[19] However, in February 2006, we reported similar problems with how NNSA is managing the implementation and reliability of the nuclear stockpile.[20] Specifically, we found that NNSA planning documents did not contain clear, consistent milestones or a comprehensive list of the scientific research being

[18]NNSA is currently refurbishing two types of B61 nuclear bombs: the B61-7 and the B61-11.

[19]GAO, *Nuclear Weapons: Improved Management Needed to Implement Stockpile Stewardship Program Effectively*, GAO-01-48 (Washington, D.C.: Dec. 14, 2000).

[20]GAO, *Nuclear Weapons: NNSA Needs to Refine and More Effectively Manage Its New Approach for Assessing and Certifying Nuclear Weapons*, GAO-06-261 (Washington, D.C.: Feb. 3, 2006).

conducted across the weapons complex in support of NNSA's Primary and Secondary Assessment Technologies programs. These programs are responsible for setting the requirements for the computer codes and experimental data needed to assess and certify the safety and reliability of nuclear warheads. We also found that NNSA had not established adequate performance measures to determine the progress of the weapons laboratories in developing and implementing this new methodology.

Successful Transformation Requires a Strong Office of Transformation

As we noted in July 2003, one of the key practices for successfully transforming an organization is to ensure that top leadership sets the direction, pace, and tone for the transformation.[21] One of the key problems that NNSA has experienced has been its inability to build an organization with clear lines of authority and responsibility. We also reported in January 2004 that NNSA, as a result of reorganizations, has shown that it can move from what was often called a "dysfunctional bureaucracy" to an organization with clearer lines of authority and responsibility.[22] In this regard, we stated in our April 2006 testimony that NNSA's proposed Office of Transformation needed to be vested with the necessary authority and resources to set priorities, make timely decisions, and move quickly to implement those decisions.[23] It was our view that the Office of Transformation should (1) report directly to the Administrator of NNSA; (2) be given sufficient authority to conduct its studies and implement its recommendations; and (3) be held accountable for creating real change within the weapons complex.

In 2006, NNSA created an Office of Transformation to oversee its Complex Transformation efforts. This office has been involved in overseeing early activities associated with Complex Transformation, such as the issuance of the December 2007 draft report on the potential environmental impacts of alternative Complex Transformation actions. However, the Office of Transformation does not report directly to the Administrator of NNSA. Rather, the Office reports to the head of NNSA's Office of Defense Programs. In this respect, we are concerned that the Office of

[21]GAO, *Results-Oriented Cultures: Implementation Steps to Assist Mergers and Organizational Transformations*, GAO-03-669 (Washington, D.C.: July 2, 2003).

[22]GAO, *National Nuclear Security Administration: Key Management Structure and Workforce Planning Issues Remain as NNSA Conducts Downsizing*, GAO-04-545 (Washington, D.C.: June 25, 2004).

[23]GAO-06-606T.

Transformation may not have sufficient authority to set transformation priorities for all of NNSA, specifically as they affect nuclear nonproliferation programs. Because NNSA's ultimate decision on the path forward for Complex Transformation has not yet been made, it remains to be seen whether the office has sufficient authority to enforce transformation decisions or whether it will be held accountable within NNSA for these decisions.

Madam Chairman, this concludes my prepared statement. I would be happy to respond to any questions that you or Members of the Subcommittee may have at this time.

GAO Contacts and Staff Acknowledgements

For further information on this testimony, please contact me at (202) 512-3841 or aloisee@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. Ryan T. Coles, Assistant Director; Allison Bawden; Jason Holliday; Leland Cogliani; Marc Castellano; and Carol Herrnstadt Shulman made key contributions to this testimony.

Testimony of Marylia Kelley, Executive Director, Tri-Valley CAREs, before the House Armed Services Subcommittee on Strategic Forces, regarding modernization of the nuclear weapons complex, 7/17/08

Thank you Madam Chairperson, Mr. Everett and subcommittee members for inviting me to testify before you today. I am Marylia Kelley, Executive Director of the Livermore, CA-based Tri-Valley CAREs, a non-profit organization founded in 1983 to monitor the U.S. nuclear weapons complex and its Lawrence Livermore National Laboratory. I represent the group's staff, board, technical advisors and 5,600 members who comprise a cross-section of our community including current and retired scientists and engineers.

My testimony will focus on three areas that are central to the subcommittee's interests and to this hearing: **(1)** The Dept. of Energy (DOE) National Nuclear Security Administration's (NNSA) preferred alternative for "Complex Transformation"; **(2)** A stockpile management alternative that will better assure the safety and reliability of the existing nuclear weapons arsenal at lower cost, reduced scientific risk and superior nonproliferation benefit; and **(3)** Specific alternatives for the future of nuclear materials and sites in the nuclear weapons complex.

THE COMPLEX TRANSFORMATION PLAN IS FLAWED

The NNSA has stated that Complex Transformation is the agency's "vision for a smaller, safer, more secure and less expensive nuclear weapons complex..." Let's take a closer look.

First, the "vision." Beneath the rhetoric, Complex Transformation calls for a significant revitalization of the nuclear weapons complex. The weapons complex of today consists of 8 major sites. After Complex Transformation is fully implemented, the weapons complex of the future will consist of the same 8 sites. The plan's centerpieces include a new, larger plutonium complex at the Los Alamos Lab in NM, capable of producing 80 new plutonium bomb cores per year, and a new Uranium Processing Facility at Y-12 in TN. According to the 2008 draft PEIS, Complex Transformation is based on the 2001 Nuclear Posture Review. Yet, Congress has already mandated that the next administration prepare a new Nuclear Posture Review. Thus, NNSA's plan will be dead on arrival; based on yesterday's policy, not forward-looking vision.

The NNSA touts its plan as a "smaller" nuclear weapons complex. Here, NNSA takes credit for proposing to demolish old buildings that, in many cases, are already in the queue to be torn down and decontaminated. As those activities will happen independently, their removal is not an achievement of Complex Transformation. The NNSA says its plan will reduce the square footage of buildings and structures supporting nuclear weapons missions from 35 million square feet today to about 26 million square feet. My organization and others *reject* the notion that a 26 million square foot complex refurbished with new capabilities and facilities in order to more efficiently develop and produce new nuclear weapons represents the major change in direction that is so sorely needed for the weapons complex infrastructure – and for nuclear weapons policy.

The NNSA calls its Complex Transformation plan "more secure," but, as I will discuss in the Livermore Lab section that follows, this plan keeps thousands of pounds of plutonium and highly enriched uranium in a vulnerable, untenable situation at Livermore Lab until 2012. Then, NNSA proposes to move the plutonium twice in service of Complex Transformation. This is not a plan that appropriately prioritizes the security of nuclear materials. Finally, NNSA insists the plan will be "less expensive," but fails to provide cost estimates in its draft PEIS. In 2006, the Government

Accountability Office offered an initial estimate of $150 billion over 20 years. Others suggest that Complex Transformation will exceed the $150 billion mark.

The NNSA promoted this plan in 2006 with vu-graphs stating that the Reliable Replacement Warhead (RRW) program "will be the 'enabler' for stockpile and infrastructure transformation." Since Congress has prudently cut the RRW budget since then, the NNSA has begun submerging the role of RRW in Complex Transformation. Make no mistake, however. The development of new and/or significantly modified nuclear weapons remains at the heart of the Complex Transformation approach, whether through RRW or a successor design program. The plan locks the nuclear weapons complex into a path that entrenches current nuclear weapons policy, preempts a full policy debate, and end runs both the commission that this subcommittee was instrumental in enabling through the National Defense Authorization Act of 2008 and the aforementioned new Nuclear Posture Review.

The NNSA has received between 115,000 and 120,000 verbal testimonies and written letters, cards, emails and petitions opposing the plan. Add the 33,000 who spoke or wrote in opposition during the initial "scoping" process, delete the duplicates, and the number approaches 150,000. This outpouring of comment represents a public referendum against the NNSA plan.

In sum, Complex Transformation is **wrong policy**, enabling new nuclear weapons programs that run counter to U.S. nonproliferation aims, **wrong direction,** building unneeded weapons facilities, **wrong priorities**, costing $150 billion or more and failing to quickly secure the nation's most vulnerable nuclear materials, and **wrong timing**, putting the "cart" of new bomb-building capabilities before the "horse" of the new policy and posture reviews. The public has roundly rejected the plan, the Congress has cut funds for some of its key elements, and the NNSA tells me it will release the final PEIS and execute a Record of Decision codifying the plan this Fall.

In so doing, the NNSA willfully ignores an alternative approach to managing the nuclear weapons stockpile that is technically, politically, environmentally and fiscally superior to the agency's "preferred alternative" outlined in the Complex Transformation PEIS.

SUPERIOR ALTERNATIVES EXIST: THE CURATORSHIP APPROACH

"Curatorship" is a far superior approach to maintaining the full safety and reliability of the existing nuclear weapons stockpile. Curatorship focuses on careful surveillance, analysis and refurbishment of the actual weapons in the arsenal rather than on pushing the envelope of new research and development, as is the case with the present "Stockpile Stewardship" program and, to an even greater extent, the proposed RRW path.

The NNSA's Stockpile Stewardship approach "emphasizes development and application of greatly improved scientific and technical capabilities to assess the safety, security and reliability of existing nuclear warheads...." In contrast, Curatorship is an inherently more conservative, less scientifically risky approach to that job. Under Curatorship, only if NNSA's surveillance activities demonstrated compelling evidence that a component had degraded, or would soon degrade, and further analysis indicated that such degradation could cause a significant loss of safety or reliability, would NNSA replace the affected part. The replacement would be remanufactured as close to the original design as possible.

Compared to Stockpile Stewardship, changes to weapons would be minimized using the Curatorship approach. One significant outcome of Curatorship is that less uncertainty would be introduced into the stockpile over time than is the case with the present program, which allows (and even encourages) major modifications. Likewise, Curatorship is a more certain approach to stockpile maintenance than the research, development, testing, engineering and production of what would be, in essential aspects, new warheads under the RRW program.

Instead of relying on a massive R & D enterprise geared more to the desires of a few individuals than to the needs of the weapons, Curatorship relies on the agency's extensive historical testing and certification activities, which have demonstrated that the existing stockpile is safe and secure. Under Curatorship, NNSA would need skilled engineers and physicists, with good judgement, to examine warheads and to determine when components must be replaced. The NNSA would continue to operate state-of-the-art testing and engineering facilities to examine components. It would retain sufficient capability to apply analytical models to questions of weapon safety and reliability. That said, NNSA would have no requirement for many of its Stockpile Stewardship facilities, which are primarily useful to design and certify new and/or significantly modified weapons and components.

The Curatorship approach will reduce the NNSA's environmental footprint and its operating costs. Under Curatorship, NNSA would close numerous facilities that use high explosives, tritium (radioactive hydrogen) and other hazardous materials beyond the NNSA's Complex Transformation plan. Moreover, under Curatorship, new facilities such as the Chemistry and Metallurgy Research buildings Replacement (CMRR) at Los Alamos Lab and the Uranium Processing Facility at Y-12 would not be built or operated, resulting in an environmental benefit. Curatorship would rein in costs. The NNSA currently spends about 50% of the Weapons Activities budget each year on nuclear weapons R & D. Under Curatorship, R & D would be directed primarily toward improving surveillance and testing, to understanding how materials in existing weapons age and to further validating codes and models to historical test results. Such R & D is estimated to amount to less than 20 % of the current budget.

Let me say a word here about Curatorship and nuclear disarmament, which my organization also advocates. Curatorship is not disarmament. Curatorship will fully maintain the safety and reliability of the existing U.S. nuclear weapons stockpile, which was extensively tested full-scale in Nevada, until such time as the weapons are dismantled. That said, the U.S. is committed to nuclear disarmament under Article VI of the Non-Proliferation Treaty (NPT), to which it is a signatory. Curatorship is more compatible with the NPT, and, more broadly, with U.S. nonproliferation aims, than either the present Stockpile Stewardship or the proposed RRW path.

Here is one example: The New Agenda Coalition, an influential group of signatory states to the NPT, has warned that any "plans or intentions to develop new types of weapons or rationalization for their use stand in marked contradiction to the NPT, and undermine the international community's efforts towards improving the security of all states." Curatorship avoids putting new military capabilities into the arsenal. By foregoing further "vertical proliferation," Curatorship will enhance the stature and effectiveness of the U.S. as we seek to work with our allies to address the rising pressures of the "horizontal proliferation" of nuclear weapons to new states. In so doing, Curatorship will reduce the nuclear dangers and make the U.S. and the world safer.

The Curatorship approach to managing the nuclear weapons stockpile builds on an impressive lineage. It stands on basic concepts advocated by Norris Bradbury, Los Alamos Lab director from 1945-1970, J. Carson Mark, former head of the Los Alamos's Theoretical Division, Richard Garwin, former nuclear weapon designer and current JASON, Ray Kidder, senior staff scientist and former weapons designer at Livermore Lab and others. In 2000, Tri-Valley CAREs contracted with Robert Civiak, a physicist and Budget Examiner for DOE weapons programs at the Office of Management and Budget from 1988-1999. Dr. Civiak undertook the analysis necessary to put the flesh on the bones of the Curatorship option. Much appreciation is also due recent and present weapons scientists for their evaluation of the Curatorship approach; in particular, to Roger Logan, a recent nuclear weapon design and certification retiree from Livermore Lab, who had served as head of the Lab's Directed Stockpile Work.

Tri-Valley CAREs provides a detailed analysis of Curatorship - and a list of facilities that would be available for closure or remissioning under this alternative - in its 2008 comments on the draft Complex Transformation PEIS, which I ask be included in its entirety in the hearing record.

SAMPLER OF ALTERNATIVE APPROACHES NEEDED AT THREE NNSA SITES

Livermore Lab: The main site sits on little more than one square mile with homes and apartments built up by its fence line. Suburban neighborhoods lie only about 800 yards from the Lab's "Superblock" and thousands of pounds of plutonium and highly enriched uranium. Tri-Valley CAREs has long-held concerns regarding the security of nuclear materials at Livermore Lab. This spring, DOE undertook a series of security drills, including a force-on-force test, in which a tactical security team played the role of an attacking force in order to see how the Lab's protective forces would respond. According to reports, the mock terrorist team's objective was to get to the nuclear material and hold the ground long enough to construct an Improvised Nuclear Device (capable of producing a nuclear explosion). A second scenario involved would be attackers stealing plutonium for use at a later date. While NNSA has yet to respond to Tri-Valley CAREs' Freedom of Information Act request for unclassified records regarding the security drill, the information we have gathered to date is that the mock terrorists succeeded in both of those objectives.

NNSA and Livermore Lab have attempted to downplay the significance of the security failures, claiming that the exercise was not realistic. However, the conditions favored the Lab's protective forces not the would-be attackers. The Lab was given extensive advance notice of the drill, which eliminated the element of surprise. The mock attack was conducted at night, when few of the Lab's thousands of employees were present. Further, because NNSA had given Livermore Lab a waiver from having to demonstrate compliance with the 2005 Design Basis Threat (DBT), the drill was conducted to the less rigorous specifications of the 2003 DBT. (The DBT is based on the Postulated Threat, which in turn is developed jointly by the DIA, FBI, CIA, DOE and DoD.)

Tri-Valley CAREs concludes the plutonium and highly enriched uranium at Livermore Lab is not secure, nor can it be made secure due to the compactness of the site, its 600 buildings cheek to jowl and the close proximity of densely populated neighborhoods, including my own. Tri-Valley CAREs is opposed to the NNSA proposal to leave these materials at Livermore Lab through 2012, as outlined in the draft Complex Transformation PEIS. I would also point to a 2007 GAO report, "DOE Has Made Little Progress Consolidating and Disposing of Special Nuclear Material." GAO stated that it will cost nearly half a billion dollars just to keep Livermore's plutonium in place for 7 years. GAO also noted the lack of any actual, detailed plan for its removal.

In addition to removing special nuclear material from the Lab, any forward-looking plan for the future of the complex would conclude that there is no "need" to maintain two full service nuclear weapon design labs. It is entirely feasible to transition Livermore Lab to new missions. Under this scenario, nuclear weapons design activities would cease. Nonproliferation, research on global climate change, non-polluting, renewable energy technologies and other science in the national interest would replace weapons R & D. Livermore Lab would maintain a small weapons footprint with about two dozen select staff supporting Curatorship and about the same number teamed to accomplish Certification tasks. The security costs at the site would plummet, a necessary step in making Livermore Lab competitive in attracting research projects. This idea, whose time has more than arrived, has a lineage that includes the late Rep. George Brown, former Chair of the Science Committee, and the recommendation of the DOE's "Galvin commission" among others.

Los Alamos & Sandia Labs: Many of the functions necessary for Curatorship would take place at Los Alamos. With the emphasis shifted from weapons design to maintenance, however, this could be accomplished without increasing the nuclear weapons footprint there. Tri-Valley CAREs opposes Complex Transformation's proposal to expand plutonium pit production at Los Alamos from its current 20 pits per year capacity to up to 80 bomb cores/year. In this regard, we note the proposed CMRR Nuclear Facility should not be built. We note also that under Tri-Valley CAREs' plan, Sandia, Albuquerque would retain the centrally important stockpile management program responsible for disassembling eleven warheads of each design each year to examine and test the components to determine if there are any "actionable" fixes to be carried out.

The Kansas City Plant: The NNSA is poised to privatize a key part of the nuclear weapons complex, which will circumvent the ability of Congress to authorize and appropriate funds. The plan is to build and operate a new Kansas City Plant eight miles from its present location under a lease back arrangement. This is occurring outside of the Complex Transformation PEIS or an Environmental Impact Statement. It is being pursued on the basis of a flimsy environmental assessment. Alternatives were given short shrift. NNSA and the General Services Administration have undertaken actions that appear to support a predetermined outcome, a violation of law. The plan violates Office of Management and Budget anti-deficiency guidelines. Tri-Valley CAREs advocates that Congress ask the GAO to investigate the lease arrangement and agency actions.

CONCLUSION: EMERGING POLICY TRENDS AND NEXT STEPS

2008 began with George Shultz, William Perry, Henry Kissinger and Sam Nunn renewing their efforts "Toward a Nuclear-Free World." Amb. James Goodby published an essay calling for 1,000 or fewer U.S. nuclear weapons by 2012. This is a trend line long-coming and worthy of further Congressional consideration. Too, NGOs will continue to contribute analyses. For example, Tri-Valley CAREs, other groups at NNSA sites and two of our DC colleagues, Natural Resources Defense Council and Project on Government Oversight, are undertaking an analysis of the "right sized" complex to support a stockpile of 500 warheads. Networks, like the Alliance for Nuclear Accountability, will continue to share perspectives from communities around DOE sites. My list could go on; notable activities abound. ***My conclusion is: The NNSA plan is flawed, the reality is that U.S. nuclear policy is at a crossroad, Curatorship is a sensible path forward, nuclear materials must be secured, scientific talent and funds need to be freed to address pressing priorities, the NGO community has ideas to share, and Congress has a uniquely important role to play in delegitimizing nuclear weapons and making the U.S. and the world safer.***

DISCLOSURE FORM FOR WITNESSES
CONCERNING FEDERAL CONTRACT AND GRANT INFORMATION

INSTRUCTION TO WITNESSES: Rule 11, clause 2(g)(4), of the Rules of the U.S. House of Representatives for the 110th Congress requires nongovernmental witnesses appearing before House committees to include in their written statements a curriculum vitae and a disclosure of the amount and source of any federal contracts or grants (including subcontracts and subgrants) received during the current and two previous fiscal years either by the witness or by an entity represented by the witness. This form is intended to assist witnesses appearing before the House Armed Services Committee in complying with the House rule.

Witness name: Marylia Kelley

Capacity in which appearing: (check one)

___Individual

_X_ Representative

If appearing in a representative capacity, name of the company, association or other entity being represented: Tri-Valley CAREs, Livermore, CA

FISCAL YEAR 2008

federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
TAG Grant	U.S. EPA	$1,501	Monitor Superfund Cleanup of LLNL Main Site and Site 300

FISCAL YEAR 2007

federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
TAG Grant	U.S. EPA	$32,145	Monitor Superfund Cleanup of LLNL Main Site and Site 300

FISCAL YEAR 2006

Federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
TAG Grant	U.S. EPA	$15,354	Monitor Superfund Cleanup of LLNL Main Site and Site 300

Federal Contract Information: If you or the entity you represent before the Committee on Armed Services has contracts (including subcontracts) with the federal government, please provide the following information:

Number of contracts (including subcontracts) with the federal government:

Current fiscal year (2008):_____;
Fiscal year 2007:_____;
Fiscal year 2006:_____.

Federal agencies with which federal contracts are held:

Current fiscal year (2008):_____;
Fiscal year 2007:_____;
Fiscal year 2006:_____.

List of subjects of federal contract(s) (for example, ship construction, aircraft parts manufacturing, software design, force structure consultant, architecture & engineering services, etc.):

Current fiscal year (2008):_____;
Fiscal year 2007:_____;
Fiscal year 2006:_____.

Aggregate dollar value of federal contracts held:

Current fiscal year (2008):_____;
Fiscal year 2007:_____;
Fiscal year 2006:_____.

Federal Grant Information: If you or the entity you represent before the Committee on Armed Services has grants (including subgrants) with the federal government, please provide the following information:

Number of grants (including subgrants) with the federal government:

Current fiscal year (2008): 2;
Fiscal year 2007: 2;
Fiscal year 2006: 2.

Federal agencies with which federal grants are held:

Current fiscal year (2008): U.S. EPA;
Fiscal year 2007: U.S. EPA;
Fiscal year 2006: U.S. EPA.

List of subjects of federal grants(s) (for example, materials research, sociological study, software design, etc.):

Current fiscal year (2008): Technical Assistance Grant (TAG) to monitor superfund cleanup
Fiscal year 2007: TAG to monitor superfund cleanup;
Fiscal year 2006: TAG to monitor superfund cleanup.

Aggregate dollar value of federal grants held:

Current fiscal year (2008): $1,501 to date;
Fiscal year 2007: $32,145;
Fiscal year 2006: $15,354.

Statement of Ambassador C. Paul Robinson, President Emeritus of Sandia Corporation and former Laboratories Director, Sandia National Laboratories

United States House of Representative

Committee on Armed Services
Strategic Forces Subcommittee

July 17, 2008

Introduction

I am C. Paul Robinson. I have testified before this Committee many times in the past: (1) in the 1980's when I led the nuclear weapons and national security efforts at Los Alamos, (2) in the late 1980's when I served as Ambassador and Head of the United States Delegation to the Nuclear Testing Talks between the U.S. and the USSR in Geneva, Switzerland, and (3) at Sandia, when I served as President and Laboratories Director from 1995 to 2005. I retired from full-time work in January of 2006, but continue to serve the country on a number of government advisory committees and boards.

I agreed to testify at this hearing in order to discuss perspectives I gained in these past posts and in my current roles. I will focus on what I believe are the most important problems plaguing the U.S. nuclear deterrent force, and which are causing its current malaise. I will stress the three issues you have requested be given priority in this hearing. My bottom line is: Since the end of the Cold War, the purpose of our nuclear deterrent has grown more and more confused. Now, the U.S. appears to be drifting, on what ought to be our most important defense issue.

Discussion of the Stockpile Stewardship Program (SSP)

The program was formulated in the early 1990's as an attempt of the Clinton administration to support a Comprehensive Test Ban. The SSP seeks to devise an alternative means to certify the performance of U.S. nuclear weapons rather than relying on underground nuclear tests. It uses large supercomputer models to better model the physical processes of all parts of a nuclear weapons device —from command through explosion— rather than relying only on data obtained from underground nuclear explosives testing. Such tests had formed the basis for certifying weapon functioning and reliability from the Trinity test, in 1945, to the last U.S. underground test in 1992.

I will repeat only a few of the words that most of us with responsibilities for U.S. warheads said at the time—e.g. that "there is no precedent for such complex technological devices to be depended on unless they were periodically tested" and that

"fielding of first-of-a-kind new devices without testing would be the most stressful challenge."

I also said in my October 7, 1999 testimony to the SASC (in hearings prior to the ratification votes on the proposed CTBT) that: "For a device as highly consequential as a nuclear weapon, testing of the complete system, both when it is first developed and periodically throughout its lifetime ... is the preferred methodology … To forego that validation through testing is, in short, to live with uncertainty."

Although all of the weapons labs, including my own laboratory —Sandia, agreed that we would support the concept of the "science-based" Stockpile Stewardship Program to the best of our abilities, I noted that I could not offer a proof that it could succeed as a substitute for nuclear testing. Now, here we are —nearly a decade later— and I cannot (nor —I believe—can anyone else) offer such a proof. Thus, we must continue to live with uncertainty as we also labor to sustain the U.S. stockpile and continue to develop the SSP, all without nuclear testing.

Some areas of the SSP program have admittedly worked better than I anticipated, as have the developments of far more powerful supercomputers that were deemed critical in order to undertake even more complex and detailed calculations of weapons phenomenology.

But in other areas we are just as uncertain today. My belief is that most weapons designers have less confidence about making changes to their designs than they had in the past. I particularly found the recent colloquy between the JASON group and the lab designers most curious —as they each speculated over the difficulties of fielding designs under the contemplated Reliable Replacement Weapon (RRW) effort. Although you will doubtless find a spectrum of views at the labs, my take is that uncertainties will necessarily (and quite naturally) grow over time for several of our systems.

I should add here that I was quite disappointed with the reception given the RRW here on the Hill. I was present for the meeting at LLNL where the idea of the RRW was born. It emerged from a question which Gen. Larry Welch, the Chairman of the Strategic Command SAG, asked "Will every future President have to be placed in a position where you Labs might suddenly come in and say 'Mr. President, there are sufficiently serious problems in key portions of our nuclear stockpile that we believe we must forsake the moratorium and conduct nuclear tests to adequately fix the problems.'?" General Welch challenged the labs by asking the follow-up question: "What could you be doing now that could significantly reduce the probability of that ever having to occur?"

After some discussion, the key idea of the RRW then emerged —that if we incorporated designs of "different genetic diversity" in each leg of the TRIAD, there would be a much lowered likelihood that all would fail at the same time from a common problem. Yet from what I've read, the Congressional support for the idea has been less than lukewarm —as evidenced by your canceling of the RRW funding, with some suggesting that the labs might be trying to "create new designs that would necessitate underground testing" in order to field the RRW. I assure you that this suggestion is just not true. RRW was

conceived to lessen the likelihood that testing would be needed. At the very least I must conclude that "there has been a significant failure to communicate", and I believe we must not let such misunderstandings perpetuate, when there is so much at stake.

Comments on the NNSA Complex Transformation Plan (SPEIS)

The second issue you requested was my opinion about the NNSA plan released this past year. My reactions are mixed. While the plan is doubtless much improved over the previous version (Complex 2030), it still does not present a compelling solution to the many problems facing the nuclear weapons complex. I do believe the NNSA (SPEIS) plan meets the admonition of "Do no harm." The suggestion to reduce the overall size from the complex whose capacity created a Cold War arsenal numbering in the tens of thousands just has to be in the right direction. But little attention is given to the new complex's ability to rapidly fix problems that are more likely than ever to arise as the current stockpile, which has the oldest components in history, develops failures.

I do have concerns that in drafting this SPEIS, the NNSA received too little guidance from the Defense Department about what stockpile size and weapons characteristics the transformed complex should produce and maintain (including the need to rapidly fix problems.) I assure you that these issues are vitally important ones, and that having to guess at what the answers may be, is not a wise course. Nor is configuring a production complex only for generic (vice specific) designs, without knowing likely production rates. But, in light of the current state of confusion in our policy, it is a small miracle that NNSA was able to produce a Preferred Alternative for Complex Transformation at all.

The DoD has not yet been able to sufficiently develop its own long-range plans for future nuclear delivery systems, even though many carrier systems for the TRIAD are rapidly reaching obsolescence and must soon be taken out of service (e.g. both air- and sea-launched cruise missiles). Similarly the Minuteman ICBMs and the Trident submarines and missiles will soon need to be replaced. More attention must be given to determining the future U.S. needs for nuclear delivery systems.

The top-level guidance from the last Nuclear Posture Review (NPR) of 2001 was the basis used in drafting the SPEIS, but it hardly fits the world of today, much less what we are likely to face in the future. Some key assumptions of the NPR are today in question, while other parts have simply been overcome by world events. The NPR declared that the U.S. should put behind us the "threat-based approach of the Cold War" in favor of a "capabilities-based approach." Arguments given for that choice was the belief that the future security environment was going to be sufficiently uncertain that precise nuclear force levels could not be predicted with any degree of certainty. But, reliance on "virtual capabilities" with nascent warheads, rather than real forces to deter, will not work.

The NPR had introduced a new Global Strike philosophy where conventional forces were to be coordinated within attack plans to hold at risk some strategic targets that previously would have been candidates only for nuclear strikes. [It was believed that such an approach would give flexibility in attack plans on rogue states that had Weapons of Mass

Destruction.] Unfortunately, these ideas have not proven nearly as useful as their originators thought they would be, because this approach would have required us to blur what had always been a clear separation between nuclear forces and conventional forces. The primary purpose for nuclear weapons must be for deterring conflicts, while the purpose of conventional forces is war fighting. It is important that we not confuse the two. Our policy should be revised to make clear that we would only consider the use of nuclear weapons if deterrence should fail, and then —only as a matter of last resort.

The most critical need, in my view, is the need for national leaders to directly engage these issues and to help articulate the national purpose(s) of our nuclear weapons and the currency of deterrence in international relations. That engagement needs to be deep and frequent and must demand and achieve the integration of the DoD, DOE, all supporting elements of the US deterrent, and of course the U.S. Congress.

My Concerns and Priorities for Complex Transformation

I shift now to the last topic that you requested —to identify any concerns I foresee for securing the continuing effective execution of the science-based SSP and the priorities I would set for the Preferred Alternative. I do have two suggestions that I think could improve the resultant plan.

The first involves a significant organizational problem within the DOE, in the separation of responsibilities and accountability for Safety and Security, which has been in place nearly since the formation of the NNSA. These problems were discussed in the recent DSB study on Nuclear Capabilities, and arose when the program management for these responsibilities were placed outside of the NNSA, with managers who had no direct responsibilities for nuclear weapons nor for meeting production deliveries (and in some cases with managers who had little interest in nuclear weapons.) These represent classic cases of separating risks and costs from being compared and balanced. Instead, both the NNSA, lab, and plant managers (and the workers themselves) have little or no roles in setting criteria for safety and security. Not unexpectedly, the costs for both have sharply grown in an unconstrained manner. The effect on Complex Transformation has been a huge escalation in costs for new facilities. In the case of any facility that has radiation (or explosives) hazards as well as sensitive/classified materials that must be protected, the costs have doubly soared!

The details show that construction costs for NNSA facilities have escalated far above any market comparisons. The enormous growth in costs for construction (and subsequently for operations) is destined to break-the-bank of the weapons budgets —as ever more stringent and unconstrained orders and directives seek to achieve "zero defects" in operations, but with no conscious tradeoffs of these risks against program purpose or needs. As per the old adage about "a divided house", the enterprise seems destined to surely "fail" based on new budget requirements alone. Not fixing these problems will also continue to produce "frustrated workers" across the complex. Admiral Chiles, who chaired the DSB Task Force on Nuclear Personnel Expertise, in examining these same issues, noted that: "Worker feelings range from anger to resigned despair."

Of course, you may ask, wouldn't it be better to require better risk management decisions and tradeoffs to undo the outrageous cost growths that have occurred from safety and security rule changes? The answer is: of course! But, I assure you the road to remove excessive requirements is never easy. If reform is to succeed, it will require a willingness by DOE to once again streamline its organizational responsibilities, and for internal and external regulatory bodies (e.g. the Defense Nuclear Facilities Safety Board) to appoint experienced and empowered people to take charge of the risk/tradeoffs process.

One stopgap approach that could be employed, would be to examine other existing facilities within the NNSA (or the larger DOE) complex, which could be more economically reconfigured to meet some program needs, rather than building new facilities now. One example that should be considered, is the relocation of the Plutonium 238 power source work from the valuable floor space within Los Alamos' PF-4 (the major weapons plutonium facility) to other areas within Los Alamos (or, if necessary, by relocation to other sites.) Although this program originally was intended to impact the weapons efforts, decisions were made a number of years ago to no longer consider such power sources for weapons uses. Yet the continuing delivery of such sources for NASA and other customers is taking up much extremely valuable space that could be freed up for more urgently needed tasks in the weapons program today. The costs would be small for moving that work to floor spaces with lower security costs (as neither strict material protection nor classification protection are now required for ^{238}Pu.)

Summary

Deterrence of major acts of aggression through a force-in-being of nuclear weapons should be restored as the cornerstone of US defense policy, now and for the foreseeable future. Achieving this will insure that we can prevent future wars. It would also assure allies and friends within the free world. Without that, the prospect of world wars looms large. Such wars would be far more destructive than the devastation of World War II, as a result of war fighting with even more destructive nuclear (and WMD) weapons than were available in WW II.

The proven formula of deterrence for preserving the peace remains our best near-term hope. While all human beings can wish for a time in which the threat of nuclear weapons for deterring aggression would no longer be required, or for a time in which nations would no longer stockpile weapons for aggression at all; but to achieve these would require fundamental changes in the nature of mankind. Even then, it is impossible to believe that such changes could occur without the dangers of recidivism always casting a huge shadow over the course of human affairs. I also see little or no chance that the idea of complete elimination of all weapons is likely to occur in any near term, and believe we must therefore continue to invest in other options.

We should all be capable of coming together to take great pride in our nation and its continuing nuclear weapons efforts —not just to keep others from attacking the United States (and our allies and friends)— but in our continuing to be the most powerful force for preserving the peace and freedoms we all value.

DISCLOSURE FORM FOR WITNESSES
CONCERNING FEDERAL CONTRACT AND GRANT INFORMATION

INSTRUCTION TO WITNESSES: Rule 11, clause 2(g)(4), of the Rules of the U.S. House of Representatives for the 110th Congress requires nongovernmental witnesses appearing before House committees to include in their written statements a curriculum vitae and a disclosure of the amount and source of any federal contracts or grants (including subcontracts and subgrants) received during the current and two previous fiscal years either by the witness or by an entity represented by the witness. This form is intended to assist witnesses appearing before the House Armed Services Committee in complying with the House rule.

Witness name: C. (Charles) Paul Robinson

Capacity in which appearing: (check one)

✓ Individual

___ Representative

If appearing in a representative capacity, name of the company, association or other entity being represented: _____

FISCAL YEAR 2008

federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
nA			

FISCAL YEAR 2007

federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
nA			

FISCAL YEAR 2006

Federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
nA			

Federal Contract Information: If you or the entity you represent before the Committee on Armed Services has contracts (including subcontracts) with the federal government, please provide the following information:

Number of contracts (including subcontracts) with the federal government:

Current fiscal year (2008): 1;
Fiscal year 2007: 1;
Fiscal year 2006: 1.

Federal agencies with which federal contracts are held:

Current fiscal year (2008): subcontract NSTec (GoCo to DOE)
Fiscal year 2007: same;
Fiscal year 2006: same.

List of subjects of federal contract(s) (for example, ship construction, aircraft parts manufacturing, software design, force structure consultant, architecture & engineering services, etc.):

Current fiscal year (2008): Nevada Test Site Adv. Council
Fiscal year 2007: same;
Fiscal year 2006: same.

Aggregate dollar value of federal contracts held:

Current fiscal year (2008): $10,000 (subcontract);
Fiscal year 2007: $10,000 "
Fiscal year 2006: $8,000 ".

Federal Grant Information: If you or the entity you represent before the Committee on Armed Services has grants (including subgrants) with the federal government, please provide the following information:

Number of grants (including subgrants) with the federal government:

Current fiscal year (2008): 0;
Fiscal year 2007: 0;
Fiscal year 2006: 0.

Federal agencies with which federal grants are held:

Current fiscal year (2008): 0;
Fiscal year 2007: 0;
Fiscal year 2006: 0.

List of subjects of federal grants(s) (for example, materials research, sociological study, software design, etc.):

Current fiscal year (2008): nA;
Fiscal year 2007: -;
Fiscal year 2006: -.

Aggregate dollar value of federal grants held:

Current fiscal year (2008): 0;
Fiscal year 2007: 0;
Fiscal year 2006: 0.

DOCUMENTS SUBMITTED FOR THE RECORD

JULY 17, 2008

A Future Vision for NNSA's National Security Laboratories

"Transforming the Nuclear Weapons Complex into a National Security Enterprise"

NNSA National Security Laboratories

- *Los Alamos National Laboratory*
- *Sandia National Laboratories*
- *Lawrence Livermore National Laboratory*
- *Nevada Test Site (User Facility)*

The Department of Energy's (DOE) National Nuclear Security Administration (NNSA) laboratories employ world-class scientists and engineers and maintain truly unique national assets. These laboratories have led science, technology, and engineering efforts that enabled major changes in the U.S. national security posture. As the Nation faces a changed world in which monolithic threats no longer dominate, the means to disrupt an increasingly technology-based society are rapidly multiplying. As a consequence, NNSA and its national security laboratories have been called upon even more than before to devote their immense capabilities to responsibilities that are not limited solely to the historic nuclear weapons core mission, but are more expansive and encompass a spectrum of national security missions.

Commitment

The Department of Energy is committed to invest in the people and the Nation's scientific infrastructure in order to enhance essential capabilities used by the Nation to solve defense, energy and other critical security issues. To contribute its unique capabilities, NNSA will partner with other segments of DOE and other agencies with national security responsibilities to direct and enhance the underlying science, technology, and engineering capabilities available to the Nation.

National Security Laboratory Centers of Excellence

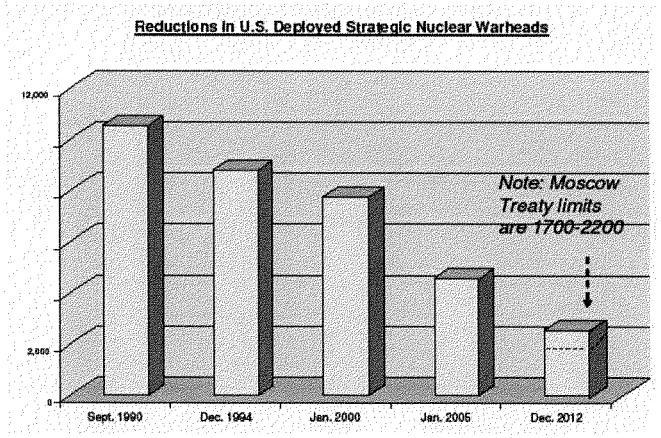
Enhancing this broadened national security role requires leadership and support from NNSA and the other elements of the Department as well as investments by the broader national security community. Each laboratory and the Nevada Test Site will maintain a broad multidisciplinary portfolio of competencies and may develop centers of excellence in specific technical areas to more effectively contribute to the Nation's current requirements. This broadened current national security role for NNSA and its laboratories will require continuity and stability for their core nuclear-deterrent mission as they continue to evolve to provide the Nation a critical advantage in meeting security challenges in the 21st century.

Samuel W Bodman
Secretary of Energy

19 June 08
Date

Chart 1

Reduction in U.S. Deployed Strategic Nuclear Warheads



Note: comparisons between 1990-2005 and 2012 are approximate.

Chart 2

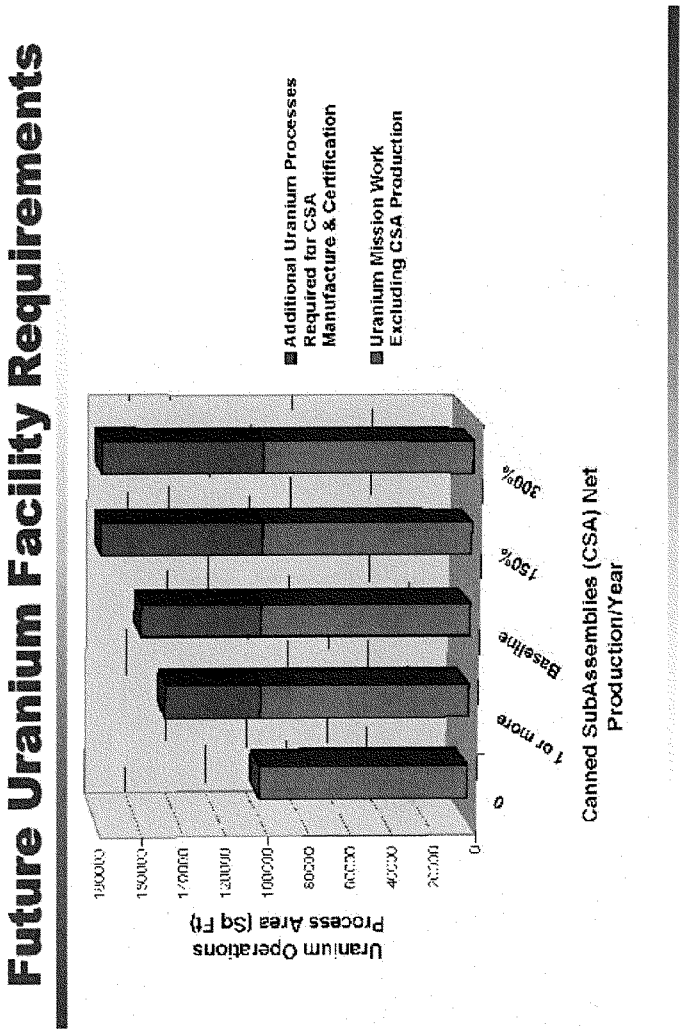
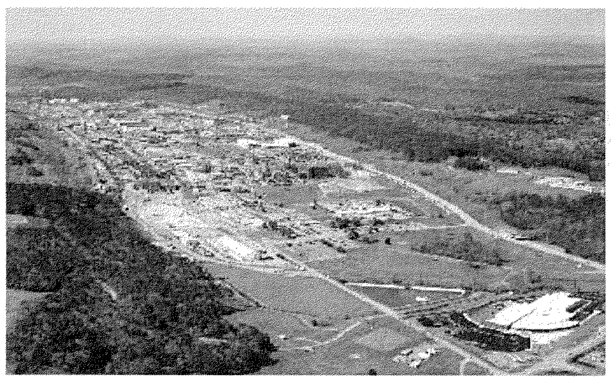

Future Uranium Facility Requirements
Uranium Operations Process Area (Sq Ft)
Additional Uranium Processes Required for CSA Manufacture & Certification
Uranium Mission Work Excluding CSA Production
0
1 or more
Baseline
150%
300%
Canned SubAssemblies (CSA) Net Production/Year

Chart 3



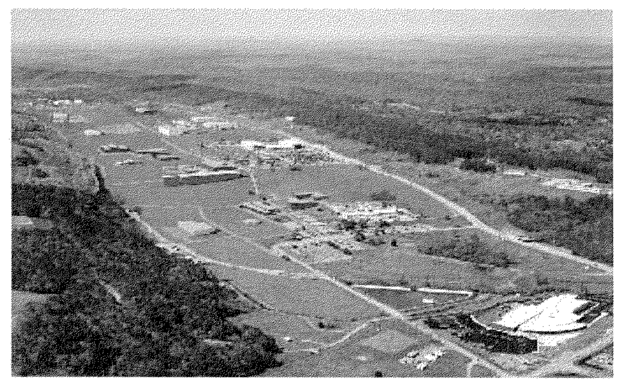
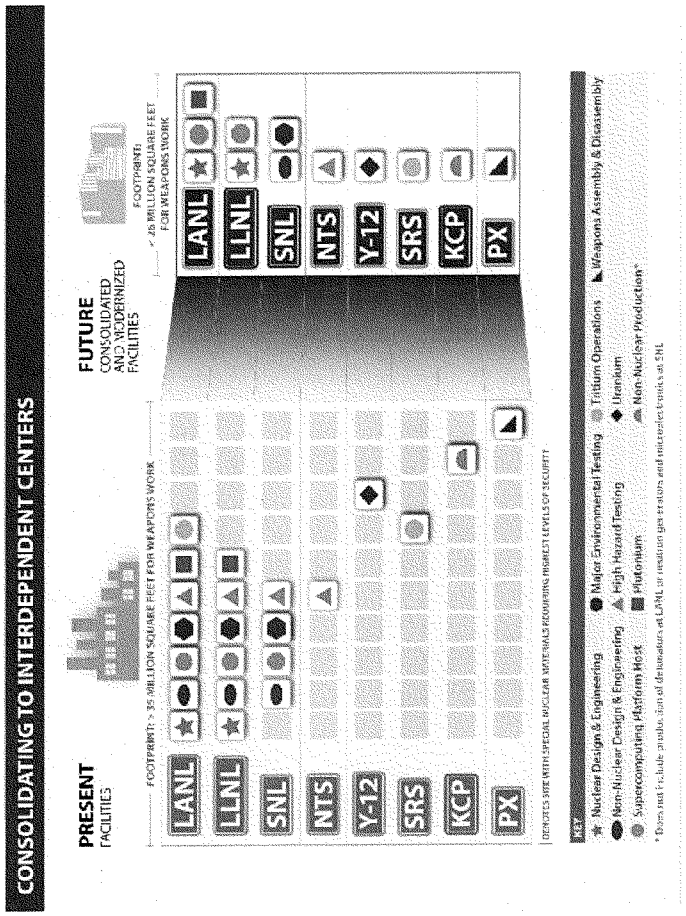


Chart 4


CONSOLIDATING TO INTERDEPENDENT CENTERS
PRESENT
FACILITIES
FUTURE
CONSOLIDATED
AND MODERNIZED
FACILITIES
FOOTPRINT: > 35 MILLION SQUARE FEET FOR WEAPONS WORK
FOOTPRINT:
~ 25 MILLION SQUARE FEET
FOR WEAPONS WORK
LANL
LLNL
SNL
NTS
Y-12
SRS
KCP
PX
DENOTES SITE WITH SPECIAL NUCLEAR MATERIALS REQUIRING HIGHEST LEVELS OF SECURITY
KEY
Nuclear Design & Engineering
Non-Nuclear Design & Engineering
Supercomputing Platform Host
Major Environmental Testing
High Hazard Testing
Plutonium
Tritium Operations
Uranium
Non-Nuclear Production*
Weapons Assembly & Disassembly
* Does not include production of detonators at LANL or uranium gas centrifuges and microelectronics at SNL

April 30, 2008

Public Comment and Analysis
Part One: The Nuclear Weapons Complex-wide Impacts

Submitted to

The U.S. Department of Energy,
National Nuclear Security Administration

Submitted as comment for

Draft Complex Transformation
Supplemental Programmatic Environmental Impact Statement
DOE/EIS-0236-S4
(also known as the "Bombplex" plan)

Submitted by

Tri-Valley CAREs
Marylia Kelley, Executive Director
Robert Schwartz, Staff Attorney
Jedidjah de Vries, Outreach Director
Robert Civiak, physicist, consultant on the Curatorship alternative

Tri-Valley CAREs' "Part One" comment document is structured as follows:

NOTE: Tri-Valley CAREs' "Part Two" comment document follows with specific analyses of the SPEIS' environmental Impacts on Livermore Lab and surrounding California communities.

PART ONE: COMPLEX-WIDE IMPACTS

1. The Public Comment Period is Insufficient and Must be Extended:

The issues embedded in the Dept. of Energy (DOE) National Nuclear Security Administration's (NNSA) draft "Complex Transformation" plan are of great significance to the country and, in particular, to the millions of people who live near facilities that will be impacted by the plan. As we wrote earlier (and reiterate here), a 90-day extension of the comment period, from April 10, 2008 to July 8, 2008, on this draft Supplemental Programmatic Environmental Impact Statement (SPEIS) is necessary for the following reasons:

First, the additional time is needed to ensure that everyone impacted by the rebuilding (or transformation) of the nuclear weapons complex will have sufficient opportunity to provide comment. While Tri-Valley CAREs and colleague organizations have undertaken to alert and inform their members about the comment opportunity, the present comment period simply does not provide enough time for word of the plan to reach everyone who has a stake in the future of the complex.

Second, the time is needed to ensure that the public comments have maximal technical depth and analysis. The draft SPEIS is a lengthy and technical document. Reading, parsing, and understanding it requires a huge investment of time and effort, especially for the lay public that may experience extreme difficulty with the details of the plan and its overuse of dense technical jargon and acronyms. An extended comment period will allow for submittal of more thoughtful, in-depth comments. This is not only a public good, but will also benefit DOE NNSA and other decision-makers by giving a more accurate picture of the public's perspectives, analysis, criticisms and feedback.

So, while we recognize that DOE NNSA did extend the comment period from April 10, 2008 to April 30, 2008, we maintain that the comment period is none-the-less insufficient given the complexity of the draft document and other considerations. And, we again call on DOE NNSA to extend the public comment period by the full 90-days requested by Tri-Valley CAREs, Senator Jeff Bingaman, Representative Tom Udall and others.

2. The "Purpose and Need" as Outlined in the SPEIS is Legally Deficient:

In the draft Complex Transformation SPEIS, the purpose and need section is largely predicated on a policy document, the 2001 Nuclear Posture Review, of waning importance that will soon lose all significance. Moreover, the draft SPEIS does not contain adequate information to evaluate the alternatives considered on the basis of NNSA's stated purpose and need. Finally, the purpose and need statement articulated by NNSA is missing consideration of alternate ways to accomplish the stated mission.

Under the Council on Environmental Quality's (CEQ) regulations implementing NEPA, an EIS "shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action." 40 C.F.R. § 1502.13. According to the draft Complex Transformation SPEIS, the underlying purpose and need addressed in the SPEIS is to: (i) "maintain core competencies in nuclear weapons"; (ii) "maintain a safe and reliable nuclear weapons stockpile"; and (iii) "[c]reate a responsive nuclear weapons infrastructure that is cost-effective, and has adequate capacity to meet reasonably foreseeable national security requirements; and consolidate Category I/II SNM at fewer sites and locations within sites to reduce the risk and safeguard costs." SPEIS at S-12. NNSA claims that the

fundamental principle underlying its evaluation of alternatives is that the Stockpile Stewardship Program (SSP) "must continue to support existing and reasonably foreseeable national security policy." *Id.*

Furthermore, NNSA states that the Complex Transformation SPEIS "does not analyze alternative U.S. national security policies. Rather, it examines the environmental effects of proposed actions and reasonable alternatives for execution of the program based on the existing and foreseeable changes in this policy." *Id.*

Outdated Basis:

The existing national security policy with regard to nuclear weapons is principally controlled by the 2001 Nuclear Posture Review (NPR), a classified document transmitted to Congress in December 2001 and only partially made public in 2002. In the Nuclear Posture Review Report, former Secretary of Defense Donald Rumsfeld stated that "Congress directed the Defense Department to conduct a comprehensive Nuclear Posture Review to lay out the direction for American nuclear forces over the next *five to ten years*." Nuclear Posture Review Report at Foreword (emphasis added). Since the NPR was issued in late 2001, it is clearly at or near the end of its usefulness. In fact, Congress has passed legislation requiring the next Administration to conduct a comprehensive NPR upon taking office. As such, it is entirely inappropriate for NNSA to base its plans for Complex Transformation on a document of such limited import. And it is doubly inappropriate for NNSA to foreclose consideration of viable alternatives that may result from a new national security policy, particularly when the next NPR will be conducted shortly.

Costs are Offered as Rationale, but are Missing:

Although NNSA claims that the purpose and need for Complex Transformation is driven, in part, by considerations of cost, the draft Complex Transformation SPEIS does not contain sufficient information to allow for objective consideration of the alternatives on this basis. Pursuant to CEQ's NEPA regulations, the section of an EIS analyzing alternatives should present "the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public." 40 C.F.R. § 1502.14. Here, NNSA has neglected to do so.

The draft Complex Transformation SPEIS lacks adequate information to allow the decision-maker and the public to evaluate the cost-effectiveness of each of the alternatives under consideration. Also, there is no data to support NNSA's assertions that the preferred alternatives would increase economic efficiency and thus serve the stated purpose and need for Complex Transformation. The draft SPEIS should be revised to include such information in both raw and comparative form (as in charts or graphics).

Impacts of the Preferred Alternative Cannot be Discerned:

The draft Complex Transformation SPEIS fails to present the environmental impacts of the proposed action and the alternatives in comparative form, as required under CEQ's regulations. *Id.* Although the draft Complex Transformation SPEIS contains a number of charts, none of

these permit a comparison between the environmental impacts of the proposed action and the other alternatives under consideration. *See* S-68 – S-94. CEQ's regulations implementing NEPA further specify that an EIS "shall be concise, clear, and to the point[.]" *Id.* at 1502.1. Here, the sheer number of acronyms used in the draft SPEIS and the lack of a clear organizational structure thwart any attempts to grasp the intricacies of the document, particularly by members of the public.

Furthermore, the preferred alternative is an amalgam of the options presented in the draft document. The preferred alternative does not fall within the boundaries of any of them and so its impacts are unknown.

Lack of Reasonable Alternatives:

Because a PEIS, such as the draft Complex Transformation SPEIS, constrains future decision-making, it "must therefore analyze alternatives in sufficient detail to prevent foreclosure of options with insufficient consideration." *'Ilio'Ulaokalani Coalition v. Rumsfeld*, 464 F.3d 1083, 1096 (9th Cir. 2006) (citations omitted). In this case, the draft SPEIS fails both to analyze reasonable alternatives and analyze those alternatives considered in sufficient detail. The alternatives analyzed in the draft Complex Transformation SPEIS are based on the need for a more responsive Complex infrastructure that has: (i) "[a]ll necessary technical and industrial capabilities"; (ii) "[a]dequate production capacity for a smaller stockpile, including pit production"; (iii) "[a] smaller size for more cost-effective operations"; and (iv) "[e]nhanced security, particularly for activities involving special nuclear materials." SPEIS at 2-2. This sweeping mandate could be served by alternatives that NNSA either neglected to consider in the draft SPEIS or inadequately analyzed.

Where, as here, the purpose and need for the proposed action is not, by its own terms, tied to a specific parcel of land, the range of alternatives that must be evaluated is broadened. *See 'Ilio'Ulaokalani Coalition*, 464 F.3d at 1098 (citations omitted). In the draft Complex Transformation SPEIS, NNSA fails to consider alternatives outside the NNSA nuclear weapons complex, with the exception of a limited mention of the White Sands Missile Range. Given the expansive purpose and need statement in the draft SPEIS, it is unreasonable for NNSA to neglect consideration of other alternatives outside the current nuclear weapons complex.

One example that has significant environmental impacts is the SPEIS' failure to consider consolidation of plutonium and highly enriched uranium from Livermore Lab to a DOE facility with secure storage capacity that is not an NNSA "Complex Transformation" site (e.g., Idaho Lab) or to a secure facility owned by another federal agency (e.g., the Defense Department). Because the draft SPEIS proposes to keep these materials at Livermore Lab until 2012 (and then move the plutonium twice) to accommodate "Complex Transformation," workers and surrounding communities are asked bear unnecessary risks. We note that the DOE has given Livermore Lab a "variance" from demonstrating that the site can comply with the Department's 2005 Design Basis Threat. Thus, the community bears what we believe is an unacceptable risk in the event of a terrorist attack. Moreover, the risks posed by a release of nuclear material in the event of a severe earthquake on one of the nearby faults is not analyzed in the draft SPEIS.

In addition, the range of alternatives considered in the draft SPEIS is insufficiently broad in light of the stated purpose and need for Complex Transformation. For instance, NNSA does not appear to have evaluated truly consolidating the nuclear weapons complex, which would mean closing down a number of sites.

Lack of justification for new plutonium pit manufacturing.

The following deficiency was pointed out by Tri-Valley CAREs in its "scoping" comment and was not properly addressed in the draft SPEIS. The JASONs review of the DOE NNSA weapons labs' plutonium "aging" data must be included in the PEIS and fully reflected in the "Purpose and Need." The JASONs report of November 20, 2006 on plutonium pit lifetimes essentially states that the plutonium pits in U.S. nuclear weapons will remain reliable for approximately 100 years at a minimum (and perhaps much longer as a maximum). The average age of a U.S. nuclear weapon in the enduring arsenal is now about 25 years. These data undercut any possible justification, based on plutonium aging or reliability, for transforming the complex so that it can produce new plutonium pits and/or building a new arsenal of so-called Reliable Replacement Warheads (RRW). While the JASON review is noted in the draft SPEIS, the data on plutonium pit lifetimes is merely mentioned and is not used a framework for any meaningful analysis.

Moreover, the potential connections between the RRW program, the proposed new pit production facility at the Los Alamos Lab and the Complex Transformation plan as a whole must be detailed. DOE NNSA officials tell the public that there is not a connection between these three elements. Yet, the pit production now envisioned as the preferred alternative for Complex Transformation is sized to produce at least 50 certified (war reserve) plutonium pits per year. The pit capability at Los Alamos Lab is presently sized at 20 pits/year. The campaign to produce spares for the W88 (due to Rocky Flats closure) has been completed. The number of replacement pits that could be needed for weapons destructively tested each year is less than 20.

Therefore, it is difficult ***not*** to make a connection between the preferred alternative of 50/80 pits at Los Alamos Lab and the desire of top DOE NNSA officials to move forward with the RRW program. Congress cut funds for RRW last year. The draft SPEIS supports capabilities that would not be "needed" without the RRW program, or some similar, yet undisclosed, new weapons project.

It appears that DOE NNSA is crafting the "Purpose and Need" in compliance with its own desires, not Congress, not the American people and certainly not NEPA. If DOE NNSA does not agree that the "purpose" of the Complex Transformation plutonium pit production capability at Los Alamos Lab is to make pits for RRWs, then DOE NNSA should explain in detail for what purpose the full number of 50/80 pits will be "needed."

3. Costs and Price Comparison of Alternatives are Missing:

Complex Transformation's preferred alternative means building new nuclear weapons plants, including making plutonium bomb cores at Los Alamos Lab in NM and a new Uranium Processing Facility at Y-12 in TN. Noticeably missing from the document are cost estimates.

The Government Accountability Office (GAO) had previously released a cost estimate that Complex 2030 (now called Complex Transformation) would likely cost upwards of $150 billion dollars. The GAO also noted "DOE's history of poor project management," meaning implicitly that figure could be larger yet. DOE NNSA has said there will be a transition period in which Life Extension Programs and the rest of the Stockpile Stewardship Program continue while Reliable Replacement Warheads are phased in. Does this mean that the NNSA nuclear weapons budget may rise when one of the professed reasons for Complex Transformation is to reduce costs?

Some, even within the DOE, believe that $150 billion is an extremely low estimate for the cost of maintaining the current system while building a new, not-so-consolidated set of facilities and then transitioning over to them. The costs of this should be included in the PEIS so that the public and all decision-makers can have a clear picture of the full price tag of this project, including the preferred alternative and reasonable alternatives to it.

The PEIS should include a cost analysis for each alternative to facilitate meaningful comparisons between them. A Curatorship alternative (see below), for example, may have a lower cost than the options currently being considered by DOE NNSA. These safer, more secure, options that focus on maintenance of the existing arsenal and minimize changes (i.e., Curatorship) and on full compliance with the nuclear Non-Proliferation Treaty (i.e., disarmament) are viable, reasonable, and must be analyzed in the final document -- including their relative costs.

We note that we also asked for a comparison of costs in our "scoping" comments -- and that the draft SPEIS continues to proffer alleged cost savings in its purpose and need, but without providing any of the cost information needed to evaluate the claim (or compare alternatives).

4 (a). Complex Transformation Fails to Consolidate the Weapons Complex:

Complex Transformation is not about true consolidation of the nuclear weapons complex. In exchange for giving up a number of outdated buildings that the Department of Energy (DOE) no longer wants or needs, DOE NNSA will get a number of new facilities that will pave the way for the development of new nuclear weapons, including through the Reliable Replacement Warhead program.

DOE NNSA does not appear to have evaluated truly consolidating the nuclear weapons complex, which would mean closing down or re-missioning a number of sites no longer needed for nuclear weapons activities, including Livermore Lab, its Site 300 high explosives testing range, the Kansas City Plan and others (details below).

4 (b). Alternatives that are Reasonable, Viable and Meet Legal Obligations with Lower Costs and Fewer Environmental Impacts Have Been Excluded:

The Complex Transformation SPEIS does not adequately consider all viable alternatives, in particular the Curatorship alternative. According to CEQ, the section discussing alternatives "is the heart of the environmental impact statement." 40 C.F.R. § 1502.14. Pursuant to CEQ's NEPA regulations, agencies are required to "[r]igorously explore and objectively evaluate all

reasonable alternatives." *Id.* at § 1502.14(a). Curatorship is a reasonable alternative, and it was not rigorously explored and objectively evaluated, as required under NEPA.

The Department claims that this alternative is not distinctly different from the current stockpile stewardship program. This demonstrates DOE NNSA's deliberate and willful misunderstanding of Curatorship and the reduction in cost and environmental footprint it would enable (as explained in detail below). Moreover, Curatorship entails consolidation of the nuclear weapons complex and its risks in ways that differ from any other alternatives analyzed in the SPEIS.

The PEIS ***should*** present the environmental impacts of the proposal and the alternatives in comparative form, thereby sharply defining the issues and providing a clear basis for choice among the alternatives by decision-makers and the public. The "Complex Transformation" draft PEIS fails utterly to do this.

For example, Curatorship, which was first suggested by Tri-Valley CAREs, was among the alternatives eliminated from further study in the draft SPEIS.

4 (c). The SPEIS Must Include a Curatorship Option; Curatorship is Superior to and Contains Advantages over Alternatives Analyzed in the Draft:

As noted, in its "scoping" comments, Tri-Valley CAREs (TVC) requested that NNSA include an alternative that reflects a "Curatorship" approach to maintaining the nuclear weapons stockpile. NNSA rejected that request stating, "[the] curatorship alternative does not define a programmatic alternative outside the range of alternatives evaluated in this SPEIS."[1] We dispute that conclusion. Curatorship is a fundamentally different approach to maintaining the nuclear weapons stockpile from the Stockpile Stewardship Program (SSP), which would continue under all of the alternatives evaluated in the Draft SPEIS. Many more R & D facilities would be closed under Curatorship than under the alternatives consider in the Draft SPEIS. More importantly, a Curatorship approach would lead to a safer, more secure and more reliable stockpile, at lower cost, than any of the alternatives considered. NNSA should include a Curatorship option as a programmatic alternative in the final SPEIS and should choose it as the preferred option.

Curatorship is Fundamentally Different from the Alternatives in the SPEIS

According to the NNSA, "The SSP emphasizes development and application of greatly improved scientific and technical capabilities to assess the safety, security, and reliability of existing nuclear warheads without the use of nuclear testing."[2] NNSA applies the results of the SSP to nuclear weapons in so called, "Life Extension Programs" (LEP). "An LEP is a systematic approach by weapon type that consists of a coordinated effort by the design laboratories and production facilities to: (1) determine which components will need refurbishing to extend each weapon's life; (2) design and produce the necessary refurbished components; (3) install the components in the weapons; and (4) certify that the changes do not adversely affect the safety and reliability of the weapon.[3] According to the Draft SPEIS, "NNSA has taken an aggressive

[1] Draft SPEIS page 3-129.
[2] Draft SPEIS page 1-1.
[3] Draft SPEIS page 2-9.

approach to warhead refurbishment."[4] Through a joint process with the Department of Defense (DoD), NNSA has been authorized to make hundreds of changes to nuclear weapons, adding new components and modifying weapons' military characteristics. The joint NNSA/DoD Project Officer Groups (POGs), which are responsible for each warhead, often agree to changes that are intended to improve weapons performance, rather than solely to replace failing components.

In contrast, Curatorship would take a conservative approach to refurbishing warheads. Only if NNSA's surveillance activities, could demonstrate compelling evidence that components have degraded, or will soon degrade, and further analysis indicates that such degradation could cause a significant loss of safety or reliability, would NNSA replace the affected parts. The replacements would be remanufactured as closely to their original design as possible.[5] They would truly extend the life of the warhead, without improving its performance. A prohibition on improving warhead performance under Curatorship would require policy changes at DoD as well as at NNSA, since some improvements are initiated by DoD requests. Ideally, introduction of the Curatorship option would be accompanied by a shift in the nation's nuclear security policy that would discourage, if not prohibit, improvements to nuclear weapons. However, even without such a prohibition, NNSA could still implement virtually all of the changes discussed below.

Instead of relying on a massive R & D enterprise to improve scientific and technical capabilities, the Curatorship approach relies upon the extensive historical testing and certification activities, which have demonstrated that the existing stockpile is safe and secure. Under Curatorship, NNSA would still need skilled engineers and designers, with good judgment, to examine warheads and to determine when components must be replaced. NNSA would continue to operate state-of-the-art testing and engineering facilities to examine components. It would retain sufficient scientific and computing capabilities to apply analytical models to questions of weapon safety and reliability. It would make use of evolutionary improvements in computing technology to better appraise problems with weapons systems. On the other hand, NNSA would have no need to continue enhancing its understanding of weapons science or to maintain cutting edge research facilities in a wide range of technologies. Those capabilities are needed primarily to design and certify new components. Under Curatorship, most of NNSA's research and experimentation programs would cease and numerous facilities would be closed. The extent of those closures place the Curatorship approach, "outside the range of alternatives evaluated in the SPEIS."

Curatorship is sufficiently different from the SSP, which underlies all of the alternatives in the SPEIS, that NNSA should consider it as a separate programmatic alternative. The major change under Curatorship would be the closure of many more R & D facilities than the NNSA proposes to close under its project specific alternatives. However, the programmatic alternatives would also be affected. Since there would be fewer changes to the weapons remaining in the stockpile, the scale of plutonium operations, uranium operations, and assembly/disassembly activities could be reduced at the facilities proposed under any of the programmatic alternatives. In addition, R

[4] Draft SPEIS page S-12.

[5] In some cases, current environmental regulations might not allow exact remanufacture of old components. In others, original specifications have been lost or are incomplete. In those cases, NNSA would attempt to match the output of the old component as closely as possible. Those cases would require more analysis and testing than exact replacements, but would still be far less costly and introduce much less uncertainty than under the current approach, which allows major modifications.

& D on plutonium and uranium would be reduced and several R & D facilities, which are not addressed in the SPEIS (and should be), would also be closed.

Note that in the context of this analysis, "closed" is defined as "no longer needed or used by NNSA for nuclear weapons activities." Should another use or "landlord" be appropriate, the site or facility may continue operating with a substantially changed or new mission and purpose.

Curatorship is Superior to the Alternatives in the SPEIS

According to NNSA, the benefits it is seeking through complex transformation include, "improved safety, security, and environmental systems, reduced operating costs, and greater responsiveness to future changes in national security policy."[6] Curatorship would be more beneficial in all of these areas than any of the alternatives in the SPEIS.

Improved Safety – Under Curatorship, no matter how many nuclear weapons remain in the stockpile, there would be fewer changes made to those weapons than under the SSP/LEP approach. Thus, NNSA could reduce the scale of plutonium operations, uranium operations, and assembly/disassembly activities at the facilities it chooses under any of the programmatic alternatives. A lower workload is inherently safer. In addition, studies of defects in nuclear weapons have shown that many more problems have occurred in new weapons and components than result from the aging of components in old weapons. That result was obtained on weapons that were well tested, before the nuclear testing moratorium went into effect. Thus, new components introduced to the stockpile through LEPs are likely to be less safe and reliable than the ones they replace. Any attempt by NNSA to make major changes to nuclear weapons, without nuclear testing, such as those proposed for a Reliable Replacement Warhead (RRW), could introduce significant safety and reliability problems into the stockpile.

Improved Security – The rational for improved security under Curatorship is similar to that for improved safety. Under Curatorship, the weapons complex would be more secure, simply because there would be less activity. There would be fewer R & D facilities requiring protection and less new classified information generated. There would be fewer contractor employees with access to sensitive facilities and classified information. There would also be fewer shipments of nuclear weapons and components around the country that offer opportunities to terrorists.

Improved environmental systems – Under the Curatorship approach, NNSA would close numerous facilities and complete sites that use high explosives, tritium, and other hazardous materials, such as Site 300 at LLNL. Those closures would produce significant environmental benefits beyond the alternatives considered in the SPEIS. Moreover, under Curatorship new facilities, such as the CMRR at Los Alamos Lab and the Uranium Processing Facility at Y-12, planned under the present programmatic preferred alternative, would not be built or operated, resulting in an additional significant environmental benefit.

Reduced operating costs – Operating costs would be dramatically reduced under Curatorship. NNSA currently spends about fifty percent of the Weapons Activities budget on R & D. That is

[6] Draft SPEIS page S-1.

appallingly out of step with any industrial activity in the United States. Large companies in the most research-intensive industries, such as computers and electronics, chemicals, aviation, and biotechnology, spend less than twenty percent of their revenue on R & D. Most spend less than ten percent. With over sixty-five years of experience in designing, producing, and maintaining nuclear weapons, there is no reason for NNSA to spend such a large percentage of its funding on R & D.

Under Curatorship, R & D would be directed primarily to improving surveillance and testing, to understanding how materials and components in existing weapons age, to supporting the manufacture and certification of rebuilt components, and to further validating computer codes to historical test results. Such R & D should amount to less than twenty percent of the Weapons Activity Budget.

Greater Responsiveness To Future Changes In National Security Policy – Under Curatorship, NNSA would not use this SPEIS to commit prematurely to building any major new facilities, before the next Administration completes a comprehensive review of the role of nuclear weapons in national security policy. Thus, the weapons complex could respond more rapidly to whatever changes that review proposes. Furthermore, the complex would not be burdened with excessive workload resulting from non-essential changes to nuclear weapons that are now routinely included in LEPs. In addition, NNSA will be able to respond more quickly to the infrequent aging problems that might arise in existing components. Its response will be to replace the problem component with a younger version of the same component, instead of designing a completely new component and scheduling its replacement as part of a complex LEP, which would take more time.

Curatorship is also superior to the alternatives considered in the SPEIS, because it would more closely align with United States' responsibilities under the nuclear Non-Proliferation Treaty (NPT) and the nation's nonproliferation goals. The New Agenda Coalition (NAC), an influential group of signatory states to the NPT, has called upon the nuclear weapons states to stop modernizing their arsenals. The NAC stated, "Any plans or intentions to develop new types of nuclear weapons or rationalization for their use stand in marked contradiction to the NPT, and undermine the international community's efforts towards improving the security of all states." Whether one agrees with the NAC that improving nuclear weapons is contrary to NPT responsibilities (and we believe it is), it is clearly detrimental to U.S. non-proliferation objectives. Stemming the proliferation of nuclear weapons requires the cooperation of all industrialized nations. To the extent that the NNSA's development of new and improved nuclear weapons alienates nations such as the New Agenda Coalition, it is undeniably contrary to U.S. non-proliferation goals.

NNSA argues that its joint planning with DoD minimizes the number of changes that are made to nuclear weapons during LEPs. It further claims they are not introducing new capabilities into the stockpile. Those are false or misleading claims. For example, the W76 LEP involves major discretionary changes to both the reentry body and to the warhead package. NNSA is replacing "organics" in the primary; replacing detonators; replacing chemical high explosives; refurbishing the secondary; adding a new Arming, Fuzing & Firing (AF&F) system, a new gas reservoir, a new gas transfer support system, a new lightning arrestor connector and making numerous other

alterations to components that still function adequately.[7] The change to the AF&F system alone is creating a weapon with significantly improved military capability over the old version. While the old fuze permitted targeting of only soft targets, the new AF&F system adjusts the height of detonation, which gives the W76 a hard target kill capability for the first time. In addition, the new reentry body and other modifications allow the W76 to be delivered by the D5 missile, with much greater accuracy than its previous delivery vehicle. Few of the changes under this LEP (with the possible exceptions of replacing the gas reservoir and some organic adhesives) address age-related problems that would require fixing under the Curatorship option.

Differences between Curatorship and the Project Specific Alternatives

According to the NNSA, there is no "significant difference in the technical capabilities needed to maintain the weapons in the legacy stockpile from those required to design new weapons."[8] That may true under the SSP/LEP-based approach to maintaining the legacy stockpile, but it would not be true under the Curatorship approach. Under the Curatorship approach of replacing old components with new ones of their original design, no design capabilities are needed. However, it is not that difference alone that sets the Curatorship approach apart from the SSP approach. The major difference derives from asking whether NNSA needs to conduct a vast R & D enterprise to improve its capabilities to design new weapons and components. Under SSP, NNSA answers yes, under Curatorship the answer is no.

Much of NNSA's R & D is intended to improve its understanding of material properties and basic weapons physics in order to improve the complex computer codes that designers use to model the behavior of nuclear weapons. Those computer codes would play only a minor role in maintaining the stockpile under Curatorship. The legacy stockpile was developed using much simpler codes. We believe that the vast improvements that NNSA has already made to its computer codes under the SSP are more than sufficient for maintaining the legacy stockpile. Under Curatorship, we would halt all R & D related to development and validation of new computer codes for weapons design and simulation.

Another large class of NNSA's R & D activity seeks to improve its capabilities in a host of emerging technologies, such as nanoscale technology and microelectronics, which are useful only to design and develop new components for nuclear weapons. All such R & D would also cease under Curatorship.

The only large scale R & D activities that would continue under Curatorship are those which directly improve capabilities in surveillance and testing of the stockpile and to a lesser extent R & D in understanding how existing components age. Of course, all activities necessary for the surveillance and testing of the legacy stockpile and for testing and certification of rebuilt replacement components would also continue.

The question of whether NNSA should maintain a capability to design new nuclear weapons or modify existing weapons is not relevant to decisions regarding which R & D facilities should be

[7] Hans M. Kristensen. Administration Increases Submarine Nuclear Warhead Production Plan. www.fas.org/blog/ssp/2007/08/us_tripples_submarine_warhead.php.
[8] Draft SPEIS page 3-129.

retained. We believe that there is no need to maintain the capability to design new weapons and that doing so is contrary to nonproliferation objectives. However, should upcoming reviews of nuclear policy determine that a design capability should be retained, that would be primarily a matter of retaining experts in nuclear weapons design, rather than retaining R & D facilities to improve and extend weapon design codes and enhance NNSA's understanding of nuclear weapons science. The suite of facilities that NNSA would retain under the Curatorship option is more than adequate to maintain a basic nuclear weapon design capability, should policy makers decide to do so.

High Explosives (HE) R & D

The revisions to HE R & D activities are among the most significant differences between the Curatorship option and the Project Specific Alternatives. Under Curatorship, virtually all HE activities at LLNL and LANL (except for production of detonators at LANL) would cease. Activities at SNL and NTS would be significantly curtailed.

The Draft SPEIS states, "HE R&D is required to assure stability and dependability of HE in nuclear weapons."[9] That is a considerable overstatement. Substantial evidence shows that many types of HE used in the weapons of the legacy stockpile become more stable and dependable as they age. What the quote probably means to claim is that 'HE R&D is required to *improve the* stability and dependability of *new types of* HE in *new* nuclear weapons." That may be true, but is irrelevant under Curatorship, in which NNSA would not seek such improvements. The primary way to assure the continued stability and dependability of HE in existing warheads under Curatorship is to continue randomly selecting warheads from the stockpile to dismantle and thoroughly examine, as NNSA currently does under its surveillance program.

All HE R & D would cease under Curatorship, except for some studies of aging of HE formulations in existing weapons and components, which could continue at one site. Surveillance activities and quality assurance (QA) studies of HE in existing components would continue at Pantex, as would all R & D in direct support of the production mission.

HE formulation and processing would continue only at Pantex and testing would continue only at Pantex and NTS, except that testing of components (with up to 1 kg of HE) would continue at SNL as part of the surveillance program.

The facilities that would be closed under the Curatorship option include[10]:
The High Explosive Application Facility (HEAF) at LLNL;
All HE facilities at Site 300 at LLNL;
TA-9, TA-14, TA-16, TA-36, TA-46 and TA-53 at LANL; and
Explosive Applications Department facilities at Sites 9920, 9930, 9939, and 9940 in Coyote Canyon and at facilities in Thunder Range at SNL/NM.

[9] Draft SPEIS page S-53.

[10] This is only a partial list, as HE R & D is conducted at 120 building at LANL alone (Source: TechSource 2007d, page 3-1).

The Explosive Component Facility (ECF) at SNL/NM would remain open, but it would be significantly reduced in scale. Its mission would be reduced to surveillance, testing, and R & D directly related to better understanding lifetime issues in existing components. There would be no R & D on new HE formulations or new component designs, unless a catastrophic flaw is discovered in an existing component.

HE facilities at NTS would be significantly reduced in scale and Hydrotesting and subcritical experiments would cease (see below). The Big Explosives Experimental Facility (BEEF) might remain open for render-safe experiments and work for other DOE offices and other agencies. NNSA might occasionally perform tests at BEEF to study aging of HE and to understand defects that may develop in existing HE components, which are too large to conduct at Pantex. No fissile materials would be used in those tests.

A small level of R & D activity on aging and performance of main charge HE might continue at either LANL or LLNL, but the formulation, processing and testing of HE to support those activities would be conducted at Pantex or NTS.

Tritium R & D

The Draft SPEIS states, "Because warheads depend on tritium to perform as designed, there is a need for tritium R & D."[11] This statement highlights the difference between SSP and Curatorship. The properties of tritium are extremely well known. Because tritium decays with a 12.5-year half-life, the gas in weapons in the stockpile must be replaced periodically to keep them within design limits. It is absurd to state that R & D on tritium is needed, unless NNSA plans to change its tritium maintenance practices or modify weapons' Gas Transfer Systems (GTS). Under Curatorship, such modifications would not be made.

Tritium production activities (as defined in the SPEIS to include irradiation of tritium targets, tritium extraction, tritium recycle, reservoir refill, and GTS surveillance) would continue under Curatorship at SRS, much as they would under the preferred alternative in the SPEIS. However, future decisions about the size of the stockpile may preclude the need for target irradiation and tritium extraction for many years.

Under Curatorship, all tritium R & D at LANL would cease and the Weapons Engineering Tritium Facility (WETF), located at TA-16, would be closed.

All NNSA-related tritium activities at LLNL would also cease. The LLNL Tritium Facility, within the Superblock, would most likely be closed. Therefore, it goes without saying that the expansion of the LLNL Tritium Facility, called the Tritium Facility Modernization Project, would not need to be undertaken and would cease. Most tritium activity at LLNL is related to NIF target design and support. Since the NIF would no longer be used by NNSA (see below), all NNSA-related tritium operations at LLNL would cease. However, DOE's fusion energy or science programs might continue operating the NIF and might choose to continue working with

[11] Draft SPEIS page 3-90.

tritium targets. In that case, LLNL would retain a very small tritium handling capability (without either R & D or target manufacturing capability).

Tritium activities at SNL/NM would continue in support of neutron generator production and surveillance, including R & D for production support and quality improvement. However, R&D on new neutron generator designs and technology would cease.

NNSA Flight Test Operations

Under Curatorship, there would be no new bombs or components requiring flight tests. However, flight tests for surveillance of existing weapons would continue. While NNSA would conduct fewer flight tests, there would be no significant change to the alternatives for flight test operations from those considered in the SPEIS.

Hydrodynamic Testing

Hydrodynamic Testing is sometimes used (in conjunction with computer modeling) to examine issues of concern regarding the annual certification of existing weapons. It is more often used to perform weapons physics research, to improve modeling of nuclear weapons performance, to study new nuclear weapons geometries, to design and certify new nuclear weapons, and to evaluate the performance of new materials and components. Under Curatorship, it would be used for only the first purpose. That would require only a small fraction of the current testing rate.

Under Curatorship, all hydrodynamic testing activities would be consolidated at the DARHT facility at LANL. The concept here is that NNSA would choose one, and not continue to maintain multiple facilities. DARHT is the most modern of NNSA's hydrotest facilities. When DARHT becomes fully operational, it will be capable of performing tests with multiple shots from two different viewing angles on targets including full-scale mockups of any warhead in the current stockpile. About 100 hydrotests per year are performed at DARHT, which would be more than sufficient for all of the hydrotesting required under Curatorship. All other hydrotesting facilities at LANL would be closed.

The Contained Firing Facility (CFF), all other firing point complexes, and all support functions for hydrotesting at LLNL's Site 300 would be closed. Together with the cessation of all HE-related activities, this would enable closure of Site 300 or rededication to another purpose.

All hydrotesting facilities at SNL/NM and Pantex would close, as they would under NNSA's preferred alternative.

The BEEF at NTS is used primarily for weapons physics and other testing that has little direct contribution to the annual certification of existing weapons. It would have little continuing mission within the Curatorship program. However, it might stay open to support other DOE programs and in support of other agencies, including DHS and DOD. If so, NNSA might occasionally perform a test there, if it is too large to conduct at DARHT.

The U1a facility at NTS is used mainly for subcritical experiments, which provide information on the performance of plutonium, uranium and other materials, primarily to improve or validate computer codes. This activity would cease under Curatorship and U1a would be closed or maintained in a standby condition.

Major Environmental Test Facilities

The SPEIS identifies more than thirty "Major Environmental Test Facilities (ETFs)." NNSA has used those facilities for multiple purposes including R & D on new component and weapon designs and for certification of new components and weapons. Under Curatorship, there would be no development of new components or weapons and those uses would drop out. Some Environmental Test facilities have also been used to test and validate changes in computer models. Those uses would also drop out.

NNSA also uses many of the ETFs to test components from weapons randomly drawn from the stockpile as part of its surveillance program. That activity would continue under Curatorship. In addition, testing for certification and quality assurance of necessary replacement parts would also continue under Curatorship.

Under Curatorship, NNSA would retain or replace only those ETFs that are essential to the surveillance program. Many of the facilities that are retained or replaced under NNSA's preferred alternative -- consolidate major environmental testing at SNL/NM -- appear to meet that criterion. There is, however, insufficient information in the SPEIS to determine whether each of those facilities would do so. Some of those facilities are likely to have very limited roles under Curatorship and would be candidates for closure.

One such example is the Annular Core Research Reactor (ACCR) at SNL/NM. The weapons and components in the existing stockpile have already been certified to withstand the high flux neutron environments that the ACCR can simulate. Components are not routinely retested in that environment as part of the surveillance program. Under the Curatorship option, if a component degrades or changes to a point that NNSA believes there is a reasonable probability that it could no longer withstand the required high flux neutron environment, it would be replaced. Thus, the ACRR would have little or no role under Curatorship and would be a candidate for closure. On the other hand, the ACRR is used to test the radiation hardness of components for other agencies, to test and develop nuclear fuels, and to produce radioactive isotopes. Therefore, DOE might continue to operate it as a user facility even with little or no NNSA mission.

Sandia National Laboratories, California (SNL/CA) Weapons Support Function

It is not clear whether NNSA is considering consolidation alternatives for the Sandia National Laboratory, California site. There are no proposed actions regarding SNL/CA in section 2-4 of the SPEIS and there is no preferred alternative identified in section 3-17. On the other hand, Section 3-13 describes facilities at SNL/CA and presents an alternative to "Consolidate SNL/CA non-nuclear component design and engineering work to SNL/NM." The environmental impacts of that alternative are discussed in section 5-18.

The SNL/CA Weapons Support mission has evolved over the past several decades into a robust weapons design and R&D activity.[12] Since SNL/CA has little to do with surveillance and testing of existing systems, it would have little or no mission under Curatorship. Most of its facilities would be closed, unless other DOE programs choose to support them. Specifically, Building 910, in which NNSA conducts engineering and technology R&D in electronics, surface physics, neutron detector research, and telemetry systems, would be closed. The Micro and Nanotechnologies Laboratory (MANTL) would also be closed. There is no need for NNSA to be at the forefront of these technologies under Curatorship. Two other major facilities at SNL/CA -- the Combustion Research Facility (CRF) and the Center for Integrated Nanotechnologies (CINT) -- are operated as user facilities by DOE's Basic Energy Sciences (BES) Program. They could continue operating, but most, if not all, NNSA activities at those facilities would cease.

Most of the remaining smaller facilities as SNL/CA would be closed under the Curatorship option. Any surveillance and testing activities or R&D in direct support of surveillance and testing that is conducted there could continue at other sites.

Effect of the Curatorship Approach on the Programmatic Alternatives

Under the Curatorship approach, NNSA must be prepared to replace any component in the weapons stockpile if it has degraded to a point where it could cause a significant loss of safety or reliability. Thus, NNSA would have to retain a capability to produce or acquire any part in the stockpile, or be able to obtain such a capability in a short time. That includes the nuclear components – the plutonium pit and the canned subassembly. Most likely, pits or components of canned subassemblies will need to be replaced infrequently and the workload for plutonium operations and enriched uranium operations will be lower than under the SSP/LEP approach.

In addition, plutonium operations will be reduced, because there will be considerably less R & D on plutonium. Some R & D on plutonium aging will continue. However, the vast majority of plutonium R & D would cease. R & D that seeks to extend NNSA's knowledge of the equation of state of plutonium would cease, as would other studies of the behavior of plutonium at high temperatures and pressures. Such research is needed only to improve computer codes to design new nuclear weapons. It is unlikely that there would be a need to manufacture new pits under the Curatorship approach, since there would be no new nuclear weapons. NNSA's own aging studies have concluded that it is unlikely any existing pits will fail due to aging for another seventy years or so. Nevertheless, it would be prudent to retain a basic capability to produce pits in case there is a problem with an existing warhead.

R & D on the basic properties of enriched uranium operations would also cease. NNSA will continue to disassemble and assemble canned subassemblies under its surveillance program. However the workload for disassembly/assembly will likely be reduced, since there will be fewer changes to components inside the canned subassemblies than occur now as part of LEPs. On the other hand, the rate of disassembly of warheads that have been retired from the stockpile might increase.

[12] Draft SPEIS page 5-509.

The workload for weapons assembly and disassembly operations would be only a little lower under Curatorship than under the SSP/LEP approach. Disassembly and assembly activities for the purpose of surveillance and testing would remain the same. There would still be regularly scheduled programs, at about the same rate as LEPs, to replace aged components in weapons. However, NNSA would replace only those components that truly need to be changed and it will make few, if any, design changes to those components. As already noted, disassembly of warheads that have been retired from the stockpile might increase.

Tri-Valley CAREs' comments on the programmatic alternatives in the SPEIS to restructure SNM facilities appear in later sections, below. Suffice it to say here that a change from Stockpile Stewardship to Curatorship, by itself, would not have a major effect on the alternatives for enriched uranium or assembly/disassembly operations. For plutonium operations, there would be no need for more than a true capability-based production alternative and only minimal R & D.

Changes under Curatorship to Programs and Facilities not Addressed in the SPEIS

Non-Nuclear Production Facilities

The vast majority of components in a nuclear weapon are non-nuclear. NNSA has chosen not to consider consolidation options for manufacture of non-nuclear components. Under Curatorship, a capability-based approach would be sufficient for non-nuclear components. Such an approach would include the possibility of consolidating the non-nuclear production capabilities of SNL/NM and the Kansas City Plant (KCP). NNSA should examine such an option.

High Energy Density and Pressure (HEDP) R & D

NNSA has numerous facilities it uses to create high pressures, densities, and temperatures for studying the behavior of materials under conditions similar to those in an exploding nuclear weapon. They are referred to collectively as HEDP facilities. The SPEIS notes that no consolidation of HEDP facilities is considered, except for the consolidation of major hydrodynamic test facilities.[13] All HEDP facilities would be candidates for closure under the Curatorship approach. The major purpose of most HEDP facilities is to improve the computer codes used to design and simulate the behavior of an exploding nuclear weapon. Current codes are more than sufficient to analyze almost all issues that might arise in existing nuclear weapons. Those weapons underwent extensive nuclear testing before the United States entered into the test ban moratorium. In the unlikely event that a future issue affecting the safety or performance of a weapons in the stockpile arises, which cannot be resolved with sufficient confidence using existing codes, the component in question would be replaced or other steps would be taken to ameliorate the issue.

Some of the HEDP facilities can be used to produce X-rays or other effects that are used in environmental testing of components. However, other major Environmental Test Facilities, which would remain in operation under the Curatorship option (see above), can produce similar effects. Therefore, all of the HEDP facilities listed below would be candidates for closure. Some

[13] Draft SPEIS page 2-17.

of them may be useful for R & D in other areas including basic materials science, astrophysics, and energy production. Those facilities might remain in operation if other DOE programs or other agencies choose to support them.

Laser Facilities Not Needed Under Curatorship
The National Ignition Facility (NIF) at LLNL
The Janus Laser at LLNL
The Trident Laser at LANL
The Petawatt Laser at SNL/NM
The Nike Laser at the Naval Research Laboratory
The Omega Laser at the University of Rochester

Pulsed Power Machines Not Needed Under Curatorship
The Atlas Facility at NTS
The Z Machine at SNL/NM
The Saturn Facility at SNL/NM

Gas Guns Not Needed Under Curatorship
The Joint Actinide Shock Physics Experiment Research (JASPER) Facility at NTS
The Shock Thermodynamic Applied Research STAR Facility SNL/NM
Several smaller gas guns at LLNL, LANL, and SNL/NM, some of which may be scheduled for closure under consolidation alternatives for Hydrodynamic Testing or Major Environmental Test Facilities.

Microsystems, Nanotechnology, and Advanced Electronic R & D

NNSA supports a substantial amount of R & D on microsystems, nanotechnology and advanced electronics for new nuclear weapon components. Under Curatorship, there would be little or no introduction of new components into nuclear weapons and little need for NNSA to perform such research. Research in microsystems, nanotechnology, and advanced electronics contributes to other missions, including fostering the competitiveness of US industry. However, unless NNSA's state of the art facilities for R & D on those technologies is supported by other programs or agencies, they would be candidates for closure under the Curatorship alternative.

Such facilities include:
The Micro Electronics Development Lab at SNL/NM
The Microsystems and Engineering Sciences Applications (MESA) Facility at SNL/NM
The Center for Micro- and Nanotechnology at LLNL

Los Alamos Neutron Science Center (LANSCE)

LANSCE is a pulsed spallation neutron source. At LANSCE, a linear accelerator produces high-energy protons, which strike a target of tungsten metal producing copious neutrons. The protons and neutrons are used in a wide range of applications. NNSA operates LANSCE as user facility, but most of the beam time is devoted to NNSA activities. The primary activities are proton radiography for R & D on high explosives during detonation and collection of nuclear cross-section data on actinides and radiochemical tracers, which enable refinements to nuclear weapons

codes. Neither of those activities would continue under Curatorship. LANSCE would be closed, unless another DOE office takes over its operation.

Advanced Simulation and Computing (ASC) Facilities

For a long time, NNSA has used state-of-the-art computers and codes in its design efforts to simulate the behavior of nuclear weapons. When the weapons in the current stockpile were designed, several parameters in those codes had to be adjusted to conform with the results of underground nuclear tests. At that time, there was a broad consensus that no sophisticated new nuclear weapon could be certified without nuclear testing.

One of the major initial goals of the Stockpile Stewardship program was to improve its computing capabilities to better model nuclear weapons performance. Today, fifteen years and scores of billions of dollars later, NNSA believes that its improved computational and simulation tools allow it not only to certify the performance of the existing stockpile, but to design and certify new nuclear weapons. NNSA's ability to certify a new weapon, without testing, is controversial. However, there is no doubt that modeling existing weapons of the legacy stockpile is a much easier task. It is easier because the extensive results from nuclear testing of those weapons can still be used to baseline the new, much more sophisticated codes. In addition, this original test data had been augmented by an enormous amount of test data from hydrodynamic and other tests on the legacy designs.

Under Curatorship, NNSA would need no further improvement to its computing and simulation capabilities to certify the legacy stockpile indefinitely. That is mostly because there will be few changes to those designs. Indeed, the fundamental basis for continued certification will be the absence of change, as assured through vigorous surveillance and replacement of altered components with new ones of the original design. Under that model, modeling and simulation play only a subsidiary role. The improved simulation capability that NNSA has acquired to date is certainly up to the task of verifying that the minor changes, which might occur under Curatorship, would not adversely affect the safety or performance of the legacy stockpile.

Under Curatorship, NNSA would maintain its existing computing and modeling capabilities. It would halt all further improvement of computer codes, but could continue adapting the existing codes to run on its newest computers and could continue applying existing test data to those codes to better understand the behavior of the legacy stockpile under a variety of conditions. In addition, NNSA would cease its current practice of using computer procurements to aggressively pursue revolutionary new technology. Instead, it would procure computers with evolutionary improvements as they become available commercially.

5. The SPEIS Improperly Sidesteps (Non)proliferation Impacts, International Law, and Treaty Obligations:

In its "scoping" comments, Tri-Valley CAREs pointed out that it is unacceptable to brush aside a discussion of how DOE NNSA will ensure compliance with the nuclear Non-Proliferation Treaty (NPT), which is US law, especially with the regard to the new planned pit manufacturing capability, the Reliable Replacement Warhead and the "responsive infrastructure."

Under Article VI of the nuclear Non-Proliferation Treaty, the United States is obligated "to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a Treaty on general and complete disarmament under strict and effective international control."

The New Agenda Coalition, an influential group of signatory states to the NPT, has called upon the nuclear weapons states to stop modernizing their arsenals:

"Any plans or intentions to develop new types of nuclear weapons or rationalization for their use stand in marked contradiction to the NPT, and undermine the international community's efforts towards improving the security of all states."

On June 1, 2006, Hans Blix issued a recommendation for freeing the world of Weapons of Mass Destruction. In that document, the United States was described as "exploring the possibilities of developing new types of nuclear weapons." In response, the report recommended:

"Any state contemplating replacement or modernization of its nuclear-weapon systems must consider such action in the light of all relevant treaty obligations and its duty to contribute to the nuclear disarmament process. As a minimum, it must refrain from developing nuclear weapons with new military capabilities or for new missions. It must not adopt systems or doctrines that blur the distinction between nuclear and conventional weapons or lower the nuclear threshold."

Kofi Annan, on Nov. 28, 2006 at Princeton University made this statement about nuclear weapons:

"All of the NPT [Non-Proliferation Treaty] nuclear-weapon States are modernizing their nuclear arsenals or their delivery systems. They should not imagine that this will be accepted as compatible with the NPT. Everyone will see it for what it is: a euphemism for nuclear re-armament."

The Complex Transformation PEIS should consider both the vertical and the horizontal nuclear proliferation risks of each alternative, including the fact that some of the options (e.g., the preferred alternative) may increase the threat of other countries getting and using a nuclear bomb as a result of our country resuming nuclear weapons production.

By nuclear weapons production, we mean both the RRW program's contemplated weapons production and the plutonium pit production of 50/80 bomb cores at Los Alamos Lab (as a nuclear core that contains sufficient material to detonate is a bomb). The draft SPEIS fails to include the needed (non)proliferation analysis.

Nor does the draft SPEIS consider any real analysis of a disarmament alternative. As with the Curatorship option detailed above, strict adherence to U.S. treaty obligations to disarm is a viable alternative that must be examined in the PEIS. Thirty-three thousand people demanded just such an alternative during the public "scoping" process. The DOE NNSA mentions the comments in the draft SPEIS, but sidesteps their substance and refuses to consider the facilities and capabilities that would be needed in a nuclear weapons complex to carry out a true Non-Proliferation Treaty / disarmament option. For example, a NPT / disarmament alternative may

include transitioning key facilities from a majority nuclear weapons R & D and/or production mission to treaty verification and other, related new missions. Under this alternative, additional capacity for carrying out dismantlements would likely be needed. The Device Assembly Facility at the Nevada Test Site is one facility that should be analyzed in this context. So, too, would nuclear material storage and disposition requirements differ from other alternatives.

The NPT / disarmament alternative would not include a 50/80 plutonium pit manufacturing capability or a new Uranium Processing Facility. This alternative would have a different footprint and impacts than other alternatives analyzed in the draft SPEIS, and would be significantly different than the preferred alternative.

Or, to put it another way, the draft SPEIS speaks of Complex Transformation as being "capabilities based". However, a crucial capability is glaringly absent: the capability to disarm. The current draft SPEIS includes no discussion of what such a path would look like or what would be required to fulfill such a mission. This is a glaring omission that must be rectified.

6. Timing / Complex Transformation puts the "Cart Before the Horse":

Complex Transformation involves important decisions about the future of the nuclear weapons complex that should not be made in the final days of the Bush Administration and founded upon documents, such as the 2001 Nuclear Posture Review, whose future viability is extremely suspect. These decisions will have long-lasting consequences and should be subject to vigorous national debate and congressional oversight. The DOE NNSA is avoiding such oversight, in part, by asserting (without foundation) that it can implement Complex Transformation within its existing budget.

In the SPEIS, DOE NNSA should not be allowed to dismiss alternatives that it claims fall outside the current scope of nuclear policy, which is defined by the 2001 Nuclear Posture Review. The Nuclear Posture Review is not a law, it is merely a policy statement developed by the Bush Administration. Changes in that policy are likely and imminent with end of the Bush Administration fast approaching. As such, NNSA should postpone any decisions regarding the future of the nuclear weapons complex until the new, Congressionally mandated and forthcoming Nuclear Posture Review is developed.

NNSA claims that it is merely implementing the national security policy established by the President and Congress, rather than developing its own policy. However, the draft Complex Transformation SPEIS would lock the nuclear weapons complex into a path that entrenches the current nuclear weapons policy, a policy that may radically change in the coming years. NNSA, in its haste to push the Complex Transformation plan forward before the next President takes office, is proposing to alter the nuclear weapons complex in a way that, as noted, may dictate or inhibit the national security policy of the next President.

DOE NNSA claims that it merely implements the national security policy established by the President and Congress, rather than developing its own policy. However, the "Complex Transformation" plan would lock the nuclear weapons complex into a path that entrenches the current nuclear policy, preempting a full and complete policy debate. "Complex Transformation," as some in Congress have stated, seeks to put the "cart before the horse."

The Cold War is over and the U.S. must adopt a new nuclear weapons policy geared toward non-proliferation, disarmament, and the abolition of nuclear weapons. Beginning next year, the new President will take the next steps toward the development of a new policy, and he or she should not have that policy prejudiced or pre-restrained by decisions DOE NNSA rushes to incorporate into a Record of Decision on Complex Transformation this year.

Although the SPEIS does include some discussion about making the nuclear weapons complex responsive to an evolving national security policy, it is only responsive within a narrow scope. The SPEIS is inadequate in this regard and should be altered to account from a broad range of options regarding nuclear weapons policy. Or, the document should be redrafted and re-circulated for public comment after publication of the new Nuclear Posture Review.

7 (a). Complex Transformation Fails to Prioritize Safety and Security:

The DOE NNSA clearly has a goal in mind for Complex Transformation; namely, the creation of a revitalized nuclear weapons complex. Unfortunately, NNSA first set out what it wanted to do, and then it attempted to consider safety and security within that narrow framework. A more rational approach would have been to make safety and security organizing principles for the future complex, and then develop a plan that embodied them.

7 (b). Analysis of Security and Terrorism Risks Must Include an Unclassified / Declassified Summary in the SPEIS, Particularly Regarding Health Impacts, Comparative Risks Between Sites and Other Information that Does Not Disclose Access or Other Security Vulnerabilities:

According to the President in Homeland Security Presidential Directive-3, the world has changed since September 11, 2001. "We remain a Nation at risk to terrorist attacks and will remain at risk for the foreseeable future. At all Homeland Security Threat Conditions, we must remain vigilant, prepared, and ready to deter terrorist attacks."

Thus, the DOE NNSA should treat terrorist attacks as a threat that is reasonably foreseeable for the purposes of NEPA and the environmental impacts of which should be fully analyzed just as reasonably foreseeable accidents scenarios are analyzed in NEPA documents. This was affirmed in the San Luis Obispo Mothers for Peace v. NRC case and again in the Tri-Valley CAREs v. DOE case (both in the 9th Circuit).

Tri-Valley CAREs has a grave, overarching concern that plans to revamp the nuclear weapons complex may create attractive targets for terrorism and other acts of malice or insanity. Additionally each time that special nuclear materials, such as plutonium and highly enriched uranium, are shipped there may be additional opportunities for attack.

And, we have particular concern for the Livermore area, where densely-populated neighborhoods with tract homes are built right up to the fence line of the Livermore Lab Main Site. Houses sit a mere 800 yards away from the tritium and plutonium facilities that make up the Livermore Lab's so-called "Superblock". Releases of radioactive materials could have a profound and enduring impact on the more than 7 million people surrounding the Livermore Lab.

In our comments on "scoping," Tri-Valley CAREs said that it is critical that a security assessment be done that the public can provide input on – and that takes into account the various ways that these materials will be made vulnerable including storage, transportation, loading / unloading, packaging, processing etc. A generalized discussion of the pros and cons of each proposed location for these materials should be included. Further, we asserted that the nuclear materials should not be shipped gratuitously, and surplus materials should be immobilized in forms that are difficult to access and retrieve for would-be attackers.

Moreover, we stated we would expect that the amount declared "surplus" to the nuclear weapons program would steadily increase over time as disarmament advances. We suggested this be studied as a part of the proposed alternatives (e.g., compliance with Non-Proliferation Treaty and Curatorship options). The draft SPEIS fails to do any of this.

Instead, the draft SPEIS merely lists the DOE NNSA sites for which terrorism impacts are considered in a classified appendix. Worse, the list in the Executive Summary of facilities for which terrorism is allegedly considered (at page S-64) ***does not match*** the list of facilities that is contained in the body of the draft SPEIS (at page B-18). And, there is no way to tell which list of facilities is the correct one.

In the Executive Summary, it states that potential impacts of malevolent, terrorist or intentionally destructive acts at Livermore Lab are analyzed in a classified appendix. In the full draft document, Livermore Lab is missing from the list of facilities analyzed in the classified appendix – and therefore, it may not be included.

According to the draft SPEIS Executive Summary, "Depending on the malevolent terrorist, or intentional destructive acts, impacts may be similar to or would exceed accident impact analyses prepared for the SPEIS. These data will provide NNSA with information upon which to base, in part, decisions regarding transformation of the Complex… Although the results of the analyses cannot be disclosed in this unclassified SPEIS, the following general conclusion can be made: the potential consequences of intentional destructive acts are highly dependent upon distance to the site boundary and size of the surrounding population – the closer and higher the surrounding population, the higher the consequences. In addition, it is generally easier and more cost-effective to protect new facilities, as new security features can be incorporated into their design…"

Inadequate attention to security and terrorism vulnerabilities at Livermore Lab (in what should be both classified and unclassified analyses) may have led to proposals in the draft SPEIS (including in the preferred alternative) that could have a catastrophic impact on Livermore Lab workers and the surrounding populations.

First, DOE NNSA admits that the environmental and health impacts of a malevolent act or terrorism may exceed the limits of those analyzed in the SPEIS (in contradiction to the aforementioned legal decisions handed down by the 9th Circuit and common sense).

Second, DOE NNSA notes that the severity of impacts is related to the distance to the site boundary. In this regard, Livermore Lab is unique. Some DOE sites cover hundreds of square miles (e.g., Nevada Test Site), others cover scores or dozens of square miles (e.g., Los Alamos).

The Livermore Lab main site, which houses significant plutonium, highly enriched uranium and tritium inventories, is a hair over one single square mile (1.3 square miles). The distance from the site boundary to the highly populated neighborhoods, with tract homes, apartments, little league fields, etc. is simply across the street. As noted, the distance from the "Superblock" tritium and plutonium buildings to these homes is about 800 yards. Some of the highly enriched uranium is located in a building that sits between the "Superblock" and the neighbors. There is no other location in the DOE NNSA complex that is situated to maximize impacts of a terrorist attack like Livermore Lab.

Third, DOE NNSA notes that the size of the surrounding population increases the impacts that would be suffered in a terrorist attack. For population size and density (as well as proximity), Livermore Lab is uniquely – and potentially catastrophically – situated. Livermore Lab is located in the East Bay region of the San Francisco Bay Area, about mid way between San Francisco, Oakland, San Jose, Concord and Stockton, California. More than 7 million people live within a 50-mile radius of Livermore Lab. The population of the City of Livermore alone is more than 81,000 – and growing.

Further, the DOE NNSA states that it is more difficult to protect older facilities, as they do not have security features incorporated in their design. The plutonium facility at Livermore Lab (where the administrative limit exceeds 3,000 pounds) is an old facility, nearly a half-century old. Its primary structure was constructed in 1961; the last major addition was completed in 1977.

The preferred alternative in the draft SPEIS involves keeping large stockpiles of plutonium and highly enriched uranium at Livermore Lab until 2012. There is no consideration in the SPEIS of moving these materials to a non-NNSA site or to a Dept. of Defense owned site. Therefore, these nuclear bomb-making materials may be left at Livermore Lab – in a uniquely vulnerable situation – longer than they should or would otherwise be kept. Thus, the preferred alternative for the plutonium and highly enriched uranium at Livermore Lab is being allowed to trump safety and security in violation of NEPA (and common sense). Tri-Valley CAREs, its members and other Livermore Lab workers and other area residents are being unacceptably placed at risk. (Additional Livermore Lab specific impacts will follow in Part Two).

In November 2007, the GAO released an audit of DOE's progress in securing nuclear materials around the country, including at Livermore Lab. The GAO found that while DOE had told Congress in 2005 that the agency would complete plans within one year to consolidate and better secure plutonium and highly enriched uranium (principally), only 2 out of 8 plans were in place. Among the 6 plans left undone was the one to remove all weapons usable quantities of special nuclear materials from Livermore Lab. According to GAO, the security costs of keeping these materials at Livermore Lab was nearly half a billion dollars (for 7 years). As stated, the SPEIS touts cost as an element of its "Purpose and Need." The security costs of leaving these materials at Livermore Lab that must also be considered in the SPEIS along with the potential health and environmental costs. The GAO report is titled, "DOE has Made Little Progress Consolidating and Disposing of special Nuclear Material."

8. The SPEIS Environmental Justice Analysis is Deficient:

President Clinton's Executive Order 12898 (59 FR 7629) mandated that federal agencies consider the potentially disproportionate effect of their activities on minority and low-income communities. The draft SPEIS does contain some discussion of environmental justice issues. But those sections are insufficient, particularly with respect to native people.

As we stated during "scoping," throughout history the native people of the United States have borne many of the highest costs of US nuclear dominance. The mining was done on land given to native people, the milling and processing has often occurred on native land, the testing of the weapons and ultimately the disposal is slated for native land. Through this process, the US government has continued to disregard (for example, Yucca Mountain Final EIS) its agreements between Western Shoshone Nation in the Treaty of Ruby Valley of 1872.

The SPEIS must include an explanation of how the DOE NNSA can ignore an agreement between the US government and the Western Shoshone, which is a treaty between nations and the highest law of the land. If the DOE NNSA uses the claim that lands were taken by the U.S. through gradual encroachment as the quasi-judicial Indian Claims Commission (ICC) alleged and upheld by the subsequent Supreme Court decision (Dann vs US Government) that the Western Shoshone lost title of their land, then it must explain how a ruling of a court within one nation (US Supreme Court) is binding upon both nations.

Further, the DOE NNSA needs to address the decisions of the Organization of American States Inter-American Commission on Human Rights (IACHR) and the United Nations Committee to Eliminate Racial Discrimination (UNCERD) which both found the U.S. to have violated the fundamental human rights of the Western Shoshone people with regard to the Indian Claims Commission Proceedings which led to the Supreme Court decision.

On March 9, 2006, UNCERD again urged the United States to "freeze", "desist" and "stop" actions being taken, or threatened to be taken, against the Western Shoshone Peoples of the Western Shoshone Nation, including threats related to ongoing weapons testing at the Nevada Test Site as well as efforts to build an unprecedented high-level nuclear waste repository at adjacent Yucca Mountain. The SPEIS needs to take into consideration both the IACHR and UNCERD decisions and describe the proposed action in the context of these decisions.

9. Improper Segmentation / The Kansas City Plant Must be Included in the SPEIS:

NNSA's plans to build a new Kansas City Plant (KCP) were illegally segmented from the Complex Transformation SPEIS. In addition, with regard to KCP, the DOE NNSA predetermined the outcome of the NEPA process and prejudiced the selection of alternatives.

As a rule, under NEPA, an agency may not divide a proposed action into smaller segments to avoid presentation of its full environmental impacts. On the contrary, it must determine if other activities are connected in such a way as to be considered parts of a single action, in which case they should be evaluated in the same EIS.

Here, the construction of a new multi-structure facility to house NNSA's non-nuclear component procurement and manufacturing operations, the new Kansas City Plant, was illegally segmented from the Complex Transformation SPEIS. There is no rational basis for excluding this site from

the SPEIS, other than NNSA's desire to move forward with plans for a new KCP with a lower level of environmental analysis, less public involvement, and without the delays that are likely to accompany the Complex Transformation SPEIS.

Of the eight active sites that are a part of the nuclear weapons complex, KCP is the only site to be excluded from analysis in the SPEIS. Significantly, KCP was included in the 1996 Programmatic Environmental Impact Statement for Stockpile Stewardship and Management, to which the SPEIS is a supplement.

According to NNSA, Complex Transformation could "produce significant benefits, including improved safety, security, and environmental systems, reduced operating costs, and greater responsiveness to future changes in national security policy." SPEIS at S-1. According to the Environmental Assessment (EA) for KCP, "[t]he proposed facility would meet current and future production requirements for NNSA in a modern, cost effective, and flexible manner through reductions in the current facility footprint while significantly reducing operational, maintenance, security, and energy costs." KCP EA at 8.

Thus, in both cases, the proposed actions are not only intimately related but serve the same underlying ends.

Moreover, NNSA claims that, "[b]ecause the non-nuclear operations at KCP are essential and do not duplicate the work at other sites, no proposal for combination or elimination of these missions was deemed reasonable for evaluation in [the Complex Transformation SPEIS]." SPEIS at S-24. However, according to the KCP EA, Sandia National Laboratory (SNL), in Albuquerque, New Mexico "offer[s] the highest co-location benefits to NNSA." KCP EA at 17. SNL is the primary design laboratory for non-nuclear components, so a combination of non-nuclear component design and production at SNL is clearly an alternative worthy of consideration in the Complex Transformation SPEIS.

Relatedly, NNSA appears to have predetermined the outcome of the NEPA process with regard to KCP. Since KCP was excluded from consideration as part of the Complex Transformation SPEIS at an early date, no serious consideration was given to moving non-nuclear component production activities to another site in the Complex.

Under the Council on Environmental Quality's (CEQ) NEPA regulations, an EIS must be "prepared early enough so that it can serve practically as an important contribution to the decision-making process and will not be used to rationalize or justify decisions already made . . . ." 40 C.F.R. § 1502.5. In this case, NNSA decided several years ago to exclude KCP from the Complex Transformation process and then crafted the SPEIS in such a way as to lend support to that assumption.

NNSA's motives concerning the illegal segmentation are transparent: "NNSA expects to make a decision on how to modernize [the Kansas City Plant] before it makes any decisions regarding the alternatives analyzed in [the Complex Transformation SPEIS]." SPEIS at S-25. NNSA, in its haste to build a wasteful and unnecessary new facility, has segmented KCP from the Complex Transformation SPEIS, in violation of NEPA.

Finally, NNSA has prejudiced the consideration of alternatives in the Complex Transformation SPEIS by deferring necessary maintenance projects. With regard to the KCP, the Relocation Business Case for that facility states that maintenance was deferred "to capture near-term savings from avoiding investments that would be unneeded upon vacating the site." KCP Relocation Business Case at 27 (estimating a backlog of approximately $200 million deferred maintenance through 2014). This incredible statement occurs as part of a NEPA analysis that supposedly considers continuing operations at the current site as part of a no action alternative. In other words, in a bad faith effort to bolster support for its preferred alternative—a new KCP—NNSA neglected to perform necessary maintenance projects at the existing facility.

Since CEQ's NEPA regulations provide that "[a]gencies shall not commit resources prejudicing selection of alternatives before making a final decision[,]" NNSA has clearly violated NEPA by deferring such maintenance. 40 C.F.R. § 1502.2(f). This pattern has been repeated at other NNSA sites to paint a more attractive—but plainly distorted—picture of the alleged benefits of NNSA's preferred alternative as part of Complex Transformation.

10. Confusing Document Structure and Failure to Properly Analyze or Disclose the Environmental Impacts of the "Preferred Alternative" in the SPEIS.

Tri-Valley CAREs ha been reading DOE NEPA documents, including numerous EIS and PEIS documents for the past quarter century, and this draft SPEIS is the most confusing 1,600 page jumble we have encountered.

First, it is not written in plain language. Instead, it features excessive technical jargon and novel (and dizzyingly numerous) acronyms. 40 CFR 1502.8 states that "Agencies should employ writers of clear prose to write, review, or edit statements, which will be based upon the analysis and supporting data from the natural and social sciences and environmental design arts." This document does not begin to approach the bar of "clear prose".

This has consequences. The public is unnecessarily inhibited from fully commenting and participating as envisioned by NEPA. Certainly, this has impacted the amount of time that Tri-Valley CAREs has had to invest in order to attempt to sort out various permutations of "program" and "project" options in the document.

These appear to be designed not for reasoned consideration of alternatives, but rather as variations on the narrow themes that DOE NNSA favors, e.g., do we put it here – or over there. In fact, it reads is as if DOE NNSA is more concerned about crafting some future legal brief defending against charges stemming from the exclusion of reasonable alternatives than in illuminating and differentiating real options upon which the public could comment.

Egregiously, the draft SPEIS nowhere contains an analysis of the environmental impacts of its preferred alternative. Instead, at the end, it culls a preferred alternative piecemeal out of various program and project options. The reader cannot discern the impacts of the specific actions that individually make up the preferred alternative. Nor can the reader determine the impact of the preferred alternative as a whole.

The text and the accompanying charts in the SPEIS contain summaries that purport to compare environmental impacts but fail utterly to analyze or disclose (or compare) the impacts of the preferred alternative. As noted in our Purpose and Need comments above, the preferred alternative is simply an unanalyzed "amalgam of options."

No reader or decision-maker can tell the individual or aggregate or cumulative or comparative (or any other) impacts of the preferred alternative. This central, serious failure makes the SPEIS useless and invalid as a basis for decision-making.

NOTE: PART TWO FOLLOWS AS A SEPARATE WORD DOC

May 2, 2008

Public Comment and Analysis
Part Two: The Impacts of "Complex Transformation"
on Livermore Lab and Surrounding Communities

Submitted to

The U.S. Department of Energy,
National Nuclear Security Administration

Submitted as comment for

Draft Complex Transformation
Supplemental Programmatic Environmental Impact Statement
DOE/EIS-0236-S4
(also known as the "Bombplex" plan)

Submitted by

Tri-Valley CAREs
Marylia Kelley, Executive Director
Robert Schwartz, Staff Attorney
Jedidjah de Vries, Outreach Director

Tri-Valley CAREs' "Part Two" comment document is structured as follows:

NOTE: Tri-Valley CAREs' "Part One" comment contains the complex-wide impacts of the "Bombplex" plan, and was submitted separately on April 30, 2008.

PART TWO: IMPACTS ON LIVERMORE LAB AND SURROUNDING COMMUNITIES

1. Under the Preferred Alternative (and Other Alternatives) in the Draft Complex Transformation SPEIS, Tritium Research and Development at Livermore Lab is not Consolidated, is not Properly Analyzed, is Slated to Increase Over Current Programmatic Use, and Will Harm the Public

Tritium is a radioactive form of hydrogen that is used to boost the explosive power of modern nuclear weapons. Tritium is difficult to contain, is not captured by HEPA filters, is only partially captured by other mechanisms, diffuses through almost anything, and will, operating histories show, invariably escape when used under high pressures. Once released, tritium can travel with the wind, can "rain out" easily on surrounding populations and can become organically bound in the food chain.

At the Lawrence Livermore National Laboratory (LLNL or Livermore Lab), tritium has been released to the air, soil and groundwater. Known tritium releases to the air from Livermore Lab total between 800,000 and one million curies. One curie is a large amount of radiation, equal to 37 billion radioactive disintigrations per second.

At the Livermore Lab main site, tritium has been measured in rainwater at a concentration of 147,000 picocuries per liter, more than 7 times the state and federal maximum contaminant limit (MCL) for water. The groundwater has been found to contain tritium above the MCL at both the Livermore Lab main site and its Site 300 high explosives testing range. At Site 300, the concentration of tritium in the groundwater has been measured at 2 million picocuries per liter, 100 times the MCL.

Livermore valley wines taken off the shelf and analyzed by Livermore Lab have been found to have nearly four times the tritium of other California wines. Local honey and other agricultural products have also been found to contain elevated levels of tritium. The milk of local cows has also been found to contain excess tritium.

Historically, and up to the present, the concentration of tritium in local agricultural products closely mirrors the amount of tritium activity that goes on at Livermore Lab. Years where tritium programs have increased -- so, too, the environmental burden of tritium increases. And, when tritium activity goes down at Livermore Lab, tritium concentrations in wine, honey and the environment decrease.

A sampling of annual tritium releases to the environment as reported by LLNL shows the following:

1986	1,128 curies
1987	2,634 curies
1988	3,978 curies
1989	2,949 curies
1990	1,283 curies
1991	>1,000 curies
1992	177 curies
1993	137 curies

1994 137 curies

In 1990, in part due to concerns voiced by Tri-Valley CAREs regarding LLNL's tritium contamination, Livermore Lab realigned and substantially reduced its tritium use and inventory. In 1991, LLNL stopped filling the test bomb components with tritium on site. In 1992, the Nuclear Testing Moratorium Act terminated full-scale nuclear testing altogether. Tritium activities at LLNL declined -- and so did the releases. There is a direct correlation between the decreases in tritium activity and the amounts released to the environment. The downward trend of tritium releases represents a move in the right direction for LLNL. This downward trend will be reversed by the tritium Research and Development (R & D) activities under the preferred alternative in the draft SPEIS.

Because the SPEIS specifically exempts the tritium R & D activities at LLNL from consolidation -- or from termination or reduction – the document must contain the LLNL history of releases, information about how much tritium is in the local environment, and provide an analysis of how DOE NNSA proposes to ensure that releases do not occur in the future. Again, it is our analysis, based on our study of tritium use at LLNL and other sites, that increased activity will lead to increased levels of tritium in the environment. Tritium exposure is associated with a wide range of negative health outcomes, from cancers to increased susceptibility to suppressed immune system diseases to miscarriage and birth defects, among others.

The accidental releases documented at LLNL have been the result of not one but many factors, ranging from equipment failure to employee error. There is nothing to suggest that increases in tritium use at LLNL will not result in similar future accidents.

In 1965 and 1973, about 650,000 curies of tritium were released through the stacks of the tritium facility (Building 331) at LLNL. In 1991, a DOE Report of the Task Group on Operation of DOE Tritium Facilities listed the following accidents occurring between 1986 and 1991:

125 curies, released 12/15/86 due to a failed pump and cryogenic vessel breach
198 curies, released 4/14/87 due to an equipment failure and operator error
145 curies, released 1/19/88 unknown cause or stack monitor malfunction
138 curies, released 1/25/88 unknown cause or stack monitor malfunction
653 curies, released 5/15/88 due to unexpected presence of tritium in gases being vented
120 curies, released 8/1/88 unknown cause or stack monitor malfunction
112 curies, released 2/28/89 unknown cause or stack monitor malfunction
329 curies, released 8/22/89 due to improper pressure relief of container
112 curies, released 10/31/89 due to mistaken belief a palladium bed contained only deuterium and (non-radioactive) hydrogen
144 curies, released 4/2/91 due to improper preparation of a reservoir

The DOE task force further states that management failures at LLNL were the direct cause of the accidental release of tritium on 4/2/91 and the resultant radiological exposure of facility personnel.

In addition to airborne releases, the SPEIS should also discuss the tritium in waste at LLNL and in releases to the sewage, soil, surface and (eventually) groundwater.

The draft SPEIS mentions but does not analyze the impacts associated with the manufacture and filling of tritium targets for the National Ignition facility mega-laser on site at the LLNL main site. This activity is likely to increase airborne tritium emissions, tritium-contaminated wastes and other environmental and health impacts of tritium at Livermore Lab and in the surrounding communities. According to the Livermore Lab 10 Year Site Plan (quoted in section 4, below) the National Ignition Facility is an "integral part" of the Complex Transformation plan. As such, it must be analyzed both with regard to programmatic alternatives and environmental and other impacts associated with the use of tritium and other elements.

Moreover, the draft SPEIS fails utterly to consider that the tritium R & D activities in the preferred alternative are driving a major expansion of the tritium facility at Livermore Lab under the Tritium Facility Modernization Project. This project includes:

- nearly doubling the size of the tritium facility (Building 331) by adding a new building of approximately 6,000 square feet to the existing tritium facility,
- renovating existing labs in the tritium facility,
- modifying labs to accommodate new and larger devices,
- introducing new activities into the tritium facility, including the manufacture of fission-fusion targets using plutonium,
- and more.

Further, according to other DOE documents, the tritium handling is slated to increase from the usage of about 3.5 to 5 grams per year to 30 grams per year "at risk" in one room beginning in 2009, after the Complex Transformation SPEIS ROD. The allowable overall inventory would be 35 grams.

There are approximately 9,800 curies per gram of tritium. Therefore, the "at risk" limit of 30 grams all available in use at one time in one room/operation is 294,000 curies. This is enough tritium to nearly equal the historically high accident levels at LLNL of the 300,000 curie and 350,000 curie tritium releases in 1965 and 1973.

According to Dr. John Gofman, the founder of LLNL's bio-medical division, those tritium releases were responsible for 120 cancers and 60 cancer deaths. The "preferred alternative" of giving LLNL a special "pass" and NOT consolidating the tritium out of LLNL carries a potentially severe impact.

Another way to look at what these amounts of tritium mean is to look at the number of disintigrations per second represented by this tritium. One curie, as noted, equals 37 billion radioactive disintigrations per second. If the 30 gram at risk limit is released, that represents 294,000 curies times 37 billion disintigrations per second – or more radioactive disintigrations per second than there are stars in the Milky Way galaxy.

The draft SPEIS dismisses this tritium at LLNL as a "small quantity." If this is indeed the DOE's basis for not analyzing the potential impact on LLNL workers and the public, it is an improper one.

The LLNL facility is unique in the weapons complex because it is a geographically small and crowded site – the main site where the tritium facility is located is only 1.3 square miles. Moreover, homes and apartment buildings are build right up to the site boundary. A number of Tri-Valley CAREs members can see the stacks of the tritium facility from their homes and yards. The tritium facility is likewise visible when driving down Vasco Road and other major streets. The impact of an accident (or other release scenarios including earthquake or terrorism attack) with tritium were not considered in the draft SPEIS and must be.

Sandia, Livermore sits directly to the south of Livermore Lab. Because of the proximity of the encroaching population center toward Sandia and Livermore Labs, all tritium activities at Sandia, Livermore have been phased out. Tri-Valley CAREs advocates for a phase out of all tritium activity at Livermore Lab. This is a viable option that should be analyzed in the PEIS.

2. Impacts of Ongoing and Increased Hydrodynamic Tests at Livermore Lab Site 300 Were Improperly Excluded from the Draft SPEIS.

As part of the preferred alternative under the Complex Transformation plan, the Department of Energy National Nuclear Security Administration (NNSA) proposes to cease open-air hydrodynamic testing at Site 300 in 2009 and conduct future open-air hydrotesting at the Nevada Test Site. Livermore Lab's hydrotesting facilities would then be consolidated in-place. According to the draft SPEIS, the Contained Firing Facility (CFF) would be closed in 2015, which could enable transfer or closure of Site 300. However, according to LLNL officials, even if hydrotesting by NNSA at Site 300 ends, experiments will continue there by other agencies, including the Department of Defense and the Department of Homeland Security. In fact, Livermore Lab spokeswoman Susan Houghton has stated, "It's going to be an industrial site no matter what."

Currently, Livermore Lab is in the process of seeking an air permit from the San Joaquin Valley Air Pollution Control District. This permit, which represents an eight-fold increase over current levels, would allow the outdoor testing of explosives at Site 300, which is located just 6.5 miles from downtown Tracy, California and approximately one mile from the proposed 5,500-home Tracy Hills development site. The blasts could contain as much as 8,000 pounds of high explosives annually and scores of toxic and radioactive materials, including up to 20 mg (200 curies) of tritium and up to 5,000 pounds of Uranium-238 (depleted uranium).

If allowed to enter the body, depleted uranium has the potential for both chemical and radiological toxicity, and the two important target organs are the kidneys and the lungs. Tritium is known to cause a wide range of health problems, from birth defects to cancers. The open-air explosives testing to be performed under the permit will aerosolize these and other hazardous materials, which will then spread with the prevailing winds throughout the San Francisco Bay Area and Central Valley of California. *(See also comments of nearly 450 area residents, submitted separately by Tri-Valley CAREs).*

One may wonder why Livermore Lab is seeking an air permit to perform increased open-air detonations at the same time as NNSA is proposing to cease such testing at Site 300 in 2009 under the Complex Transformation plan. The answer is likely that Livermore Lab is planning on performing further experiments at Site 300 on a "work for others" basis for other federal agen-

cies. This is unacceptable. All open-air explosives testing and related experiments should cease at Site 300, which should then be closed to these types of activities.

In the draft Complex Transformation SPEIS, NNSA must consider an alternative that specifically involves the closure of Site 300 and/or transition to other environmentally-benign activities. According to the Council on Environmental Quality's (CEQ) regulations implementing the National Environmental Policy Act (NEPA), the section discussing alternatives "is the heart of the environmental impact statement." 40 C.F.R. § 1502.14. Pursuant to CEQ's NEPA regulations, agencies are required to "[r]igorously explore and objectively evaluate all reasonable alternatives." *Id.* at § 1502.14(a). The closure of Site 300 is a reasonable alternative, which should be thoroughly analyzed in the draft Complex Transformation SPEIS.

Further, even assuming Site 300 is merely transferred instead of closed, that is a connected action that must be analyzed in the draft Complex Transformation SPEIS. Under CEQ's regulations implementing NEPA, connected actions are those that "are closely related and therefore should be discussed in the same impact statement. Actions are connected if they . . . [c]annot or will not proceed unless other actions are taken previously or simultaneously." *Id.* at § 1508.25. In this case, any environmental impacts associated with the transfer of Site 300 should be analyzed in the draft Complex Transformation SPEIS, since that transfer could not proceed unless NNSA undertakes its planned status change for Site 300 as part the Complex Transformation plan.

Moreover, the cumulative impacts of future activities at Site 300 must be analyzed in the draft Complex Transformation SPEIS. Pursuant to CEQ's NEPA regulations, "'Cumulative impact' is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." *Id.* at § 1508.7.

Since Livermore Lab officials have publicly stated that experiments for other federal agencies will continue at Site 300 in any event, such actions are clearly foreseeable. As such, the environmental impacts of these activities, whether conducted by the Departments of Defense or Homeland Security, should be analyzed in the draft Complex Transformation SPEIS.

In conclusion, all open-air explosives testing at Site 300 should cease. Whether this testing is done by DOE or another government agency, the risk to the community is the same. Central Valley residents, and in particular those from the fast-growing community of Tracy, should not have their health endangered by these activities. As acknowledged in the draft Complex Transformation SPEIS, Site 300 is a redundant facility inappropriately located for such hazardous activities. Therefore, all high explosives and bomb testing at Site 300 should cease and future efforts should focus on remediating its toxic legacy, as reflected by its status as a Superfund (CERCLA) site.

3. Consolidation of Plutonium and Highly Enriched Uranium out of Livermore Lab Needs Better Analysis – and Faster Action -- Due to the Encroaching Community and Other Unique Risks of Keeping Special Nuclear Material at This Location.

The plutonium and highly enriched uranium at Livermore Lab are vulnerable to a terrorist attack, a disgruntled employee scenario and to release in the event of a major earthquake, as well as other scenarios.

The draft SPEIS proposes to leave weapons usable quantities of plutonium in place at Livermore Lab until 2012. Further, the "preferred alternative" involves moving the plutonium from Livermore twice -- once to the Nevada Test Site and then again to the Los Alamos Lab in NM, presumably for use in the new plutonium pit manufacturing facility that is the "preferred alternative" in the SPEIS.

Tri-Valley CAREs requests that a far different option be analyzed. First, there is no need for new pit production facilities/capabilities at the Los Alamos Lab with the capacity of producing 80 pits a year (nor is the CMRR facility, let alone its potential 9,000 square foot expansion, fully justified or analyzed in the SPEIS). Second, the plutonium from Livermore Lab should be moved only once -- and for safe and secure storage, not new bomb experiments. We suggest the following process:

First, undertake a study of potential storage sites. It need not take long. This study should not be limited to sites that are part of the Complex Transformation plan. For, if the plutonium from Livermore Lab were to be simply stored safely and securely at a remote location, that plutonium would not have a role in Complex Transformation. (It is possible that if the decision regarding moving the LLNL plutonium were made on the grounds of safety and security, a different storage site choice might emerge. For example, the DOE has excess underground secure storage at a large site that is not an NNSA site analyzed in the SPEIS. Too, the DoD may have excess secure storage facilities suitable for the job.)

This is an important point because, with the present plan, the tail of new nukes is wagging the dog of Livermore's plutonium. As noted, an unbiased analysis might show that the safest and most secure location for Livermore's plutonium is at a site that is not one of the eight involved in Complex Transfomation. Or, perhaps one of the eight is the best site (though it most certainly won't be Los Alamos -- the place the "preferred alternative" now proposes to send it). Point is, start with the analysis. We offered this comment at scoping, but unfortunately it was ignored in the preparation of the draft SPEIS.

Second, make the study of potential storage sites as transparent as possible. Bring in independent analysts, community members, affected tribes and other stakeholders.

Third, (and this can begin today) lay out a plan to safely package the plutonium at Livermore Lab. The Defense Nuclear Safety Board has cited Livermore Lab's plutonium facility for storing plutonium in paint cans and food tins. And, this is only the tip of the iceberg. Good procedures, and a reasonable allocation of time and money will be required to package the plutonium for shipment.

Fourth, ship it to the selected location in as safe and timely manner as is possible. Allocate sufficient funds to ensure that it is stored safely and securely at the new site. Continue to involve independent analysts, communities, affected tribes and other stakeholders.

Similarly, the highly enriched uranium should be moved from Livermore Lab in a prompt manner. And, the material should be stored as safely as possible at the most secure location. The DOE should undertake a process similar to the one outlined above to determine the best location. And, the highly enriched uranium should be stored only, and not be used in bombs or in nuclear weapons experiments.

The SPEIS proposes to keep highly enriched uranium and plutonium at Livermore Lab at least for the next 5 years, yet it fails to consider the Livermore Lab's environmental record of accidents, spills, leaks etc. with these materials. There have been numerous fires and other accidents involving uranium at Livermore Lab. Below are just a few of the accidents and other problems at Livermore Lab involving plutonium.

Some Plutonium Mishaps at Livermore Lab: Over the years, there have been a number of accidents and oversights at Lawrence Livermore National Laboratory involving plutonium. The following is but a small sampling of such incidents:

- 1953-1962: Radioactive liquid wastes, including plutonium, are disposed of in unlined pits
- 1958: Livermore Water Reclamation Plant (LWRP) begins to distribute sludge to the public
- 9/13/1965: A fire involving about 100 grams of plutonium starts in Building 332
- 4/20/1967: A spill of radioactive liquid containing plutonium occurs in a storage area outside Building 332
- 5/25/67-6/15/67: Release of plutonium to the City of Livermore's sewer system contaminates sludge distributed by LWRP
- 1973: Unknown quantities of plutonium released to soil during transfer of solid materials from solar evaporators; LWRP stops distributing sludge to the public
- 4/16/1980: Flash fire in a glovebox allows plutonium to escape
- 3/1983: Routine handling of drums containing curium, americium, and plutonium results in a spill and the contamination of at least one worker
- 5/1987: Another release of plutonium to the City of Livermore's sewer system
- 1990: DOE testing finds elevated levels of plutonium in an off-site air monitor east of LLNL
- 7/9/1991: Monitoring indicates statistically significant increase in plutonium discharge to sewer system
- 10/24/1991: Torn bag results in plutonium powder being spread on the floor
- 10/29/1992: Two LLNL workers are contaminated after a can of plutonium oxide is placed in a bag
- 1994: EPA discovers plutonium above background levels in three city parks. The highest level occurs in Big Trees Park, a half-mile west of LLNL.
- 1995: Deficiencies in safety practices lead to the shut down of all plutonium experiments and machining operations for 6 months
- 2/7/1996: Department of Energy reports that LLNL cannot account for 12 pounds of plutonium in its stockpile
- 2/2/1997: A worker at LLNL accidentally sticks himself with plutonium-contaminated metal
- 10/3/2003: A dozen LLNL workers are exposed to plutonium after a power outage caused the radioactive element to leak from its specially designed container
- 2004: Five workers at LLNL inhale plutonium particles while packaging radioactive waste

- 3/2005: Defense Nuclear Facilities Safety Board cites LLNL for storing plutonium in paint cans and food tins.

Plutonium represents a serious health hazard. A person is most likely to be exposed to plutonium by breathing it in. Other exposure pathways are also possible. Plutonium may remain in the lungs or move to the bones, liver, or other body organs. It generally stays in the body for decades and continues to expose the surrounding tissues to radiation, which may increase your chance of developing cancer and other health problems. The health effects of plutonium have been studied primarily by experiments done on laboratory animals. These studies have shown lung diseases from short-term exposure to high concentrations of plutonium. Animal studies have also reported an increase in lung, liver, and bone cancers from exposure to plutonium, as well as effects on the immune system.

In light of this, problems with the LLNL plutonium facility are relevant and must be examined in the SPEIS. The primary plutonium building was first built in 1961, and the latest major addition was built in 1977. Safety vulnerabilities such as the ventilation system and electrical system must be considered carefully.

Safety Features / Accident Response: According to a report issued by the Defense Nuclear Facilities Safety Board (DNFSB), the accident analysis and bases for calculating consequences used in the Draft SWEIS may be deficient. In a March 17, 2004 report, the DNFSB wrote that staff had reviewed LLNL's accident modeling and found its key assumptions highly questionable.

The DNFSB determined that more radiation was likely to escape from the LLNL plutonium facility in an accident than was calculated by the model. Page 3 of the DNFSB report states that the LLNL calculation of only 5% leakage (Leak Path Factor) of the radiation from a plutonium fire is "unrealistic and probably underestimates the extent of a release of unfiltered radioactive material from the facility."

The SPEIS does not discuss the environmental impacts of plutonium in Livermore at all – and must. In this context, we ask if DOE is still using the old 5% leak path factor?

We would also like the SPEIS to describe how integral Livermore Lab reliance on air monitors / emergency generators and negative airflow is. In this context, the SPEIS should include information about the October 2003 plutonium accident that resulted in a dozen lab employees potentially being exposed to airborne plutonium because glovebox seals, an emergency generator, an alarm system and negative airflow system all failed simultaneously. A case study should be included in the SWEIS describing how all of these things could have failed at once and describing how these types of failures will not happen again. (See also the partial list of accidents above).

Plutonium has been removed from soils at the Livermore Lab main site as part of the ongoing Superfund cleanup there. Plutonium has also been found at elevated levels in an off-site air monitor to the east of LLNL and in the top 2 inches of dirt in a City park to the west of LLNL. The impacts of continuing operations, including those that are part of the "preferred alternative" of the SPEIS at Livermore Lab includes risks that were not studied in the SPEIS and must be.

In addition to failing to consider the environmental and health risks of keeping this material at LLNL and the security risks (discussed in Part One and below), the SPEIS also fails to consider that its decision to name LLNL as a nuclear weapons design center of excellence for the future may involve LLNL operating a new plutonium foundry (currently under construction at LLNL).

The new plutonium foundry is intended to:
(a) prototype plutonium pits and develop new plutonium pit manufacturing techniques that would be used full-scale at Los Alamos Lab in the new pit manufacturing facilities under the SPEIS' "preferred alternative," and,
(b) in a related activity, help develop and prototype a new plutonium pit for the Reliable Replacement Warhead that LLNL is presently developing.

The new foundry, called L-cast, which is being built in the Livermore Lab plutonium facility (Building 332), is inextricably connected to the Complex Transformation plan, yet it is strangely absent from the draft SPEIS. It must be analyzed, including:

- Its potential health and environmental impacts,
- Its potential security impacts and vulnerabilities,
- Its potential to affect or defer the SPEIS "preferred alternative" to remove plutonium from LLNL by 2012 as well as its impact on any plans to accelerate the removal date, and
- Its constraining impact (along with the RRW program of which it a part) on the development of a consolidation alternative that would result in Livermore Lab's re-missioning.

4. Role of the Reliable Replacement Warhead and Continuing Nuclear Weapons Development at Livermore Lab as Part of Complex Transformation (e.g., as Outlined in the Livermore Lab 10 Year Site Plan) Must be Fully Transparent and Considered in the SPEIS

The Ten Year Site Plan for Livermore Lab (dated March 2007) contains the following references to the Complex Transformation plan:

• 10 Year Plan, Lab director George H. Miller's' statement (page i): "The Lawrence Livermore National Laboratory is an important part of that vision as a nuclear design resource and a center for innovative science and technology to help expedite the transformation... Success in the development of RRWs [Reliable Replacement Warheads] is essential to making the transformational changes envisioned..."

• 10 Year Site Plan, page 3-2, "Livermore plays a prominent role... develop[ing] replacement warheads that will enable the Complex 2030 [Complex Transformation] transformation."

• 10 Year Site Plan, page 3-13, "NNSA's Complex 2030 [Complex Transformation] plan... calls for the significant changes to the nuclear weapons complex, and a modified mission that includes development, production and deployment of the Reliable Replacement Warhead (RRW) designs to replace major portions of the current stockpile..."

Tri-Valley CAREs' analysis of the draft SPEIS is that the "preferred alternative" for revitalizing and rebuilding the nuclear weapons complex is tied to the desire of DOE NNSA to continue the RRW program.

In essence, RRWs are the "enabler" for Complex Transformation as CT is a plan for the future of the nuclear weapons complex whose taproot is RRW -- and at the same time it would also be fair to say that Complex Transformation is likewise the "enabler" for RRWs as production would occur in refurbished nuclear weapons complex facilities and use the pits that are part of the 50/80 "preferred alternative" under Complex Transformation.

Perhaps a simpler way to put it is that RRW and Complex Transformation are inextricably linked. Yet, the SPEIS is opaque on this relationship, does not analyze it adequately, does not examine the associated environmental impacts and does not consider the constraining effect that enabling the RRW program has on the Department's own thinking (or lack thereof) regarding reasonable alternatives to the preferred plan.

Moreover, by keeping these relationships opaque, the SPEIS fails to adequately analyze the totality of environmental impacts associated with the RRW program. For example, Livermore Lab was chosen to develop the first RRW design. If that goes forward (and DOE NNSA is pushing Congress to get it funded in 2009 even after Congress cut it last year), what are the impacts on LLNL and the surrounding communities?

• 10 Year Plan, Page 1-3 and repeated on Page 4-5, "The establishment of NIF [National Ignition Facility] as a user facility, integrated with the available computational modeling capabilities and consolidation of the user community into a campus around the facility are an integral part of the LLNL Complex 2030 [Complex Transformation] vision."

• 10 Year Plan, page 1-4, "In support of the Complex 2030 [Complex Transformation] strategies, LLNL is improving its F&I [facilities and infrastructure], including:
  • Steady progress is being made on deferred maintenance reduction.
  • Sufficient F&I maintenance funding is committed (at the minimum 2% of replacement plant value) to assure the sustainment after FIRP ends.
  • The Terascale Simulation Facility (TSF) is operating as a productive user facility for the three NNSA laboratories.
  • The NIF is undergoing transformation to a national shared user facility..."

Why were these "integral parts" including NIF, the Tritium Facility Modernization Project that is "needed" for NIF, and the supercomputing complex referred to in the quotes not analyzed in the SPEIS. Was a deal cut between DOE NNSA Headquarters and LLNL management for certain nuclear weapon design facilities and programs to be "exempted" from consolidation or closure in order to appease one of the parties? It looks that way. Further, this inappropriately constrains the alternatives analysis.

• 10 Year Site Plan, page 1-5, "This year's TYSP [10 Year Site Plan] follows the framework of the Complex 2030 [Complex Transformation] vision... One tangible initiative is the line item proposal to consolidate target fabrication capabilities and associated personnel into a Target Fabrication Facility. This transformation accommodates user facilities and meets one of the important goals of the 2030 [Transformation] vision. In addition... "

Tri-Valley CAREs notes that the SPEIS describes neither a "Target Fabrication Facility" at LLNL nor the aforementioned Tritium Facility Modernization Project. What is the relationship between the facilities? To the Complex Transformation plan? Why are these relationships absent from the SPEIS?

Above are examples of the naming of Complex 2030 [Complex Transformation] in the LLNL 10 Year Site Plan, March 2007. Please reconcile the relationships outlined in that document with the lack of consideration of these facilities and programs in the SPEIS itself. And, in that context, we repeat that it appears as if promises about the outcome of the process have been made in advance of the final document and ROD.

We also request that DOE NNSA consider and include in the SPEIS any relevant information from the 2008 LLNL Site Plan (which Tri-Valley CAREs is attempting to obtain).

5. Safety and Security Vulnerabilities and the Threat / Consequences of Terrorism at Livermore Lab.

As we note in our Part One comment, Livermore Lab has been granted a "variance" from DOE NNSA and need not demonstrate compliance with the DOE's 2005 Design Basis Threat (meaning there is no assurance that LLNL has adequate defenses against a terrorist attack).

We also noted a significant discrepancy in the SPEIS; LLNL is listed in the Executive Summary as among the facilities whose security and vulnerability to terrorism is considered in a classified appendix to the SPEIS. Yet LLNL is missing in the body of the document (page B-18) when it likewise listed facilities whose security vulnerabilities were considered in the same classified appendix.

We refer the reader to our Part One comment for details, but note that either a severe earthquake or terrorist attack could have a catastrophic impact on the nearly 10,000 Livermore Lab employees, Sandia, Livermore's approximately 1,000 employees, the 81,000 people who live in Livermore and the 7 million people who live within 50 miles of Livermore Lab.

The administrative limit for plutonium at Livermore Lab is more than 3,000 pounds, enough for about 300 nuclear bombs. The administrative limit for highly enriched uranium is hundreds of pounds. The administrative limit for tritium is 35 grams. The Livermore Lab tritium facility (Building 331) and plutonium facility (Building 332) are "cheek to jowl" and vulnerable to a terrorist attack. As stated, the Complex Transformation plan leaves weapons usable quantities of plutonium and highly enriched uranium at Livermore Lab in place for the next 5 years. It fails to consolidate LLNL's tritium R & D and its preferred alternative supports an increase in programmatic activity with tritium at the Lab. These nuclear materials leave the people and the environment in this rapidly growing suburb at risk.

6. Alternatives Analysis and the Need to Rethink the Future of Livermore Lab.

Many of our members are residents of Livermore who would like to see the SPEIS include an exploration of alternative futures for the Livermore Lab, specifically a civilian science based alternative.

We note that Livermore Lab has great potential as a premier center for civilian research, for example in the area of modeling global climate change, research and development of non-polluting, renewable energy technologies and more. The current proposal would keep radioactive tritium at the Lab, and would continue use of Site 300 for open air bomb testing (albeit under the auspices of different federal agencies). Other futures are possible for the Livermore Lab and for this community and it is within the scope of DOE's authority and reasonable to expect that a NEPA review of the future of the nuclear weapons complex would examine an alternative future for Livermore Lab. We note that an alternative future for Livermore Lab goes hand in hand with the Curatorship alternative detailed in our Part One comment. It is not credible for DOE to stubbornly refuse to evaluate Curatorship for the complex and/or a post-Cold War, civilian science future for LLNL's mission and programs.

DOE should embrace its overarching mission to advance the national, economic, and energy security of the nation, instead of clinging to Cold War era nuclear weapons programs. A credible alternative future could be accomplished by "re-missioning" Livermore Lab. This would have benefits for the Lab, the community, the country, and the world. At a minimum, DOE's responsibility under NEPA is to evaluate such an alternative in its SPEIS.

Conclusion: Tri-Valley CAREs is a non-profit organization located in Livermore, California. Tri-Valley CAREs has been monitoring the activities of Lawrence Livermore National Laboratory and the nuclear weapons complex for 25 years. On behalf of our 5,600 members, many of whom are directly affected by the preferred alternative and other options in the Complex Transformation plan, we submit these comments on the DOE National Nuclear Security Administration Complex Transformation Supplemental Programmatic Environmental Impact Statement. We request that upon completion of the final SPEIS, DOE send Tri-Valley CAREs 2 complete copies, 10 additional Executive Summaries and 10 copies of the document on CD ROM. We thank you for this opportunity to comment.

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WITNESS RESPONSES TO QUESTIONS ASKED DURING THE HEARING

JULY 17, 2008

RESPONSE TO QUESTION SUBMITTED BY MS. TAUSCHER

Mr. D'AGOSTINO. The NNSA has not completed a review of what the sites in the Complex will need for personnel in five years, but we will have a clearer picture after the findings from the Congressional Commission on the Strategic Posture of the United States (Section 1062 of the FY 2008 National Defense Authorization Act) are reported, as well as from the FY 2009 Nuclear Posture Review (Section 1070 of the FY 2008 National Defense Authorization Act). Based on an assumption of steady state requirements, we can make some rough projections about the needs of the Complex in five years. We have projections from the sites:

Los Alamos National Laboratory (LANL) expects about 625 career employee scientist and engineer terminations in the next five years. The number of expected career employee new hires or conversions from pos-doc or limited term positions is 500. LANL expects to lose about 625 career employee scientist and engineer terminations in the next five years. LANL has historically relied largely on postdocs for many of its hires. However, the number of post-doc applications selected for consideration in 2003 was 279, competed with 175 in 2008, a significant decline due to budget constraints. From 2006 to 2008, the percentage of LANL post-docs who were U.S. citizens has been steady at 39%, compared with 52% in 2000, a significant decline.

Lawrence-Livermore National Laboratory (LLNL) has over 6,400 employees of which more than 2750 are scientists and engineers. The laboratory expects 1007 career employee scientist and engineer separations in the next five years and a like number of hires LLNL's post-doc population has remained constant from 2004 through 2000. However rates of conversion to permanent employees dropped from an average of 22 percent in 2004 to 3.8 percent in 2008. Almost seventy percent of the post-docs are U.S. citizens. Over 75 percent of LLNL's scientists and engineers have a master's degree or higher, with 50 percent having a PhD.

Sandia National Laboratory (SNL) projects from a total of almost 4000 scientists and engineers a total attrition of approximately 950 scientists and engineers over the next five years. The hiring estimate is 150-200 technical staff per year, or 750 to 1000 engineers and scientists over a five year period. Of these, 40% will have PhDs, 35% masters, and 20% bachelors and other degrees. For both attrition and hiring, Sandia's California site is projected to account for 13%. The total number of Sandia's employees is greater than 8400.

National Security Technologies (NSTec) reports the Nevada Test Site currently has 450 scientists and engineers and estimates attrition of 175 and hiring of 200 over the next five years. One fourth of the engineers have a master's or PhD, as do half of the scientists.

The Kansas City Plant expects to lose 300 technical workers out of a total of 648 in the next five years and plans to replace 80-100% (240-300). Most are expected to be bachelor-degreed engineers, a third masters, and a few PhDs.

The Pantex Plant has 524 scientists and engineers and anticipates a 6% annual attrition for the next five years. To maintain a static technical workforce, 157 scientists and engineers with bachelors or masters degree must be hired over that period.

RESPONSES TO QUESTIONS SUBMITTED BY MR. EVERETT

Mr. D'AGOSTINO. The NNSA has diligently worked over the past two years performing technical reviews and business case analyses of transformation alternatives. The business case analyses covered costs, risks, and benefits of each major alternative. These studies also included life cycle costs of alternatives; costs of decommissioning, deactivation, and decontamination of closure sites and facilities; and cash flow analyses. The selected preferred alternative in the Draft Complex Transformation Supplemental Programmatic Environmental Impact Statement (SPEIS) was typically the lowest cost and lowest risk option based on both our internal and independent business case analyses. These business case analyses were made available for public review on the web at http://www.complextransformationspeis.com in

January 2008. Updated business case studies will be made available with the Final SPEIS.

In our business case and environmental analyses for each major modernization alternative, an internal Integrated Project Team (IPT) was established to perform a business case analysis. Typically, this work proceeded in parallel with an evaluation by a non-NNSA independent review team. We evaluated consolidation options that could have resulted in closure of up to two major sites (Pantex in Texas and Y–12 in Tennessee). However, we did not select these consolidation options because extensive internal and independent analyses indicated that of higher lifecycle costs and higher risks for time periods extending through 2060. For example, the Department of Defense, Office of the Secretary of Defense, Cost Analysis Improvement Group reported to me in a January 10, 2008 memo that a "Consolidated Nuclear Production Center (CNPC) proposal is less cost effective than modernizing the existing nuclear weapon production facilities." [See page 15.]

Dr. MILLER. Great care must be taken during the anticipated transformation activities to ensure that foundation of our confidence in the stockpile, achieved through the independent scientific approaches to identifying and resolving issues offered by two-Laboratory competition, be sustained and nurtured. Pursuing efficiencies such as a single simulation code system for both Laboratories or dictating common approaches to solving complex problems would destroy this foundation. Similarly, eliminating Livermore's expertise in a basic material like plutonium would cripple the peer review process. Appropriate consolidation of facilities is a valid and important step; however, consolidating expertise would create unacceptable risks. A more general concern is that during complex transformation the foundational science and technology of the Laboratories will be squeezed out by the large capital investments required for transformation and the work required to maintain the existing stockpile. The planned reduction of the Laboratories capabilities by an additional 20 to 30% is a cause for great concern.

The United States has maintained confidence in the safety, security, and performance of its nuclear deterrent through a scientifically competitive process involving Los Alamos and Livermore for over 50 years. This process of managed competition, collaboration, and peer review has been essential because it has never been possible to fully test the nuclear explosive package in all of its delivery configurations and anticipated environments. With the current restrictions on any nuclear testing and the potential for ratification of a Comprehensive Nuclear Test Ban Treaty, this process, which provides the government with independent, expert advice on questions of national importance is more essential than ever.

At its core, this process relies on having truly independent experts—trained people with experimental capabilities and computational simulation codes—who have the tools to do independent, hands-on work on particular issues and provide that independent scientific judgment to the government. Historically, this independent expertise was developed through the design, engineering, production, and maintenance of separate systems that made up the U.S. nuclear stockpile. Each Laboratory has its own process, culture, and organization for addressing stockpile challenges. These dissimilarities led to truly independent scientific approaches and continue to provide critical "checks and balances" in the process of maintaining the nation's stockpile. The cooperative competition between LANL and LLNL has yielded different approaches that gave us different weapons, new technologies, and solutions to difficult challenges. Examples of these are the modern, nuclear-safe, small weapon architectures; insensitive high explosives; fire safe designs and materials, and modern security features including active protection systems and permissive action links. The two laboratories have developed different specializations, resulting in unexpected discoveries, faster troubleshooting of problems, and cost savings.

Today's system of peer review proceeds at several levels.

- Each Laboratory retains responsibility for part of the overall stockpile: LANL has responsibility for the B61, W76, W78, and W88. LLNL has responsibility for the W62, W80, B83, W84, and W87. During the Annual Assessment process each Laboratory does extensive experiments, evaluations, and calculation of the systems for which it is responsible. Within each Laboratory, "red teams" review the results of this analysis and provide comments to the Director. The other Laboratory also provides comments based on its expertise, but generally a Laboratory without primary responsibility does not provide any significant calculations, experiments, or evaluations to the other Laboratory. Based on the work done by his own Laboratory and the comments from the "red team" and the other Laboratory, the responsible Laboratory Director provides his annual assessment.

- Frequently, when there is a particularly complicated or important Significant Finding or manufacturing issue, both Laboratories provide independent assessments based on extensive analysis, experimentation, and calculations. For example, assessment of the aging effects in plutonium received this level of peer review.
- Sometimes both Laboratories do extensive analysis, experimentation, calculations, and evaluations of an entire system and provide independent input to the government. The W76 Dual Revalidation and the competition for the Reliable Replacement Warhead proceeded along this line.

The current Annual Assessment process could be significantly strengthened by requiring that each Laboratory do an extensive evaluation—including independent calculations and experiments—of the entire U.S. nuclear stockpile. Each Laboratory's stockpile evaluation would be provided to the responsible Laboratory Director for inclusion in his annual assessment of the systems for which he is responsible. I believe that adding this more comprehensive peer review process is the single most important action that we could take to improve confidence in the nuclear deterrent in the absence of nuclear testing. [See page 33.]

Dr. ANASTASIO. The ability of the United States to sustain a safe, secure and reliable stockpile in the absence of testing rests on the ability of the 2 physics laboratories—Los Alamos and Lawrence Livermore—to carry out a comprehensive suite of experimental, analytical and computational activities that provide data needed by scientists and engineers to determine the overall health of the stockpile. These judgments however must be subject to a robust peer review process. The challenge will be to conduct technically credible inter-laboratory peer review.

The experimental, computational and analytical tools that have evolved with the maturation of the Stockpile Stewardship Program are the same tools that are essential to the future conduct of technically credible inter-laboratory peer review. Simple reviews of data, technical reports and subject matter expert analyses do not constitute the type of inter-laboratory peer review that is needed to sustain confidence in the stockpile in the future. A Laboratory conducting peer review must be able to conduct its own experiments, simulate nuclear processes using its own codes and models and complete its own analysis of the results unconstrained by the perspectives of the other Laboratory. This will not be easy nor inexpensive, but I believe it is the prudent course for the Nation.

NNSA's proposal to transform the complex has 4 fundamental objectives: Advance the science and technology base that is the cornerstone for long-term national security—nuclear deterrent, nonproliferation, counter terrorism and energy; transform the nuclear deterrent-smaller, safer, more secure, reliable without underground nuclear testing; transform to a modernized, cost-effective Complex; and create an integrated, interdependent enterprise that employs best business practices to maximize efficiency and minimize costs. NNSA's proposal creates several centers of excellence that directly impact on the ability of the two physics laboratories to carry out their challenging peer review functions. Specifically, both Los Alamos and Lawrence Livermore are designated as centers of Excellence for Nuclear Design and Engineering; and Supercomputing.

This consolidation must be accomplished carefully and thoughtfully to avoid unacceptable risk to the Stockpile Stewardship Program and, derivatively, the ability of the Laboratories to conduct technically credible inter-laboratory peer review.

It is critical that the current and anticipated tools of stockpile stewardship are available to both Laboratories to enable inter-laboratory peer review. These tools include the Dual Axis Radiographic Hydrodynamic Test (DARHT) Facility, the National Ignition Facility (NIF), the Chemistry and Metallurgy Research Replacement (CMRR) project, Los Alamos Neutron Science Center (LANSCE), the Los Alamos Plutonium Facility, the Weapons Engineering Tritium Facility (WETF), supercomputing capabilities (Blue Gene and Road Runner) commensurate with the scale of issues that will have to be addressed and the many smaller but no less important experimental and analytical capabilities at the Laboratories. And, above all else, motivated scientists and engineers will have to be recruited, trained and given challenging, meaningful work to preserve our ability to conduct technically credible inter-laboratory peer review.

Finally, a new approach to inter-laboratory peer review is needed. Director Miller and I agree that each Laboratory must provide the necessary teclmical transparency that would enable continuous inter-laboratory peer review of each nuclear warhead. This fundamentally alters the classic inter-laboratory peer review process, which was executed to assess discrete events or decisions. Implementation of such an approach will require leadership, additional resources and careful management, and

is essential to sustain our long term confidence in the United States' nuclear deterrent. [See page 33.]

RESPONSE TO QUESTION SUBMITTED BY MR. SPRATT

Mr. D'AGOSTINO. Currently, there are eight facilities within the list of 600 Assets which are considered process contaminated and have been proposed for transfer to DOE Environmental Management (EM). The eight facilities are located at the Y-12 National Security Complex and some of them are still operational. Six of the eight facilities have been proposed for transfer within the next five years while the remaining two are available for transfer after 2014.

There are approximately six to eight additional operating facilities in the list of 600 Assets that are potentially process contaminated. As the plans for transformation of the complex mature and the facilities declared excess become more defined, the facilities will be characterized to determine contamination and scheduled for disposition. [See page 19.]

QUESTIONS SUBMITTED BY MEMBERS POST HEARING

JULY 17, 2008

QUESTIONS SUBMITTED BY MS. TAUSCHER

Ms. TAUSCHER. Why did NNSA reject the concept of a Consolidated Nuclear Production Center (CNPC), such as proposed in the 2005 SEAB report? If funding were not a limiting factor, would that be the preferred option?

Mr. D'AGOSTINO. NNSA did not select a Consolidated Nuclear Production Center (CNPC) because extensive internal and independent analyses indicated the concept of a CNPC as proposed in the 2005 Secretary of Energy Advisory Board (SEAB) report was both a higher cost and higher risk approach. The SEAB task force underestimated three important factors: (1) the cost of replacement facilities at a new site, (2) the value of infrastructure at existing sites that would have to be replicated at a new site, and (3) the cost of transitioning operations to a new site (e.g., workforce development at new site). Business case analyses indicated there would be no positive lifecycle cost return on investment before 2060. While near-term budgets would have been a challenge, the lack of a lifecycle cost advantage means that a CNPC would not be our preferred option even if funding were not a limiting factor.

The Department of Defense, Office of the Secretary of Defense, Cost Analysis Improvement Group reported to me in a January 10, 2008 memo that a "Consolidated Nuclear Production Center (CNPC) proposal is less cost effective than modernizing the existing nuclear weapon production facilities." This is consistent with all our analyses of a CNPC. While many individual facilities require modernization, the net present value of existing buildings and structures at our eight sites is still measured in tens of billions of dollars and thus modernization is the preferred alternative.

Ms. TAUSCHER. Has the National Nuclear Security Administration (NNSA) resolved concerns over the seismic safety of the proposed Chemistry and Metallurgy Research Replacement (CMRR) facility?

Mr. D'AGOSTINO. Yes. The CMRR design conforms to rigorous modern seismic design requirements for nuclear facilities and its site is fully characterized. The seismic design approach was reviewed and endorsed by external reviewers, including the Defense Nuclear Facilities Safety Board. The CMRR seismic design requirement derives from the recently completed probabilistic ground motion studies (approximately 2 years ago); resulting in setting the CMRR peak vertical acceleration at 0.52 g (1 g is the acceleration of gravity on the surface of the earth, which is approximately 9.8 meters per second per second). This value is higher than the prior acceleration value of 0.31 g used as the site-wide design parameter. The value was updated based on recent geological information that reveals that the Los Alamos area had been subjected to larger earthquakes in the distant past than had been previously understood.

The CMRR facility is designed to withstand earthquakes. This is a significant improvement compared to the existing CMR structure. CMR was designed to the building code in effect in the late 1940's before the current rigorous requirements for the design and construction of nuclear facilities existed and before the seismicity in the area was understood. In particular, CMR is built atop a seismic fault that was not discovered until well after the building was erected. Seismic engineers have reached a consensus opinion that CMR would not withstand severe but plausible earthquakes. For this and other safety reasons, NNSA has concluded that CMR can not be relied upon as a long-term asset in the Complex.

Ms. TAUSCHER. Some have asserted that the CMRR is essentially a plutonium pit production facility. Please explain to the subcommittee the stockpile stewardship activities that will be housed in the CMRR, and their relationship, if any, to pit production. Please also describe, for each activity, the analysis conducted that led the NNSA to conclude that performing that activity in the CMRR—rather than in any other existing or planned NNSA facility—was the most cost-effective alternative.

Mr. D'AGOSTINO. The Chemical and Metallurgical Research Replacement (CMRR) is a support facility for a number of programs requiring analytical chemistry support. Currently, these capabilities are performed in a 60 year old building that has numerous safety issues and needs to be replaced. CMRR is not a plutonium pit production or manufacturing facility. Pit manufacturing is conducted and will continue to be conducted in the Technical Area 55 Plutonium Facility (TA–55/PF–4).

The following Stockpile Stewardship activities may or will be supported by the CMRR-Nuclear Facility analytical chemistry and material characterization activities:

- Directed Stockpile Work (DSW):
  - —Pit Surveillance
  - —Milliwatt Radioactive Generators Surveillance
  - —Special Recovery Line
  - —Plutonium Measurements for Above Ground Experiments
  - —Subcritical Experiments
  - —Pit Manufacturing
- Campaigns:
  - —Material Readiness
  - —Enhanced Surveillance
  - —Primary Certification
  - —Dynamic Materials Properties
  - —Advanced Radiography
  - —Certification in Hostile Environments
- Readiness in Technical Base and Facilities:
  - —Materials Recycle and Recovery

In addition, the facility will have the capability to provide analytical chemistry and material characterization support to other national security programs, including:

- —Pit Disassembly and Conversion
- —Arms Control and Nonproliferation
- —Nuclear Materials Stewardship
- —Nuclear Materials Stabilization
- —Advanced Fuels
- —Waste Isolation Pilot Project Characterization Work

The CMRR-Nuclear Facility will also provide nuclear materials storage in support of all programs.

The major analytical chemistry and materials characterization processes housed in the CMRR-Nuclear facility and supporting all programs are:

- —Assay Measurements
- —Isotropic Mass Spectrometry
- —Trace Element Analysis
- —X-Ray Fluorescence and X-Ray Diffraction
- —Radiochemistry
- —Analytical Chemistry
- —Materials Characterization
- —Sample Management
- —Standards and Quality Control
- —Waste Accountability and Handling

Pit production uses all the processes above except x-ray diffraction and waste accountability and handling.

The analysis and rationale for performing activities in CMRR is that no other adequate facility exists at Los Alamos, with the exception of TA–55/PF–4 which does not have sufficient floor space nor the facility infrastructure, to provide the large and varied amount of chemical activities required to support the myriad programs listed above. The current Chemical and Metallurgical Research (CMR) facility is an aging facility with operational, seismic, and safety issues which make it cost prohibitive to upgrade to required safety standards. Therefore, building a new CMRR facility was found to be the most cost-effective alternative. A decision to not build CMRR will require contingency plans to relocate workloads. This may cause delays in other areas of Complex Transformation.

Ms. TAUSCHER. NNSA has stated a requirement to produce 50 to 80 pits per year. Can you explain the rationale for this requirement, and the relationship between the sizing of the CMRR facility and the planned pit production rate?

Mr. D'AGOSTINO. The requirement comes from the Department of Defense, not the NNSA. A key factor in a responsive nuclear infrastructure is the rate at which it can refurbish existing warheads or produce replacement warheads. Currently, the production of plutonium pits is the most constraining limitation on capacity. Needed pit production capacity will depend on stockpile size and composition, performance margins of warhead types comprising that stockpile, and the viability of pit reuse options. Uncertainties in each of these factors make it difficult to assess definitively future required pit production capacity. Currently, we have a very small sustainable

production capacity at the Los Alamos Technical Area 55 (TA–55) facility as supported by the current Chemical and Metallurgical Research (CMR) facility, which could be as much as 10 pits per year (ppy) if CMR operates as desired or as little as zero if CMR is unavailable for a protracted duration. A rate of 10 ppy, we believe, is insufficient to support the stockpile for the long term for several reasons:

—Our best estimate of minimum pit lifetime is 85–100 years. While this exceeds previous estimates, degradation from plutonium aging still introduces uncertainty in overall system performance, particularly for lower margin systems. As the stockpile continues to age, we must plan to replace considerable numbers of pits in currently stockpiled weapons.

—If a future decision is made to field replacement warheads, we will require expanded pit production capacity to introduce sufficient numbers of warheads into the stockpile.

—At significantly smaller stockpiles than today, we must anticipate that an adverse change in the geopolitical threat environment or a technical problem in the stockpile could require manufacture of additional warheads on a relatively short timescale.

A variety of future pit production alternatives have been evaluated as part of the planning for transforming the nuclear weapons complex infrastructure. The best economic and technical alternative is to retain and build on the existing production facilities at Los Alamos. In light of the uncertainties, the NNSA program, recognizing the range of potential stockpile requirements and differences in pit types, is planning on achieving a production capacity of about 50–80 pits per year by 2017. This capacity has the potential to support smaller stockpile sizes than today, particularly if coupled with potential reuse of pits.

In addition to providing required analytical chemistry support to numerous other programs, the Chemical and Metallurgical Research Replacement (CMRR) facility will provide required analytical chemistry and metallurgical support capacity to enable the manufacture of pits. Additional analytical chemistry and metallurgical support for 50–80 pits per year would come from multiple shifts or selected operations being supported out of the TA–55 plutonium facility (PF–4). No pit manufacturing would take place in the CMRR-Nuclear Facility. Actual pit manufacturing would be accomplished within the current TA–55/PF–4 plutonium facility through the addition of equipment, restructuring of the manufacturing flow, and displacement of some other non-pit programs.

Ms. TAUSCHER. Why does the NNSA need an in-house non-nuclear manufacturing capability such as the Kansas City Plant? Could such components be acquired via commercial outlets?

Mr. D'AGOSTINO. The Kansas City Plant (KCP) manufactures or procures through outsourcing approximately 85% of the parts for modern nuclear weapons. As part of transformation of non-nuclear production at KCP, we are already planning to increase outsourcing to commercial outlets from currently less than 50% of components to over 65% of components. However, there are two reasons why we must maintain a limited in-house manufacturing capability such as KCP. First, KCP produces highly classified use-control components for nuclear weapons. As such, access to information on these parts must be controlled to a limited number of people with appropriate security clearances. Second, the quantity of parts produced are so low and the quality specifications so rigorous that commercial outlets are not interested in producing some of these parts at a price comparable with that of KCP. KCP continuously looks at make-buy options for components to get the best value for NNSA.

Ms. TAUSCHER. What benefits to the Stockpile Stewardship Program can you discern as a result of the recent competitions for the management and operations contracts at Los Alamos and Lawrence Livermore National Labs?

Mr. D'AGOSTINO. As you are aware the previous contracts were in existence for a very long time at these two national laboratories. When we embarked on the recent competitions for new management and operations (M&O) contractors, we fully understood there would be a period of transition. During that period we expected some extra effort would be required by the new contractors to establish a new culture at these laboratories and clearly there would be some issues that had not been anticipated. At this point in the contract transition, we have seen clear signs of a refocus by the laboratories in those areas that are also consistent with our Complex Transformation. For example, Livermore has put forth considerable effort to meet the Secretary's challenge to accelerate the consolidation and removal of Special Nuclear Materials. In addition, the new M&O contractors at Los Alamos and Livermore have:

- Focused on identifying infrastructure savings through footprint reductions, replacement of buildings that are long past their economic lifetime and updated cost-sharing models for "work-for-others" customers; assurance processes and commodity purchase savings through a supply chain management center; and
- Reduced staff supporting weapons activities through attrition and reassignment to other national security missions, while maintaining proper expertise to fully support on-going stockpile missions.

We expect continued performance improvements as the new contractors mature. There have been some challenges at each site and we are working with the M&O to work through these to everyone's benefit.

Ms. TAUSCHER. Please comment on any cost or cost-benefit analyses completed by NNSA on its preferred alternative and any other complex modernization alternatives given consideration.

Mr. D'AGOSTINO. The NNSA has diligently worked over the past two years performing technical reviews and business case analyses (BCAs) of transformation alternatives, including the preferred alternative in the Complex Transformation Supplemental Programmatic Environmental Impact Statement (SPEIS). For each major modernization alternative, an internal Integrated Project Team (IPT) was established to perform a business case analysis. Typically, this work proceeded in parallel with an evaluation by an independent (non-NNSA) review team. These business case analyses covered costs, closure costs, life cycle costs of alternatives, cash flow analyses, risks, and benefits of each major alternative. The preferred alternative in the draft SPEIS was typically the lowest cost and lowest risk option that meets mission needs based on both our internal and independent business case analyses.

The business case analyses supporting selection of the preferred alternatives in the Complex Transformation SPEIS were made available for public review on the web at http://www.complextransformationspeis.com/links__ref__pdfs.html in January 2008. Hard copies of the business case analyses are also available to the public upon request. We are continuing to update our business case analyses as we prepare for release of the Final Complex Transformation SPEIS. We plan to make these latter analyses available to the public as well.

In addition to the preferred alternatives for restructuring of special nuclear material and research and development facilities covered in the SPEIS, NNSA is pursuing modernization of non-nuclear production at the Kansas City Plant. An environmental assessment and business case analysis has also been completed to support this proposed action.

Ms. TAUSCHER. Does the NNSA see opportunity costs, or risks of incurring greater future costs, by deferring infrastructure decisions to a later date?

Mr. D'AGOSTINO. NNSA does see higher risks of incurring greater future costs if infrastructure decisions are deferred to a later date. This particularly applies to major plutonium (e.g., Chemistry and Metallurgy Research Replacement (CMRR) facility at Los Alamos) and uranium (e.g., Uranium Processing Facility (UPF) at Y–12) facilities. Several existing nuclear facilities that support uranium and plutonium research and manufacturing operations are very old (greater than 50 years) and cannot cost-effectively meet current facility safety and security standards. By deferring construction of modernized replacement facilities, mitigating actions such as expensive interim facility upgrades will need to be taken.

The added costs of delay result from the cost of mitigating actions; costs of continuing to operate old, inefficient facilities; construction costs for replacement facilities that have been going up at a faster rate than core inflation; and finally the potential impacts of delayed deliverables to the nuclear stockpile resulting from the higher rate of work stoppages in facilities being operated well beyond their economic lifetime. We have estimates of many of these costs in various business case analyses undertaken as part of the Transformation planning process. The business case analyses can be found on the internet at http://www.complextransformationspeis.com/links__ref__pdfs.html.

Ms. TAUSCHER. How does NNSA's preferred alternative, which is heavily focused on consolidation and increased efficiency, address the military requirement for a more responsive infrastructure and a more reliable safe and secure weapons capability?

Mr. D'AGOSTINO. A guiding principle for NNSA's preferred alternative for Complex Transformation is to achieve more responsive capabilities in key research, design, development, production, and testing areas essential for more reliable and secure weapons. One challenge we face today is that overhead and support costs are consuming an increasing fraction of our budgets. Thus, we do want to increase efficiency and consolidate old and outdated facilities in order to maximize the percent-

age of our budget that can be devoted to direct national security mission work in a more responsive infrastructure.

Ms. TAUSCHER. What role will advanced simulations and computing at Livermore play in the Stockpile Stewardship Program as the complex is transformed?

Dr. MILLER. Recognizing the advancements in computing pioneered by LLNL in support of the Stockpile Stewardship Program, NNSA is proposing LLNL as a center of excellence in computing as an essential component of its transformation plan. LLNL will serve as the host site for the ASC Sequoia system which will perform complex 3D calculations to explore and resolve weapons physics questions related to performance and safety that are currently incompletely understood. This knowledge is necessary to improve codes critical to maintain confidence in stockpile reliability, safety, and security. In addition, Sequoia's petascale computational capability will be required to run large suites of 3D simulations to quantify the level of confidence in the prediction of weapon performance. Sequoia's capability, combined with LLNL's best-in-class weapons codes, will then be used to examine technical options both to maintain the stockpile and to improve the security and safety features to meet today's safety standards and threat environment.

Advanced computational capability becomes increasingly important as the U.S. stockpile continues to age beyond the nuclear test base. Current codes calibrated to the nuclear test base are becoming increasingly suspect in describing the performance of the stockpile as it exists today. New, more fundamentally accurate and predictive physics and materials models are consequently needed and are being added to LLNL (and LANL) weapons codes—for instance, the NNSA boost initiative is part of this effort. Boost is the most significant remaining incompletely understood weapons performance process. This lack of understanding inhibits the nation's ability to incorporate improved safety and security features into the stockpile. Sequoia will be employed to improve the understanding of this fusion ignition process and to develop better predictive models. These improved, more complex models will require increased computing capability, in particular for running large suites of calculations to quantify the uncertainty in the predictions of performance. Additional computational challenges will emanate from the potential inclusion of enhanced warhead safety and security features in future Life Extension Programs to protect against accidents and unauthorized use in a changing worldwide threat environment. It is the case that LLNL is particularly well suited to address these challenges, which combine to require far faster computers and more advanced design codes. LLNL has a stellar track record in developing and employing reliable, production-computing systems with world-class user support. LLNL has successfully sited three generations of such systems, all of which have outperformed original expectations. This operational advantage, combined with continuously improving LLNL design codes, permit LLNL to bring a unique capability to the nation.

In NNSA's transformed complex, LLNL will provide highly reliable tri-Laboratory access to Sequoia, just as it has with the previous machines sited at LLNL, in particular ASC Purple and White. Tri-Laboratory usage of LLNL-hosted computational machines has enabled continued work on the W76 LEP, B61, B83, W87, W80 (as well as RRW in the past), Significant Finding Investigation (SFI) resolution, and support for experiments on Z, NIF, and DARHT. Purple utilization and availability rates have set a standard for the DOE. In providing this tri-Laboratory support, approximately 2/3 of the cycles on LLNL's Purple machine have been accrued by teams from the New Mexico Labs and similar usage rates are expected on Sequoia.

LLNL's simulation capability will also be available to meet other national priorities as directed by NNSA. For example, modernizing and sizing the NNSA production complex for future needs will require the development and implementation of new manufacturing processes, the elimination of some legacy materials, and the inclusion of new materials. LLNL, using its advanced codes and computers, will develop innovative technologies and determine if these technologies can be safely and reliably implemented in the stockpile through rigorous application of Quantification of Margins and Uncertainties (QMU). Beyond this, NNSA computational capabilities contribute to programs in nuclear attribution, nuclear forensics, and weapon outputs and effects. LLNL's continued leadership in ASC will meet the mounting challenges of maintaining an aging stockpile was well as addressing broader 21st century national security issues.

Ms. TAUSCHER. Could Category I and II Special Nuclear Materials (SNM) be removed sooner than 2012 from LLNL? Why or why not?

Dr. MILLER. LLNL has examined options for completing the de-inventory of Security Category I/II SNM from LLNL sooner than 2012. However, since the rate of de-inventory activities under the current plan will utilize the full capacity of all available processing equipment, further acceleration is not possible. Additional processing capabilities over those currently available or planned would be required to

further accelerate the schedule. Due to the time required to procure, assemble, install, commission, and initiate operation, any such additional capabilities would not be available until after over 95% of the material is already processed, which precludes the opportunity to substantially impact the de-inventory schedule.

The current plan ensures the safe and secure removal of all Security Category I/II SNM from LLNL by FY2012. It represents a two-year acceleration from the original plan, which set the completion date in 2014. The timeframe for the safe and secure removal of SNM is dictated by several factors governing the requirements for the appropriate processing, packaging, and shipment of the material, including (a) regulatory, safety, and security requirements for packaging, shipping, and safety management; (b) applicable Code of Federal Regulations; (c) DOE orders, standards, and manuals; (d) receiver site processing and storage requirements; and (e) DOE Model 9975 shipping package Certificate of Compliance requirement; as well as (f) the physical processes associated with safe and secure packaging of the material. Figure 1 indicates the rate at which SNM can be processed and made available for safe shipment to its end location, i.e., Savannah River Site (SRS).

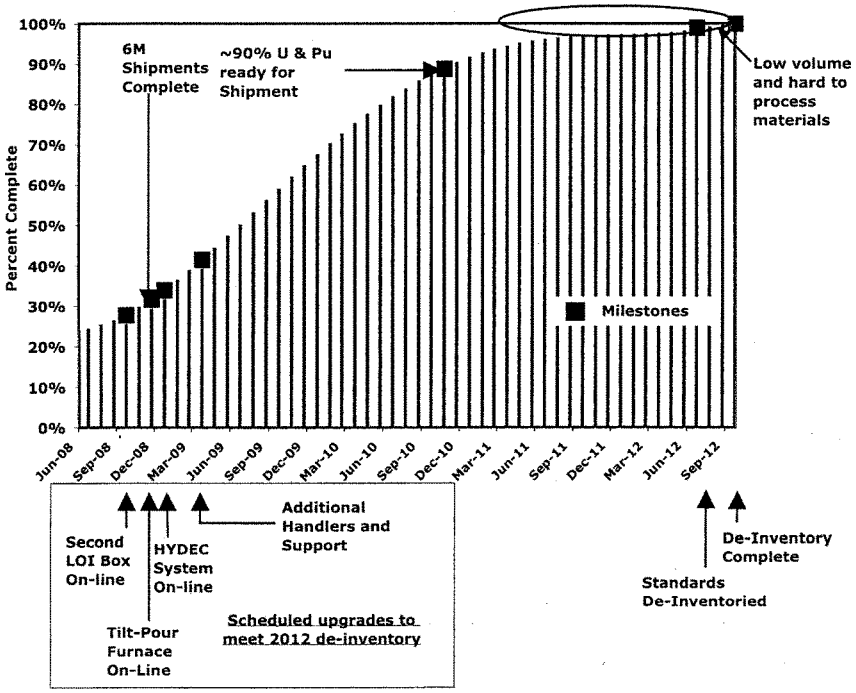

Figure 1: Percentage of SNM packages complete and ready for shipment to SRS.

About 33% of the material has already been removed. Under the current plan, additional processing equipment is scheduled to be installed in the first six months of FY2009. This additional equipment enables 90% of the material to be removed in two years (December 2010). Because of the difficult nature of a small part of the inventory, it will take nearly two additional years to process the remaining 10% to meet shipping and receiver site requirements.

Ms. TAUSCHER. Why did LLNL seek a waiver from responsibility for meeting the 2005 Design Basis Threat (DBT) security standards?

Dr. MILLER. LLNL did not request a waiver from responsibility for meeting the 2005 Design Basis Threat (DBT) security standards. LLNL received direction from NNSA's Livermore Site Office in November 2007 to suspend expenditure of funds to meet the 2005 DBT following NNSA's designation of LLNL as a "non-enduring" site for Security Category I/II Special Nuclear Materials.

The NNSA Livermore Site Office Manager, Camille Yuan-Soo Hoo, issued a memorandum to George H. Miller, President, Lawrence Livermore National Secu-

rity, LLC on November 7, 2007, informing him that based on NNSA's decision to de-inventory the Category I/II facilities at LLNL, he should not expend any funding to implement the 2005 DBT plan.

Ms. TAUSCHER. What impacts will the closure of Site 300 have on LLNL stockpile stewardship activities?

Dr. MILLER. Site 300 has several capabilities that are routinely used to support stockpile stewardship and support U.S. counterterrorism efforts. These include:

- The Contained Firing Facility (CFF): a 55,000-square-foot building that houses a containment chamber in which high explosives are detonated and associated state-of-the-art diagnostics, including radiography. This facility provides experimental data relevant to high explosives and weapons performance.
- High-explosives storage, machining, inspection, and waste treatment facilities: these facilities provide the safe and secure infrastructure to conduct high-explosive related stockpile stewardship and advanced conventional munitions development for national security missions.

These capabilities have enabled the life extension of the W87 and W76 weapons as well as critical assessments of the aging stockpile. In addition, LLNL has successfully conducted experiments to assess methods for safe multi-unit processing at Pantex. This has helped Pantex increase its dismantlement throughput in recent years.

In addition to supporting CFF, the high-explosives storage, machining, inspection, and waste treatment facilities are essential to the operation of the High Explosives Applications Facility (HEAF) on the LLNL main site. As a center of excellence, HEAF provides critical support to the stockpile assessment and certification program, and it has enabled LLNL to develop new innovative conventional munitions for the U.S. armed forces.

Termination of NNSA's programmatic activities at Site 300 would force the shutdown of the CFF and associated high-explosives facilities. LLNL's high explosives R&D activities would require a replacement facility, the HEAF annex, to be built on LLNL's main site to provide the machining and inspection capabilities necessary to support mission responsibilities at LLNL. Additionally, a new site would have to be found for high explosives storage and waste treatment. Initial analysis indicates that establishing an alternate high-explosives waste stream is risky and likely infeasible. Without these Site 300 replacement capabilities, LLNL's on-site high explosives R&D would have to be terminated, jeopardizing LLNL's stockpile stewardship responsibilities. High explosives expertise and capabilities are an essential component of fulfilling the role of a nuclear design laboratory.

NNSA's initial complex transformation plans called for all hydrodynamic experiments to be conducted at LANL's DARHT Facility. While the DARHT Facility has the forefront radiography capability, it is not equipped with a large-scale high explosives containment facility; rather, it uses smaller containment vessels. The technical approaches taken by the two nuclear design Laboratories at CFF and DARHT are unique and complementary. While DARHT can perform many of the experiments conducted at CFF, it cannot address all requirements for tests.

The closure of Site 300 and CFF would result in the forfeiture of the capabilities that have been essential to assessing the enduring stockpile. In particular, NNSA would no longer be able to execute experiments for all of the enduring stockpile systems that have a particularly large high explosive load. DARHT's containment vessels are too small to contain all explosive loads. Neither LLNL nor LANL would have the capability to execute experiments to address SFIs that arise on warheads in this class. The use of containment vessels also limit the types of data that can be obtained. There is also one class of experiment, pertinent to all enduring systems, that could not be conducted on DARHT. Historically, these experiments have been essential to stockpile assessments. There is a high probability this class of data will be required in the future but will not be available if CFF closes with Site 300.

Beyond Stockpile Stewardship, the potential closure of Site 300 would impact LLNL and the nation's capability to do forensic analysis of radiological, chemical, and explosives samples, as Site 300 is one of two facilities in the nation capable of receiving large quantities of, or large items contaminated with, these materials for analysis.

Ms. TAUSCHER. What Stockpile Stewardship activities are directly supported by the Chemistry and Metallurgy Research (CMR) building at Los Alamos?

Dr. ANASTASIO. Essentially *all* stockpile stewardship programs that use plutonium or other actinides have used, and continue to require, scientific capabilities provided by the CMR facility. CMR provides analytical chemistry for purposes of characterizing material for programmatic work as well as basic analytical measurements to

support material control and accountability and other activities needed to ensure safe and secure plutonium building operations. Some specific Stockpile Stewardship programs drawing on capabilities in CMR are: stockpile surveillance, manufacturing, annual certification, enhanced surveillance, dynamic materials research, pit disassembly & conversion, and test readiness. CMR also supports a broad range of national security programs including: power source technology for space and terrestrial applications, nuclear fuels research and development, nuclear non-proliferation, nuclear forensics and nuclear materials stabilization.

The balance of workload among the different program elements that use the capabilities in CMR will vary from year to year depending on the details of program plans.

Ms. TAUSCHER. How old are the lab facilities in the existing Chemistry and Metallurgy Research (CMR) Facility? What is the remaining useful life of these labs?

Dr. ANASTASIO. The CMR facility began nuclear operations in 1952 and has been operating for 56 years. Maintaining the viability of the aging CMR laboratories to maintain the capabilities it provides is an increasingly challenging activity. Significant investments were made a decade ago in facility upgrades and there have been, and remain, ongoing efforts in hazard reduction and maintenance, prioritized by urgency and need. For example we have recently performed fire door replacement and sprinkler head replacement. That said, the margin against failure is not large in this aging facility. To preempt projected failures, we anticipate performing activities including ventilation (HVAC) refurbishment, transformer refurbishment, and fire suppression upgrades in the near future. The current Basis for Interim Operations expires at the end of 2010, but a new Authorization Basis approval is currently being pursued.

Ms. TAUSCHER. If and when the CMR building is deemed unsafe for work, where would the stewardship activities currently carried out in CMR be conducted?

Dr. ANASTASIO. It is important to recognize that the CMR building's capabilities support more than the stockpile stewardship program. If the CMR building were declared unsafe for work today or in the near future (i.e., before the CMRR nuclear facility is available), there is no alternative path for the full suite of capabilities and the activities they support. Some operations could be conducted in other nuclear facility locations (e.g. PF–4 at TA–55) with significant costs and up to years of time required for renovation and retrofit, potentially displacing other operations or requiring compromise in capabilities available for program support. Since appropriate nuclear facility space is limited and in significant demand, this would lead to considerable impacts to national security programs that would have to be negotiated.

The current plan is to: a) reduce the operational risk in CMR by removing material, consolidating operations inside CMR and moving some activities into both PF–4 and the CMRR radiological laboratory as appropriate and achievable; b) perform a limited set of activities in CMR to maintain the viability of its capabilities until the CMRR nuclear facility is available and; c) eventually transfer remaining operations to the CMRR nuclear facility. The proactive approach being pursued with the CMR facility is to allow the facility to be operated safely until the CMRR nuclear facility is available.

Ms. TAUSCHER. As construction of the high profile experimental machines to support stockpile stewardship is completed, such as NIF and DARHT, what do the NNSA and Congress need to do to ensure the Stockpile Stewardship Program is robust in the coming decades?

Dr. ANASTASIO. The success of stewardship to date has been based on: (1) a sense of national commitment to the nuclear deterrent and the Stockpile Stewardship program; (2) sustained investments in leading edge experimental capabilities, modeling and simulation, and computational platforms needed by scientists and engineers to understand the physics of nuclear performance; and (3) meaningful work to challenge the workforce across the Laboratories and the complex.

The next Administration and Congress must restore the bipartisan consensus that existed on nuclear deterrence policy for the United States during the latter half of the 20th century. Without such consensus, U.S. allies and friends will increasingly question our Nation's commitment to security assurances, which could lead to actions to ensure their own security situation including exploration of nuclear options. Such a shift could also lead to questions regarding their long-term relationship with the United States. Further, our adversaries, including rogue states, could become emboldened to take actions counter to U.S. security interests.

The next administration and Congress must also reach a consensus on an investment strategy to support the nuclear weapons complex and allow it to support whatever stockpile the Nation decides it needs for the 21st Century. The budget uncertainties of the last several years have created much doubt and uncertainty in the workforce of the weapons labs, making it difficult for us to retain staff. Over the

last several years more than 2000 employees have left Los Alamos through a combination of attrition, voluntary separation and reductions in the contractor workforce. It has also greatly complicated our ability to recruit the next generation of scientists and engineers.

The Laboratory's role is to anticipate, innovate, and deliver leading-edge science and technology to meet a broad range of national security challenges. These challenges include maintaining the effectiveness of the nation's nuclear deterrent, supporting the nation's nonproliferation and threat reduction priorities, and addressing emerging national security issues—including energy security—with urgency and agility. Leveraging our capabilities with such broader national security missions will help sustain the leading edge capabilities that the weapons program will draw upon as needed. A strong basic research capability that interweaves the multidisciplinary talents of Laboratory scientists and our unique facilities is also essential to this mission. For Los Alamos, there are several key initiatives including Chemistry and Metallurgy Research Replacement (CMRR) project, Los Alamos Neutron Science Center (LANSCE)-R and Matter-Radiation Interactions in Extremes (MaRIE) that will ensure the continued scientific and technical excellence of the laboratory for decades to come. LANSCE-R is a compilation of facility and infrastructure subprojects focused on renovating and modernizing the LANSCE accelerator and related systems, to ensure reliable operations past 2020 in support of national security activities. MaRIE, though still pre-conceptual, will allow scientists and engineers to better understand properties of materials in extreme conditions, crucial to predicting their performance in applications and developing new materials and products to address national security challenges. CMRR will provide the nation with a state of the art facility for: nuclear fuels research and development, stockpile maintenance and manufacturing support, nonproliferation/threat reduction activities, and nuclear forensics.

Ms. TAUSCHER. If the CMRR facility is not built, what specific stockpile stewardship program activities are at risk of interruption?

Dr. ANASTASIO. CMRR will support a broad range of national security carried out by LANL. All stockpile stewardship programs that use plutonium or other actinides are at risk of interruption without continuous support for analytical chemistry, actinide R&D, materials characterization and vault storage. These services are planned for operation in the CMRR nuclear facility as Los Alamos transitions out of the CMR facility.

Some Stockpile Stewardship programs supported in CMR are: stockpile surveillance, manufacturing, annual certification, enhanced surveillance, dynamic materials research, pit disassembly & conversion, and test readiness. Though as noted above, the balance of demand from different programs varies over time, capabilities needed by all these programs would be at risk of interruption. CMR also currently supports programs beyond stockpile stewardship including; power source technology for space and terrestrial applications, nuclear fuels research and development, nuclear non-proliferation, nuclear forensics and nuclear materials stabilization.

Ms. TAUSCHER. If the CMRR facility is not built, what are the consequences to pit manufacturing in particular?

Dr. ANASTASIO. Similar to other programs, the pit manufacturing program in TA–55/PF4 will rely on the CMRR nuclear facility for analytical chemistry, materials characterization and vault storage. The pit manufacturing program would be interrupted at any level of manufacturing without continuous support in these functional areas. That support is presently provided by the CMR facility and in the absence of CMRR, CMR would continue to serve that role.

Ms. TAUSCHER. If the CMRR facility is not built, what are the consequences to other national security functions such as nuclear forensics?

Dr. ANASTASIO. The Nuclear Forensics mission requires extensive analytical chemistry and materials characterization capabilities applicable to plutonium and other actinide elements in order to provide timely information concerning domestic and foreign nuclear materials and materials of unknown origin that may be obtain by U.S. Government agencies or other sources. Not having the analytical and material characterization services significantly diminishes our ability to meet technical and programmatic needs as those services allow us to ascertain processing signatures inherent to the material.

Nuclear forensics and materials inventory programs are representative of the broader national security missions that can be supported by CMRR and associated facilities at Los Alamos. Other national security programs supported by these types of facilities include:

- Schools to train International Atomic Energy Agency (IAEA) inspectors in order to strengthen the international nonproliferation regime and meet U.S. treaty obligations;
- Schools to train domestic safeguards inspectors for both the Department of Energy (DOE) and the Nuclear Regulatory Commission (NRC);
- Criticality safety training to maintain U.S. capability to characterize, manipulate, and ensure the safety of critical and super-critical nuclear material assemblies;
- Training of international safeguards inspectors from other countries in accordance with bilateral or multilateral agreements, including training inspectors from countries such as Russia, Pakistan, Brazil, and Argentina, and international organizations other than the IAEA, such as EURATOM;
- Development of science and technology for safeguards and arms controls functions;
- Assessment of materials and capabilities of foreign states;
- Developments of nuclear detection technologies for U.S. Government Agencies such as the Department of Defense, DOE, Department of Homeland Security, and the Department of Justice that are used to analyze, detect, deter, and act against global nuclear and radiological threats.

Without modern nuclear facilities the long-term viability of our ability to support these and related missions is very much in doubt.

Ms. TAUSCHER. If the CMRR facility is not built, what plans if any does NNSA have to mitigate these risks?

Dr. ANASTASIO. The laboratory is not aware of any NNSA plans to assure continuous support for programs other than the baseline plan described above. The present planning relies on the construction of the CMRR nuclear facility to replace the CMR facility. In the absence of the new facility, the CMR facility would have to continue operating indefinitely (with associated investments to extend the lifetime) or the nuclear operations presently in the CMR facility and planned for CMRR would have to be transferred into PF–4. Transferring activities into PF–4 is a long duration activity, displaces existing programs, requires considerable expense and results in compromises and impacts to both current capabilities and future program requirements.

Ms. TAUSCHER. What are the implications of the plan to host supercomputing platforms at only Livermore and LANL? Do you believe Sandia's historic excellence in advanced computing architecture design will persist, in spite of the new arrangement?

Dr. HUNTER. Sandia considers supercomputing to be a vital element in support of all major lab programs and missions. Our world-class expertise in supercomputing has helped enable the stockpile stewardship program as well as numerous other national security applications. Planned changes in the nuclear weapons complex have presented challenges for retaining our computing expertise. In the near term, Sandia has developed a memorandum of understanding with LANL to partner in the design and operation of the Zia Computer, a next generation platform to be sited at LANL. Work on this machine will help maintain Sandia's expertise in computer architecture design while also providing a platform on which to run the many codes required in support of our missions. Sandia has also partnered to establish the Institute for Advanced Architectures and Algorithms with Oak Ridge National Laboratory. Funding and support for both of these endeavors is crucial for maintaining our high performance computing expertise.

We are not yet convinced that the expertise that has provided the foundation for much of the nation's preeminent global position in computing can be maintained under these new arrangements. The Sandia/Los Alamos partnership is not without risk to both institutions. We will need to demonstrate that this expertise can be maintained without the operation of a large capability computer platform at Sandia. Historically, this has not been possible. While we are somewhat apprehensive, we have agreed to give the new approach a chance. It will be essential for NNSA to execute a program strategy that supports the partnership with a platform procurement in fiscal year 2010 that meets the established requirements for maintaining and refurbishing the nuclear weapon stockpile.

Ms. TAUSCHER. Sandia has a far higher percentage of work outside of NNSA Weapons Activities than either of the other two weapons labs. What lessons can LLNL and LANL take from Sandia as they seek to broaden their work scope?

Dr. HUNTER. Both LLNL and LANL successfully perform extensive programs outside of NNSA, and these programs are very important to our nation's security. We are not in a position to compare the effectiveness of the three laboratories, but can

offer some insight into why Sandia has been particularly successful. First and foremost, we deliver for our customers. Our non-NNSA customers always have the option to go elsewhere if another organization can provide better performance or if our costs become unreasonably high. We have worked hard to develop a reputation among our customers as being a place that delivers unique technology solutions and meets our commitments. We carefully monitor our program performance and our customer satisfaction. Second, we have been working in these areas for decades and have always included these activities in our strategic planning. This is not an overnight success story. For example, we have been working in areas such as counterterrorism since the early 1970's, and as a result were well positioned to respond to the nation's needs after September 11, 2001. Third, in implementing our strategic planning, we have committed significant effort to development of capabilities and technical staff. Finally, we never lose the connectivity to our nuclear weapons program and leverage the two program areas for mutual benefit in enhancing our technical capabilities and keeping our staff energized. In this manner, we are able to deliver advanced technologies that are unique and at a reasonable cost.

Ms. TAUSCHER. Is "Work For Others" a mission area the weapons labs should look to grow, particularly as their nuclear missions are consolidated?

Dr. HUNTER. Sandia views the resources of the national laboratories as assets to be applied to the nation's hardest national security problems. To the extent that our capabilities can be applied to solve these problems, we should do so. DOE support for national laboratories and their science and technology capabilities to support the broader national security missions of other agencies is important. However, these other agencies should retain full responsibility to competitively select and directly manage specific programs. Maintaining the direct relationships between the laboratories and other Work For Others customers is critical. With these thoughts in mind, growth of the programs should not be a goal in and of itself, although that may be a logical outcome, given the increasing diversity and complexity of threats to the nation. It is important to maintain the character of the laboratories as assets to the nation for solving our most challenging problems, rather than businesses with revenue targets. In many cases a laboratory has been most successful when it transfers a technology to industry for large-scale implementation, as opposed to developing an in-house revenue stream. That said, the problems facing the nation in energy, terrorism, environmental change, and various emerging global threats is likely to lead to growth in Work For Others programs in the future.

Ms. TAUSCHER. What characteristics do you think are needed in the organizations that run the national laboratories? What is required of such organizations to ensure that the national interest is their paramount concern?

Dr. HUNTER. A contracting entity needs to understand and value the national laboratories' missions and unique attributes as Federally Funded Research and Development Centers (FFRDCs). National service, through implementation of the federal sponsor's mission, should be the primary motivation of the contracting entity, not financial interest.

A contracting entity's role should be to support behaviors and processes that will facilitate the laboratory's ability to serve the nation and deliver with excellence. Companies or academic institutions contracting to operate an FFRDC should have a demonstrated commitment to ethical business practices and values of service that are evident in their record of operations. Moreover, they should share with the FFRDC a passion for excellence in science or engineering germane to the mission of the laboratory.

The NNSA national laboratories are complex organizations. The operating contractor should also have a history of managing large, complex enterprises successfully and safely. The entity should have a visible record of integrity and ethics and an effective, auditable process for avoiding and mitigating organizational conflicts of interest. It should know how to provide an assurance system with robust internal controls for effective program execution and business management. The NNSA laboratories have a unique role in the independent annual assessment of the nuclear deterrent. It is essential that the leadership of these laboratories never be put in a position in which an unbiased, objective judgment cannot be provided. A contractor's value system must support providing this independent judgment without concern for corporate profit, contract performance, or personal gain.

Ms. TAUSCHER. What role should nuclear test readiness play in a transformed and modernized complex?

Dr. YOUNGER. Stockpile Stewardship—maintaining the nuclear weapons stockpile without underground testing—should be regarded as an experiment. Scientists and engineers have no experience in maintaining complex objects in perpetuity without testing them, and there are concerns that the accumulations of small changes in weapons, some naturally occurring due to age and others the result of planned re-

furbishments, could affect our ability to accurately predict safety and performance. Significant progress has been made in developing sophisticated computer codes for describing nuclear explosives. Previously, computer codes had many "adjustable parameters" that could be changed to make code output match the results of nuclear tests. This was adequate so long as we were conducting tests that were required, since we lacked the computer power to do much better. Today, we have incredibly powerful computers that can include vastly greater detail in the description of the weapon (down to the threads on the bolts) and in the amount of physics included. Progress has also been made on quantifying the accuracy of our predictions via the Quantification of Margins and Uncertainty methodology that is part of the stockpile stewardship plan. However, two fundamental issues remain that encourage maintenance of a minimal capability to return to nuclear testing.

First, it is impossible to demonstrate that all of the physics relevant to aging weapons is included in our computer codes. Science of any kind—be it a study of individual molecules or the description of nuclear weapons—proceeds through a sequence of prediction and experiment, the hypothesis-experiment sequence familiar to every student. Without experiments, there is no way to directly check the accuracy of a weapons computer code. Supporting evidence can be assembled, including data taken from laboratory experiments, previous nuclear test data, and from fundamental studies, but the question remains whether it is sufficient to accurately describe a weapon. We believe that our current methods are adequate, but we cannot prove that they are adequate without an actual test. Hence the issue is one of risk analysis and risk assessment. At present we believe that the risk associated with not conducting a nuclear test is low, but as we move further from the design lifetime of weapons, as changes are introduced, and as our experienced workforce ages and leaves the scene, this risk may increase. New capabilities will increase our confidence, but several key processes in nuclear weapons operation cannot be reproduced in any anticipated laboratory experiment. The notion that laboratory experiments and computations are superior to conducting an actual test of a nuclear device is factually incorrect and inconsistent with generally accepted scientific practice.

The second issue affecting the need to maintain a capability to perform a nuclear test relates to the composition of our nuclear weapons stockpile. In contrast to every other nuclear nation, the United States does not have a program of regular remanufacture and replacement of our weapons. All other countries regularly remove weapons and either refurbish them or replace them with completely new units. The United States has a policy of refurbishing weapons when we have reason to believe that they require attention. We assume that the quality controls in place at the time of their original manufacture, combined with our occasional surveillance of a small number of weapons, will provide adequate confidence in the status of the stockpile. Moreover, the decline in the nuclear weapons industrial plant and the much stricter regulatory environment that governs the surviving capability limits our capability and capacity to refurbish or replace weapons. This might be adequate if the weapons in our stockpile were designed to be maintained for a long period, but they were not. The criteria that drove their design were focused on low weight (so that they could be carried on smaller aircraft and missiles) and minimal use of then-scarce nuclear material. They were highly optimized and, like other highly optimized complex machines, are sensitive to change.

The fundamental scientific challenge of proving the accuracy of our computer predictions, combined with the highly optimized nature of a stockpile (one that we are hard-pressed to remanufacture) suggests that the United States maintain some capability to return to nuclear testing should the need arise. The cost of maintaining this capability is very low compared to the overall cost of stewardship—a reasonable estimate is $20M per year. This value can be kept low by exercising as many key test capabilities as possible in other parts of the stockpile stewardship program. For example, gamma and neutron diagnostics capability can be maintained via experiments on the National Ignition Facility. Timing and firing of test devices can be exercised in non-nuclear hydrodynamic tests. However, some skills are unique to nuclear tests and are not maintained elsewhere in the stewardship program. These include the ability to demonstrate containment of a nuclear explosion underground, various pieces of special equipment including nuclear-certified cranes, and personnel who are familiar with the design of an underground test configuration.

The potential consequences of not maintaining a nuclear test capability are severe. Given the age of our stockpile and our inability to rapidly remanufacture key components, a problem could arise that could severely impact our confidence in our nuclear deterrent. In a time of international crisis, such uncertainty could have negative or even disastrous results. Also, other countries, most notably Russia, are actively developing new classes of weapons and delivery vehicles to carry them. These

new weapons are presumably tailored to the military requirements of the future, in contrast to the American weapons, which were designed to meet the requirements of the Cold War. Finally, while we have no reason to believe that we have missed a fundamental part of nuclear weapons science, there is always the possibility of technology surprise, the fielding of a new type of weapon by a foreign power that would affect the strategic nuclear balance.

Most of these motivations for maintaining a minimal capability to return to nuclear testing will remain valid even in a transformed and modernized nuclear weapons complex. We will still worry about the sufficiency of our computer codes to describe objects as complex as nuclear weapons. We will still worry about the effect of changes on high-optimized nuclear weapons designs. We will still worry about foreign developments. Absent changes in our stockpile, particularly the introduction of more robust and more easily manufactured designs, maintaining some capability to perform a nuclear test is necessary.

Ms. TAUSCHER. What are your primary concerns about the proposed complex transformation?

Dr. YOUNGER. Any transformation must start from a set of requirements. For the nuclear weapons complex, we must consider three fundamental questions: What types of weapons and how many is the nuclear weapons complex expected to maintain? What activities must be performed to sustain them? What physical and human infrastructure is required to perform these activities?

At present, the U.S. nuclear weapons stockpile is a legacy of the Cold War. Our weapons were designed to hold Soviet targets at risk and, to reduce costs, were highly optimized to deliver the maximum amount of yield for the minimum weight. They were designed to remain in the stockpile for a fixed period of time and then to be replaced with fresh units. More consideration was given to performance than to longevity, to weight than robustness. These tradeoffs were made palatable by the ability to actually test a weapon to assure that it was safe, reliable, and that its performance was within acceptable bounds. Today, the requirements for weapons are much different. The geopolitical situation has changed fundamentally since the end of the Cold War and new technologies have arisen that can perform some of the missions formerly assigned to nuclear weapons. Thus the requirements for nuclear weapons, both their type and number, have changed. Partial consideration of these changing requirements are accommodated by agreements to reduce the number of nuclear weapons in our stockpile, but there has been virtually no willingness to change the types of weapons, to reduce their yield, make them safer, and lo improve the reliability by using more robust designs.

In designing a transformed nuclear weapons complex, we must start with why we have nuclear weapons in the first place—in particular the missions that we expect them to perform. This mission space spans both military and political realms. Some targets simply cannot be destroyed by conventional means and require the energy of nuclear weapon for their destruction. Also, possessing a nuclear capability sends a strong message to would-be aggressors that the United States has the capability to project overwhelming force in the defense of our national interests. A rigorous assessment of what targets the United States wishes to hold at risk determines the composition of the stockpile required for the future.

Having identified what types of weapons and how many are required, we can then address what actions are required to provide and maintain these weapons. Some capability to manufacture plutonium pits is essential, as is an ability to machine uranium and other unique materials. Scientists and engineers familiar with nuclear weapons physics, engineering, and manufacturing must maintain a sufficient set of skills, and demonstrate their proficiency on relevant activities, to assure their ability to carry out these tasks.

Finally, the physical infrastructure required to carry out these activities must be provided. This is challenging given that we are not starting from scratch. The country has invested many billions of dollars in the nuclear weapons complex and there are significant environmental and political concerns about constructing new facilities or even closing old ones. Before constructing new facilities, especially costly nuclear facilities, I believe we should first fully utilize what already exists. This should be done on a national scale rather than a site-by-site basis. The time when the country could afford to build one of each type of capability at multiple sites is over—we must operate the nuclear weapons complex as a national enterprise where capabilities are located where they are most cost efficient and in particular where we can avoid expensive capital construction.

Unfortunately, the nation has yet to clearly identify the requirements for its nuclear stockpile. Such ambiguity, combined with strong local interests at each of the NNSA sites, has made strategic planning difficult and has impeded much-needed consolidation efforts. My principal concern regarding complex transformation re-

mains the lack of a clear requirements case that can drive businesslike planning for future capabilities and the migration from our present configuration to a sustainable complex.

Ms. TAUSCHER. If a decision is made to make further stockpile reductions, would infrastructure upgrades be required at Pantex?

Mr. MEYER. If a strategic decision is made to reduce the total number of units in the country's nuclear arsenal, the Pantex Plant would still need to maintain and upgrade the existing infrastructure.

A decrease in the total number of stockpile units would mean an increase in dismantlements and storage requirements in the short term. This would be accomplished by working multiple shifts in existing facilities. Instrumental in meeting this increased short term workload will be the ability to sustain and perform essential upgrades to the site infrastructure, e.g. High Pressure Fire Loop Project.

Once the dismantlement work is completed and the smaller stockpile is in place, B&W Pantex has identified out-year infrastructure projects to sustain the mission and provide life cycle replacement to Cold-War legacy facilities. These projects are required to sustain the Pantex Plant's capabilities and designated centers of excellence. In addition, these projects will allow the older facilities currently in use to be vacated and replaced by newer, smaller, more energy-efficient buildings. This will enhance operational efficiency at the Pantex plant.

Ms. TAUSCHER. How advanced is the planning for the new underground Weapons Storage Area?

Mr. MEYER. B&W Pantex has developed the Program Requirements Document and Mission Need Document required to obtain Critical Decision Zero (CD–0) approval for the project. National Nuclear Security Administration (NNSA) approval may coincide with the Complex Transformation Supplemental Programmatic Environmental Impact Statement (SPEIS) Record of Decision (ROD). This CD–0 approval will authorize B&W Pantex to initiate alternative analysis, conceptual design and initial funding for the project.

On a parallel course Pantex is reviewing a storage facility design developed for the Department of Defense and its applicability to the Pantex operations.

Ms. TAUSCHER. Why is such a facility needed? What are the expected benefits of the facility?

Mr. MEYER. The new underground facility will result in safety and security improvements over the current facility. Although a detailed discussion of these benefits would require a classified forum, they can be summarized as:

- Reduced operational costs due to a decrease in transportation, handling times, and number of security personnel.
- Increased security and safety due to a modern design incorporating contemporary nuclear safety and security standards and configured to better resist any possible threats.

Ms. TAUSCHER. What is the current status of the Kansas City Responsive Infrastructure Manufacturing and Sourcing (KCRIMS) initiative?

Mr. TRIM. The non-facility related aspects of KCRIMS, which include strategic sourcing activities, process consolidation, and business system transformation to reduce costs, are being executed as planned. The original GSA solicitation for the new facility was cancelled in July and a new solicitation was issued on August 16th with revisions made to improve competition and adjust for current market factors. Honeywell FM&T is continuing to work with GSA and NNSA to ensure this important project is successful and moves forward in a timely manner. Facility completion is now scheduled for FY11 with relocation and the operational transition complete in FY13. The final NEPA Environmental Assessment for the new site is complete and a Finding of No Significant Impact has been published.

Ms. TAUSCHER. Please describe the analysis of alternatives that was conducted prior to the NNSA decision to build a replacement facility for the Kansas City Plant (KCP) near the current location, rather than moving the KCP mission to other NNSA sites. Please also describe the basis for NNSA's conclusion that this approach is the most cost effective alternative.

Mr. TRIM. The first analysis of alternatives was performed in conjunction with Critical Decision 1, part of the DOE Order 413.3 Acquisition of Capital Assets process. This study was performed in March 2007 by Honeywell FM&T and concluded that the additional cost to move operations to either Amarillo, TX or Albuquerque, NM was $565M more expensive than the Kansas City option. A second analysis, chartered by NNSA–HQ and conducted by an independent third-party (SAIC), was completed in October 2007. This study concluded that Albuquerque was the most viable option and the additional costs would be $289M more than the Kansas City option. Both studies agreed that the major cost drivers of a distant relocation would

be the transfer or rehire/retraining of a uniquely skilled workforce and additional costs associated with extended downtimes and requalification activities that would result from a long-distance relocation. Several examples of relatively recent major relocations of NNSA missions and capabilities (non-nuclear reconfiguration) served to validate both of these studies. The SAIC study was revalidated in conjunction with the second GSA solicitation.

Ms. TAUSCHER. Could more aggressively down-blending surplus highly-enriched uranium (HEU) reduce the need for storage of such surplus HEU in the HEUMF at Y–12? If so, could floor space in the HEUMF be configured for processing activities of the sort the planned UPF is designed to house?

Mr. KOHLHORST. The HEUMF was designed and built to accommodate HEU for all viable stockpile scenarios. Down-blending of surplus HEU is occurring as soon as the HEU becomes available. However, should excess space be identified in the HEUMF, the facility was designed for storage rather than processing. Key systems such as air handling, electrical, and steam could not accommodate the unique operational requirements of wet chemistry, casting, and x-ray operations. The UPF is designed as a processing facility with different hazards, operations, deliverables and related regulatory requirements. The confinement strategy, fire protection requirements, criticality considerations and supporting infrastructure are all radically different than HEUMF and in many cases they are non-compatible.

Ms. TAUSCHER. How will changes in the size of the U.S. nuclear weapons stockpile affect the scale and scope of work to be done in the planned UPF?

Mr. KOHLHORST. This question has been studied extensively with many scenarios modeled and evaluated over the past year. One of the intentional features of the UPF design is its flexibility to accommodate a wide range of programs with a very limited set of equipment and minimal operating space. Accordingly, its size is driven primarily by capability and not capacity. The planned equipment set, combined with new technologies, allows for an impressive range of production capacity. The viable stockpile ranges being considered do not have a major impact on the scale or scope of the UPF design.

Ms. TAUSCHER. What effect would delays in construction of the UPF have on stockpile stewardship program work at Y–12?

Mr. KOHLHORST. First, HEU operations are performed today in 60+ year-old facilities that have exceeded their economic lifetime and must continue to function until UPF is operational. Any delay in the construction of UPF will amplify the risk to continued operations, incur increased operating costs, and likely require facility investments to remain operational. Second, approximately $200 million per year in annual cost savings are projected upon completion and operation of the new UPF. In addition, just a one year slip in the UPF schedule would cost up to $100 million due to escalation, schedule slippage, and demobilization.

Ms. TAUSCHER. In your experience auditing National Nuclear Security Administration (NNSA) project execution and management, do you believe the agency is equipped to effectively manage the consolidation of missions, especially among the labs, called for in the Preferred Alternative?

Mr. ALOISE. For the better part of a decade GAO has reported on weaknesses in NNSA's and the Department of Energy's (DOE) ability to effectively manage large, complex projects. Poor project management has contributed to a history of cost overruns and schedule slips on major construction projects, as well as to changes in project scope and mission to accommodate cost and schedule constraints. For example, GAO reported in March 2007 (GAO–07–336) that 9 of the 12 major construction projects that DOE and NNSA were managing had exceeded their initial cost or schedule estimates, including three projects that exceeded initial cost estimates by more than 100 percent and four projects that were delayed by five years or more. Furthermore, our preliminary results from an ongoing review for this Subcommittee on NNSA's Life Extension Program show that NNSA's cost estimate for refurbishing each B61 bomb has almost doubled since 2002.

GAO has testified that without clearly defined stockpile requirements to drive decision-making about Complex Transformation (GAO–06–606T, GAO–08–132T), we are not confident in NNSA's ability to effectively implement the Preferred Alternative. The construction project and programmatic examples above represent NNSA efforts that began with clearly defined requirements. In contrast, NNSA's Preferred Alternative is not based on clearly defined requirements to drive decisions about the scope of proposed facilities' missions—specifically the size and capacity requirements for the Chemistry and Metallurgy Research Replacement facility at the Los Alamos National Laboratory or the Uranium Processing Facility at the Y–12 Plant—which NNSA estimates together will cost as much as $5.5 billion. Further, the absence of stockpile requirements calls into question the basis on which the Preferred Alternative consolidates other missions, such as high explosives testing, which is cur-

rently conducted at five sites within the nuclear weapons complex and, under the Preferred Alternative, would continue to be conducted at all five sites, though to differing extents.

Transforming the nuclear weapons complex is a far more demanding task than any of the individual construction projects NNSA has managed and executed, and the Preferred Alternative for this transformation was crafted without grounding in stockpile requirements. For these reasons, GAO is concerned about NNSA's ability to effectively manage and execute the Preferred Alternative.

Ms. TAUSCHER. What elements of the NNSA's Preferred Alternative would you identify as warranting special congressional attention?

Mr. ALOISE. In our testimony before the Committee, GAO identified three elements of NNSA's Preferred Alternative that we believe warrant special congressional attention: (1) ensuring that the Preferred Alternative is ultimately implemented to meet specific stockpile requirements; (2) overseeing major projects called for in the Preferred Alternative, including the Chemistry and Metallurgy Research Replacement facility and the Uranium Processing Facility; and (3) holding NNSA accountable for meeting detailed schedules and cost estimates for implementation of the Preferred Alternative.

First, because Complex Transformation must be driven by clearly defined stockpile requirements, the Congress should ensure that once stockpile requirements are set the Preferred Alternative is systematically adjusted to meet these requirements. For example, once NNSA and the Department of Defense settle on a requirement for pit manufacturing, the Preferred Alternative should be revisited to ensure that the nuclear weapons complex's plutonium manufacturing capability is correctly sized to meet the requirement.

Second, given NNSA's historically poor track record in managing major projects, the congress should pay special attention to overseeing all major projects associated with the Preferred Alternative, particularly construction of the Chemistry and Metallurgy Research Replacement facility and the Uranium Processing Facility.

Third, the Congress should require NNSA to submit detailed schedules and cost estimates for implementation of the Preferred Alternative that the Congress can then use to hold NNSA accountable for its management performance. These schedules and cost estimates should be tracked against their original baselines and a review triggered if these schedules and cost estimates are significantly exceeded.

Ms. TAUSCHER. Does Tri-Valley CAREs believe Livermore should meet the 2005 DBT standards, even though all Category I and II special nuclear material (SNM) is expected to be removed by 2012?

Ms. KELLEY. In theory, all sites with nuclear weapons usable quantities of plutonium and highly enriched uranium should meet the standards of the most stringent and most recent Design Basis Threat (i.e., the 2005 DBT). The potential for a terrorist attack from an outside force, insider "plants" or a disgruntled employee exists on any given day and is not limited to dates after 2012.

That said, the spring 2008 security test that Livermore Lab failed was calibrated to the less stringent 2003 DBT. The number of attackers presumed in the 2003 DBT is only about half those in the 2005 DBT. Moreover, Livermore Lab did not fail the force-on-force drill on a peripheral, minor technicality. The Lab failed the central core of the test, in that it allowed mock terrorists to obtain special nuclear material and detonate an Improvised Nuclear Device. Moreover, the mock terrorists also succeeded in a second objective; to steal special nuclear material for use at a later date and place of their choosing. As a Livermore-based organization, Tri-Valley CAREs finds this situation intolerably dangerous.

As you know, Tri-Valley CAREs has long called on the Dept. of Energy (DOE) National Nuclear Security Administration (NNSA) to initiate a timely, transparent and credible analysis of the most safe and secure location for Livermore's special nuclear material. We have advocated that these decisions should not be politicized or tied to the Department's nuclear weapons plans (e.g., Complex Transformation," in which the preferred alternative is to move Livermore Lab's plutonium twice to serve expanded pit production at Los Alamos Lab, a location that would not likely to be chosen if security were the primary determining factor).

And, Tri-Valley CAREs has consistently called on Congress to press the Department and Livermore Lab management to prioritize safe packaging of the Lab's plutonium, in particular.

Thus, in 2008, we find ourselves understandably frustrated by the seeming conundrum of whether the focus of security activities and funding at Livermore Lab should be geared toward compliance with the 2003 and 2005 DBTs or toward getting the material safely and swiftly moved to a more secure location.

This is a choice that remains only because of DOE's inaction. However, if choice be required of me, I must pick the latter. I have been told by knowledgeable people

that Livermore Lab's plutonium could be safely de-inventoried by 2010, two years ahead of the DOE's proposed date of 2012. If the plutonium is de-inventoried by 2010 instead of 2012, that cuts a 4-year risk in half. This should be the preeminent goal. Simply put, Livermore Lab's special nuclear material is vulnerable every day it is left here—and so are we.

Congress, and this subcommittee in particular, can productively impact this dangerous situation by:

1. Mandating immediately a scientifically credible and independent analysis of the present procedure and schedule for de-inventorying special nuclear material from Livermore Lab with the goal of determining strategies to accelerate the schedule.

2. Ensuring sufficient funds (and application of existing funds) to do the job. In this regard, it might be necessary for Congress to specify in legislation that qualified, certified plutonium handlers and packagers at Livermore Lab not be laid off. Word on the street is that Livermore Lab management earlier this year laid off some of the very workers who are needed to accelerate and complete the job. And,

3. Passing legislation that mandates a date certain by which all weapons usable quantities of plutonium and highly enriched uranium must leave Livermore Lab. As you note in the wording of your question, the DOE "expects" to move the material by 2012. We believe it can be accomplished by 2010. But no law at present requires any date, including 2012.

The crux of the problem of the vulnerability of nuclear materials at Livermore Lab is that the physical site (about 500 buildings and nearly 10,000 people crowded into one square mile), the encroaching community (homes, little league fields and apartments crowding up against the site), and the surrounding Bay Area (seven million people within a 50-mile radius) make this an unacceptable location for nuclear bomb-making materials.

Therefore, the solution cannot be found in installing more Gatling guns, which also pose a risk to workers and the community if they are ever fired. Instead, the only right thing to do is to de-inventory the site by the earliest possible date.

Ms. TAUSCHER. Is Tri-Valley CAREs "curatorship" model compatible with the military's requirement for a more responsive infrastructure and more reliable, safe, and secure weapons capability?

Ms. KELLEY. Yes! A "Curatorship" approach to managing the arsenal will achieve the goals of safety, reliability and security more credibly and at lower cost than either the current Life Extension Programs or the (so-called) Reliable Replacement Warhead program.

Curatorship is designed to better utilize and focus the nation's stockpile maintenance capability. Minimizing changes to the well-tested warheads in the U.S. nuclear weapons stockpile keeps them more reliable, safe and secure than either making "enhancements" to them that are not absolutely required to resolve an actionable defect in the warheads or designing new ones without nuclear tests.

An historical note of importance here: In 1993, the President and the Congress established the Stockpile Stewardship Program with the goal of maintaining high confidence in the stockpile absent full scale underground nuclear testing. The DOE NNSA's 2003 budget documents revised that goal to read, "Maintain and ENHANCE [emphasis added] the safety, security, and reliability of the Nation's nuclear weapons stockpile to counter the threats of the 21st Century." The idea of enhancing the stockpile was intentionally omitted as a goal in 1993 for two reasons. First, it was generally agreed that the existing stockpile was extremely safe and reliable and, thus, no changes were needed. Second, it was generally agreed that if major changes were made to nuclear weapons, without full scale underground nuclear testing, there would be a significant risk that the modified weapons would be less safe and reliable than the well-tested versions they replaced. Neither of those reasons is any less true today.

Adding enhancement of the stockpile as a DOE NNSA goal is the type of major policy change that should have triggered significant debate at the time it was proposed. That debate is late in coming, but is no less needed.

The choice is between "curating" the existing nuclear test pedigree of the arsenal or walking further and further away from that pedigree in favor of interesting new projects for bomb designers, whether they be RRWs or unnecessary changes bootstrapped into Life Extension Programs.

Additional detail on how a Curatorship approach compares to other methods can be found in Tri-Valley CAREs' 2000 report, "Managing the U.S. Nuclear Weapons Stockpile: A Comparison of 5 Strategies." Further analysis of how to "modernize" (this subcommittee's term) or "transform" (DOE NNSA's word) the U.S. nuclear weapons complex to reflect a Curatorship approach can be found in Tri-Valley CAREs' comments on the Complex Transformation draft Supplemental Pro-

grammatic Environmental Impact Statement, "Part One: The Nuclear Weapons Complex-wide Impacts," April 30, 2008.

Your question also asks about the requirement for a "responsive infrastructure," which was introduced in the 2001 Nuclear Posture Review. Congress has already mandated that the next administration produce a new posture review. That said, Tri-Valley CAREs would like to offer a few observations on the general thrust of the question. A nuclear weapons complex with a more clear and narrowly defined mission and scope of work focused on the safety, reliability and security of the existing (pedigreed) stockpile will be more responsive to fixing "actionable defects" in the stockpile than the Complex Transformation plan, as maintenance will not be competing with other priorities in the DOE NNSA complex—as is presently (and increasingly) the case.

Furthermore, we find the DOE NNSA poised on the brink of building large new production facilities (for example, more plutonium pit production capability at Los Alamos Lab in NM and a new uranium processing facility at Y–12 in TN). This approach is not only wasteful and counterproductive to our nation's global nonproliferation aims, but it locks in the departing administration's nuclear weapons policy for the next 20 years or more. So-called Complex Transformation is neither responsive to needed (and likely) changes in U.S. policy nor to prioritizing maintenance of the existing nuclear weapons stockpile as a principal organizing feature of the weapons complex. In contrast, Curatorship is more responsive to both.

Ms. TAUSCHER. Does Tri-Valley CAREs imagine that at some point, Life Extension Programs (LEP) for existing nuclear weapons could be riskier than the development of something like the Reliable Replacement Warhead (RRW)? On whose judgment would you rely for such an assessment?

Ms. KELLEY. First, thank you for asking this question. Tri-Valley CAREs seeks to limit and restrain the Life Extension Programs and terminate the RRW program in large part to ensure that the U.S. is not forced to the very precipice posited above.

Curatorship is grounded in the principle that staying as close as possible to the existing nuclear test base is the best technical approach to maintenance of the arsenal while carrying the least technical risk that there will be future pressure to resume full-scale underground nuclear tests. If this is the goal, then Curatorship has distinct advantages over either the current LEPs or the RRW.

You ask on whose judgment for these assessments Tri-Valley CAREs would rely. In general, Tri-Valley CAREs leans toward ensuring that the "table" at which such judgments are made includes the broadest spectrum of voices, and that the decisions themselves are conducted in the most transparent manner possible. In this regard, we have concerns that the new management structures of the Livermore and Los Alamos labs may be headed in the misguided direction of enabling not more but fewer, and more uniform, voices at the "table."

Tri-Valley CAREs supports genuine scientific peer review—which we believe need not necessitate and does not justify the continuance of two full service nuclear weapon design labs—along with "outside" independent analysis. Moreover, we support the Federal Advisory Committee Act, the Freedom of Information Act and other open government laws to ensure that the American people can also participate appropriately in decision-making.

Ms. TAUSCHER. What is your assessment of the NNSA complex transformation proposal? Are there other viable alternative approaches to provide a more responsive infrastructure?

Ambassador ROBINSON. As I said in my testimony, "My reactions [to the Complex Transformation Plan] are mixed. While it is doubtless improved over the previous version (Complex 2030), it still does not present a compelling solution to the many problems facing the nuclear weapons complex."

A more viable (and sensible) approach would be to:

(1) Establish at a national level the purpose and sizing of the US arsenal of nuclear weapons—appropriate to the threats we and our allies must likely face going forward. The DoD has not taken up this issue for at least 15 years (under two administrations) but continues to try to preserve a Cold War arsenal that (a) no longer fits the world we live in, (b) nor fits the threats we face. The US Strategic Commission you created is one attempt to develop same, but whether it will stall over the polarizations (of the left and the right) is yet to be seen. There is no substitute for the US uniformed military once again developing its own detailed plans (that would implement such a national strategy.) Having DOE move forward to transform the Complex without having coordinated plans [with the DoD] is unlikely to succeed. The drafters of the current SPEIS were "flying blind" in trying to develop a plan to transform the complex without such guidance.

(2) Reorganize the management structure of the complex to have a nuclear weapons enterprise that is coherently managed and budgeted for. Just look at the DOE and NNSA org. chart: there is no direct management of the production complex. The overall management—including cohesive day-to-day management of the GOCOs—used to be performed by the Albuquerque Operations Office for the entire complex, and the AOO depended on the weapons labs to help it establish the technical directions and design and quality acceptance requirements and the labs served as the final approval for any deviations. This arrangement worked for 40 years, and no one has filled the vacuum left by abolishment of the Albuquerque Operations role. (b) The plants mostly exist in an "every man for himself" environment, and—in that vacuum—many plants have sought and achieved close political relationships with their own Congressional representatives and Senators. The effect of such actions has only increased "the centrifugal pressures tearing the complex apart."

(c) There never was effective, cohesive management of the three weapons labs, although in truth it was never possible to "manage" the labs in any traditional sense. The fact has been well established that the Federal government is incapable of "managing the advancement of science" (even though periodically it tries this, through civil-service labs, but untarnished by success.) Because of this fact, the GOCO system (Government-owned, Contractor-operated) was created. The GOCO contractors originally were the nation's best companies (or universities) in science and technology, who brought their business practices and approaches to the labs. There are only one or two of these left today, with the rest being mostly small outfits whose main business is "running the labs for the government', motivated by fees they can earn (which was never the case in the original complex.) Worse yet, the bureaucracy of DOE (ERDA, or AEC) has continued to grow and have attempted to "take control" of the labs, and the model has deteriorated more and more to a "government-owned and operated" complex. There are now no longer any barriers to preventing the constantly burgeoning government bureaucracy from being imposed on the labs (and plants) and the advantages of having "private-sector" organizations for their functions has long since vanished. The original approach had been to have the labs responsible for innovations. The labs would propose their ideas to the government and to the military, and once agreement was established between them on "What was to be done", the labs took over the process of how it should be done and carried the responsibility for achieving the agreed goals. **My deeply held conviction is that the GOCO model has deteriorated so far, that it must now either be eliminated or drastically rejuvenated (with a new agency and a "clean sheet of paper.")**

In summary, there is little to suggest that the US weapons complex is a common team, smoothly interfacing, with clear guidance to carry out its mission. That is what is needed.

Ms. TAUSCHER. Ambassador Robinson, you have witnessed previous efforts to modernize or transform the nuclear weapons complex. What lessons have you learned from previous efforts?

Ambassador ROBINSON. The whole issue of budgeting for either facility maintenance or constructing new facilities has never been done well through the process of "annual budgets." One of the helpful improvements was the NNSA requirement for a five-year plan, although seldom were the last 3 years of any such plan ever realized. Setting priorities should be easy enough in today's "shortage environment" where we no longer have the capability to produce Plutonium pits in sufficient numbers. Reviving a plutonium production capability must have top priority.

I believe that the organization of the Congress for budgeting has become a serious problem. Having two subcommittees in both the House and Senate that provide separate appropriations for DOE and for DoD have left us with little alignment or even correlation of these budgets. Personally, and after many years of believing that it was important to keep the nuclear weapons design, development, and production separate from the Defense Department, **I have now reached the point that I believe it is worth considering removing the weapons responsibilities from DOE and placing it as a new agency within the DoD.** The presence of a uniformed military could provide a continuity that has been lacking as different administrations came and went. The nation's nuclear deterrent has only suffered from these short-term upheavals in what must be a long-term commitment.

Ms. TAUSCHER. As transformation efforts take shape, what steps can Congress take to mitigate against the risk that the vast intellectual capital in the complex—the people that make the Stockpile Stewardship Program a success—is not lost or permanently impaired?

Ambassador ROBINSON. I am glad that the Subcommittee does recognize how crucial the bright, highly, trained, and dedicated people are to ensuring the US deterrent. In this regard I am more concerned, than I have ever been, over the more than

forty years I have worked in this complex, that the morale of these rare people has reached an all time low. The recent Chiles study (a DSB Task Force on Nuclear Personnel Expertise) examined the problems of the fractionated management within DOE for nuclear weapons, safety, and security and said "Worker feelings range from anger to resigned despair." Note also, that his investigations took place before the lay-offs of more than a thousand people at both Los Alamos and Livermore this past year. The situation at both of those labs is far worse now. While the labs had always been able to attract the best and brightest to come to the laboratories (for somewhat less pay than they would have earned in the private sector), the freedom to pursue new ideas and the fact that the work was so vitally important to the security of our country was reward enough to keep them. However today, it is impossible to make these arguments, when the burgeoning bureaucracy suppresses individual voices, and it is apparent that most officials within the Executive branch and the Congress pay little attention to the nuclear weapons efforts. It is all too obvious that too much in government no longer care about its future.

On an historical basis, one principle that has proven itself to be valid for many centuries was well expressed by Edward Gibbon ("The Rise and Fall of the Ancient Roman Empire."), who wrote ***'That which is not advancing must surely decline.'***

Thus, until only very recently, the mission to perpetually try to improve the US deterrent weapons was a necessary and accepted mission for that intellectual capital embodied in the weapons labs. That guiding principle is still uppermost in the Russian and Chinese programs, and in the French program, but it has now been successfully eliminated in the US labs. However, this issue seems to be forbidden from discussion, in the badly mistaken view that to hold such a view would stimulate other nations to proliferate (in the ridiculous viewpoint that somehow if we—the United States—stop striving for a stronger deterrent, the rest of the world will stop as well.) The safeguards—that were agreed upon to be in place with the signing of the CTBT by the US—state that the US will continue to keep a strong design and development capability, but this capability is now well down the path to going out of existence.

Ms. TAUSCHER. Do weapons designers need to design and build weapons to exercise their skills?

Ambassador ROBINSON. This question can only be answered by an understanding of what used to happen, and how it has changed over the past 20 years. The driving force for new developments was always the Phase 1 and Phase 2 joint projects with military Project Officer's Groups (POG's) teaming with the labs to evaluate possibilities (which the labs and the POG's would both suggest), and then jointly settle on "Military Characteristics" that would guide the next weapon systems. The proposals would then move forward through the military chain of command and the DOD leaderships and separately through the DOE (ERDA, AEC) chain as well. Finally arriving at a Presidential decision, which—if approved—would be passed to the Congress for their approval, or disapproval.

That process seems to be broken today, with little or no attention having been paid to the configuration of the US deterrent arsenal since the end of the Cold War. Also, members of the legislative branch have interrupted this process from moving forward, by placing specific language in Authorization and Appropriation bills to prohibit any work (either Phase 1 or Phase 2 as well), until they have approved any proposed systems. The result unfortunately has been a stalemate, with no new systems being approved by the Congress and hence new starts becoming non-existent since the end of the Cold War. The labs often, but not always, would work together to establish mutual directions which could substitute for lack of guidance on future weapons, but depending on personalities at the individual labs (at any point in time), these were never really a successful substitute.

Thus the plain truth is that today the US continues to try to maintain an arsenal of weapons for deterrence purposes that no longer matches the threats we face (and hence whose ultimate use would be credible), nor the delivery systems which would be most likely to succeed, and hence the legacy systems are less likely to deter aggressive behaviors of major adversaries. The very high yields of the legacy systems are no longer needed because of the huge improvements that have been made in delivery system accuracies over the intervening years. Many of us believe that if such high yields remain the only options available, our threats to actually use such weapons are hallow and hence our ability to deter war is rapidly vanishing, to a point where we will be "self-deterred." Something must be done to break the current stalemate.

Ms. TAUSCHER. How should the stockpile stewardship program be executed in a transformed and modernized complex? Will a transformed complex require changes to the stockpile stewardship program?

Ambassador ROBINSON. My belief is that the following represents the right order of things:

(1) The question of whether the nuclear weapons entities should all be moved to become an integral part of the Department of Defense is a critical issue, which needs to be faced now.

(2) Fix the GOCO process (as I discussed earlier) and tailor a stand-alone organization to direct and manage the R&D, design, development, and manufacturing processes.

(3) Pull the complex parts into a cohesive whole (functioning as a single, high-performance team), rather than continuing the current collection of poorly coordinated parts.

(4) Set a priority order of urgently needed facilities, and prepare a long-range budget that puts these in an appropriate budget plan.

There should be no need to change the Stockpile Stewardship program, other than to again free up some activities in advanced science and technology and advanced designs, most of which has been curtailed or eliminated in recent years. Of course, everyone should "wake-up" to the fact that there is no guarantee that it will yet prove possible to replace the confidence that always was provided by nuclear testing, by—instead—relying only on computer calculations and much improved scientific-understanding. We have made excellent progress in developing the supercomputers for the effort, but far less progress on improving the unknown scientific mysteries so that they can be correctly included in the computer codes. Thus, preservation of the ability to test—should it become necessary—is still vital to the US.

Ms. TAUSCHER. What are the highest investment priorities for NNSA's limited resources?

Ambassador ROBINSON. A new and effective (i.e. proven) capability to fabricate plutonium pits is a critical first priority. The damage done to the US program by the closing of the Rocky Flats Production Site (because of environmental issues/protests) has hurt the overall US nuclear weapons production program more than almost anyone realizes. We are the only nation that cannot build a new, modern arsenal of weapons, much less can we reproduce the old designs which now constitute our complete stockpile.

The ultimate priority is of course a realization that the US arsenal of deterrent weapons is the only proven factor in preserving the peace in the world and prevent world wars or major conflicts. The end of the Cold War was not the "end of history", as many suggested, but it does appear that the emergence of nuclear weapons that ended the fighting of World War II may yet prove to be "the end of the history of global conflicts." The mindset being advocated in many quarters—that we must now embark on a policy of "eliminating all nuclear weapons from the earth"—is misguided and premature. It would usher in a state of international affairs where nations are free to return to unlimited global conflicts, and there is little chance that even if it were possible (and it is not) to remove all nuclear weapons, they could be reproduced by some nations, who could then easily take advantage of the relatively greater power they would have over the US and others.

I have always believed that there are (at least) two extremely major barriers that must be overcome before we could undertake any realistic thinking that "a world free of nuclear weapons would be a better world" than the current situation. These are:

(a) the elimination of nation-states. (Anyone who believes that this could be achieved in a matter of decades is either hopelessly idealistic or really fooling themselves.), and

(b) a change in the nature of mankind itself to eschew any acts of major aggression. Once again, these are merely "poetic ideas" but there are little grounds to believe that this could be achieved even in 100 years, if ever. I would note that there are not even any good ideas put forward for how to go about same, nor is anyone actually working on it. The US already began the nuclear weapons era by putting forward a serious proposal (the Baruch Plan) that would have placed all nuclear weapons under a common international control, but this plan was instantly rejected, and I feel safe in predicting that a revival of that proposal would be just as quickly rejected today.

Thus, we should now all join in putting our best efforts to the task of deterring war through the threat of retaliation of nuclear weapons, with the best outcome being that we would—as a result—never have to use such weapons. But the overarching importance that the US must give sufficient attention to the characteristics, numbers, performance, and reliability of its nuclear deterrent arsenal should be ob-

vious to anyone in a senior government position. I urge the Strategic Forces Subcommittee of the HASC to step up and demand that the US greatly increase its attention to reverse the decline which now characterizes our deterrent and the complex responsible for it.

QUESTIONS SUBMITTED BY MR. WILSON

Mr. WILSON. The NNSA has indicated that it must develop an inventory of plutonium oxide feed material to cover the time gap between start-up of the MOX facility and the construction of the PDCF.

What is NNSA's current planning estimate for the amount of plutonium oxide feed material needed to bridge the gap between start-up of the MOX facility and completion of PDCF?

Mr. D'AGOSTINO. In consideration of the current schedules for both the MOX and PDCF facility, NNSA currently estimates up to twelve metric tons of plutonium oxide feed material will be required to bridge the gap between start-up of the MOX facility and completion of PDCF. This amount is in addition to the two metric tons of plutonium oxide currently planned to be received from the Advanced Recovery and Integrated Extraction System (ARIES) project at the Los Alamos National Laboratory.

Mr. WILSON. What is the current estimate of the amount of available plutonium oxide feedstock currently in storage?

Mr. D'AGOSTINO. There is currently 4.1 metric tons of plutonium oxide feedstock available in storage at the Savannah River Site to support feed for the MOX facility that meets the MOX feed specification.

Mr. WILSON. What is the current estimate of the "alternate feed stock" or non-pit surplus plutonium in the weapons complex that does not rely on PDCF for processing to plutonium oxide?

Mr. D'AGOSTINO. The current estimate is 7.8 metric tons of "alternate feed stock" or non-pit surplus plutonium is available to process into plutonium oxide for feed to the MOX facility. This includes the 4.1 metric tons of plutonium oxide currently in storage.

Mr. WILSON. How much of the alternate feed stock could be converted in H-Canyon at the Savannah River Site (SRS)?

Mr. D'AGOSTINO. The 3.7 metric tons out of 7.8 metric tons of "alternate feed stock" plutonium metal yet to be processed, is expected to be processed within the K reactor area of SRS. No material to be used for MOX feedstock is currently planned to be processed through H-Canyon. However, DOE is evaluating options that could provide additional alternative feed stock materials through the use of H-Canyon.

Mr. WILSON. NNSA has indicated that the Advanced Recovery and Integrated Extraction System (ARIES) facility at Los Alamos can produce plutonium oxide feedstock for the MOX facility before PDCF comes online. How much plutonium oxide does NNSA intend to produce at ARIES with the funding it has requested for FY 09? How much plutonium oxide has ARIES produced to date, and has any of this plutonium oxide been accepted by the MOX program under its quality control regime?

Mr. D'AGOSTINO. The funding for ARIES in FY 2009 is primarily to conduct final demonstration testing of the equipment to support design & operation of the PDCF. The ARIES project will then transition to routine oxide production in subsequent years. As a result of the demonstration activities, about 40 kilograms of plutonium as oxide will be generated in FY 09 and will contribute to the 2 metric tons expected to be delivered from Los Alamos through 2018. The ARIES project has produced approximately 300 kilograms of oxide via demonstration programs in prior years. 120 kilograms of this oxide was accepted by MOX services and is currently being irradiated at the Catawba reactor in lead test assemblies. Los Alamos was designated as a qualified vendor for MOX services during earlier production and will re-establish vendor certification as a part of the baseline program.

Mr. WILSON. The Senate Energy and Water Appropriations Report included an additional $22 million for ARIES for FY 09. How much additional plutonium oxide could be produced with the additional funds? Is the available equipment and hired and trained workers at ARIES/Los Alamos capable of safely producing an additional $22 million worth of plutonium oxide in FY 09?

Mr. D'AGOSTINO. The additional $22 million for ARIES in FY 2009 is intended primarily for the procurement and installation of additional ARIES equipment, not for the production of additional oxide. The additional equipment will reduce the dose to workers and provide for enhanced operating safety and efficiency improvements

during oxide production in later years. Depending upon the vendor certification schedule and when the funding becomes available, it may result in the production of a small amount of additional material in FY 2009.

Mr. WILSON. Your Memorandum dated July 7, 2008 sets forth recommendations for the FY 2010–2014 planning, programming, budgeting, and evaluations process. Please explain why PDCF funding is zeroed out in the Memorandum. Please also explain how you could approve a CD–2 decision on PDCF by January 2009, if NNSA's budget profile set out in the July 7 Memorandum provides no construction funding for PDCF.

Mr. D'AGOSTINO. The Administrator's Final Recommendations Memorandum dated July 7, 2008, by which we conclude our annual internal budget update process, retains construction funding for the PDCF construction project for FY 2010 and beyond. The funding was moved within the Weapons Activities appropriation from the Directed Stockpile Work (DSW) program to Readiness in Technical Base and Facilities (RTBF) where most Defense Programs construction projects are funded. The DOE's decision to approve the construction baseline, CD–2, is not contingent upon a program funding allocation; however, once CD–2 is approved, it is NNSA's practice to allocate funding supporting the baseline schedule.

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