

**Statement of Dr. Paul J. Hommert**  
**President and Director**  
**Sandia National Laboratories**

**Committee on Armed Services**  
**Subcommittee on Strategic Forces**  
**United States Senate**

**April 9, 2014**

**Introduction**

Chairman Udall, Ranking Member Sessions, and distinguished members of the Strategic Forces Subcommittee, thank you for the opportunity to testify today on the Administration's request to Congress for the FY 2015 budget and on the National Nuclear Security Administration (NNSA) governance of the national security laboratories. I am Paul Hommert, President and Director of Sandia National Laboratories. I am pleased to join Charlie McMillan and Bill Goldstein, who are here today for this discussion.

Sandia is a multiprogram national security laboratory owned by the U.S. Government and operated by Sandia Corporation<sup>1</sup> for the NNSA. Sandia is one of three NNSA laboratories with responsibility for stockpile stewardship and annual assessment of the nation's nuclear weapons. Within the U.S. nuclear weapons enterprise, Sandia is uniquely responsible for the systems engineering and integration of the nuclear weapons in the stockpile and for the design, development, qualification, sustainment, and retirement of nonnuclear components of nuclear weapons.

While nuclear weapons represent Sandia's core mission, the science, technology, engineering, and business professional capabilities required to support this mission position us to support other aspects of national security as well. Indeed, there is natural, increasingly significant synergy between our core mission and our broader national security work, including research and development in synergistic defense products, cyberspace, nuclear assessments and warning, and global nuclear dangers. Examples of areas where Sandia has applied its expertise with a direct nexus between nuclear weapons (NW) work and non-NW benefits for the nation include the development of satellite technology, synthetic aperture radar, hypersonic vehicles, global monitoring systems for nuclear material detection, and our contributions to cyber defense, which are enabled by our long-standing work in the command and control of nuclear weapons.

---

<sup>1</sup> Sandia Corporation is a subsidiary of the Lockheed Martin Corporation under Department of Energy prime contract no. DE-AC04-94AL85000.

## Major Points of This Testimony

Today, Sandia is executing its NW mission in the context of three overarching imperatives. First, take care of the current U.S. stockpile through such activities as annual surveillance and stockpile maintenance through limited-life component exchanges; second, sustain the stockpile into the future through life extension programs and alterations; and third, maintain and advance Sandia's required engineering and science capabilities, operations, and infrastructure.

My statement will provide an update since having testified before this subcommittee on May 7, 2013, and before the House Subcommittee on Strategic Forces on October 29, 2013. It will emphasize Sandia's execution of a full suite of modernization programs in full-scale engineering development, address the status of the NW stockpile regarding the other two imperatives, and describe the synergistic connection between Sandia's NW mission and other major national security missions. Today, we would not be able to deliver on our nuclear weapons mission without these synergistic relationships. All these topics will be viewed within the context of the Administration's request to Congress for the FY 2015 budget. Listed below are the major points of my statement.

1. Sandia is **successfully executing a full suite of modernization programs in full-scale engineering development**: the B61 Life Extension Program (LEP), W88 ALT 370, and Mk 21 Fuze Replacement.
2. As of March 2014, **we have met all major B61 LEP milestones on schedule as adjusted against receipt of program appropriations**. By employing **effective cost-management measures**, we were able to minimize cost impact due to schedule delays caused by discrepancies between planned and received funds.
3. Our **assessment of the Administration's FY 2015 budget request to Congress** is that **support for the modernization programs is consistent with first production unit (FPU) plans**. However, although the budget emphasis placed on modernization is understandable, it presents challenges for supporting the current stockpile and the underpinning capability, particularly in the long term.
4. At Sandia, **the NW mission is strongly connected to other key national security mission areas: reducing global nuclear dangers**, which is the work we do in nonproliferation, treaty monitoring, and securing nuclear facilities; **nuclear assessments and warning**, which involves foreign nuclear weapons assessments; **cyberspace**, which has grown from our early work in NW use control; and **synergistic defense products**, which refers to a set of products on which we work for the Department of Defense, which are synergistic with the products for the NW program.
5. **We support the goals of the Congressional Advisory Panel on the Governance Structure of the NNSA** and offer what we believe are guiding principles for improving the construct.

## Executing a Full Suite of Modernization Programs

We are currently in full-scale engineering development on the B61 LEP, W88 ALT 370, and Mk 21 Fuze Replacement. Indeed, for the first time since the end of the Cold War, we are executing three Phase 6.3 programs simultaneously. We are confident that our in-depth scientific, engineering,

and technical expertise, combined with increased rigor in project management and cost control, will enable successful completion of these programs. Several years ago, we recognized the magnitude of the challenge before us, coupled with the expectations of high rigor in all aspects of cost, schedule, and performance. Thus, we took steps to prepare the institution to execute in this environment. During the past calendar year, we completed co-locating the core design teams, enhancing our classified networks to reflect the volume of the work, and most significantly, staffing the programs and training the workforce. I will now summarize our progress in each of the modernization efforts.

### **The B61 LEP: Sustaining the B61 Safety, Security, and Reliability**

As I stated in my testimony of October 27, 2013, the B61 LEP includes a prudent mix of the following activities: (1) requalification and reuse of existing components that we can certify for at least an additional 20-year lifetime, (2) remanufacture of some existing component designs, and (3) replacement with new designs, where required.

This approach to the program reduces the number of components to be developed, as well as the technical and programmatic risk associated with the life extension, but it does add lifetime risk to the B61-12. The resulting B61-12 design is the minimum that

- Meets threshold military requirements, including compatibility with future digital aircraft interfaces
- Addresses known end-of-life and technology obsolescence issues
- Sustains and updates safety and security for this system
- Consolidates the B61 Modifications (Mods) 3, 4, 7, and 10 into a single B61 Mod 12

**Cost and Schedule Performance.** The B61 LEP can be thought of as having three major phases—design, component and system qualification, and production. We are now about 75% complete on design, and by late FY 2015, we will be at a 95% design point and will be ready for a planned first flight test of this bomb. This remarkable progress is the result of a significant effort on our part. As we learn more about the design, we will look for opportunities to consolidate some of the follow-on tests on subsequent development builds for the B61 in order to provide margin to the cost and schedule. For example, as I stated in October 2013, at the start of our Phase 6.3 on the program, the radar component was considered high risk. In August 2013, we tested our new radar for the B61-12 at the Tonopah Test Range in Nevada. The test of the new design was so successful that we have decided to consolidate three originally planned tests into the one we have completed, thus having an estimated \$300,000 as contingency for budgetary fluctuations.

We have been successful in bringing innovative approaches to the B61-12 execution to reduce risk and cost. For example, in February 2014, Sandia collaborated with the Air Force to successfully perform a key aerodynamic test with multiple configurations at the Air Force Arnold Engineering Development Center in Tennessee. In this test, the bomb included the new tail kit developed by the Air Force. The test sharpened our insight into the bomb's spin motion during freefall and led to enhanced understanding of a complex spin phenomenon, which in turn provides better understanding of the B61-12 flight performance.

As of March 2014, we have costed \$350 million of the estimated incremental cost for Sandia to execute the B61 LEP. This amount is consistent with the June 2012 cost estimate that specifies an incremental cost of \$2.65 billion for Sandia to execute the B61 LEP over 11 years. Against those

expenditures, **we have met all major milestones on schedule as adjusted against receipt of program appropriations.** By using sound program-management measures, we are working to minimize cost impact due to schedule delays caused by discrepancies between planned and received funding. In fact, we currently project cost savings of approximately \$120 million over the life of the program, which will go a long way to offset such discrepancies.

Our success in cost control reflects in part our commitment to manage labor costs, which are the largest component of the overall program cost. As an example, our efforts to manage healthcare cost and pension cost obligations have allowed us to keep labor rates for FY 2014 below those we used in our cost estimate reflected in the Weapon Development Cost Report.

### **Further Modernization Efforts at Sandia**

As discussed, we are currently executing two additional full-scale engineering development efforts: the W88 ALT 370 and the Mk 21 Fuze Replacement. Across these two programs and the B61 LEP, we have taken an overall system approach, using common technology and components to an unprecedented extent. This approach is significantly reducing risk and cost in these programs. For example, a modular arming, fuzing, and firing (AF&F) design is being developed for the W88 ALT 370 and the Mk21 Fuze Replacement. Given the benefits of a common-technology approach, we will look to use it in all our future efforts.

**W88 ALT 370.** The W88 ALT 370 is well into full-scale engineering development and is executed on schedule and within budget relative to an FPU scheduled for December 2019. This modernization program replaces the AF&F assembly and adds a nuclear-safety connector for enhanced lightning protection.

Sharing technologies and components with other modernization programs, the W88 ALT 370 is cost-efficient and presents reduced risk, in keeping with the Nuclear Weapons Council's (NWC's) plan for stockpile modernization. The W88 ALT 370 has not only developed a common subset of fuze requirements to support the W87/Mk21 fuze replacement application, but it also features a common radar module with the B61 LEP. Already prototyped, this radar will be included in a D5 missile Navy test flight later this year, which will evaluate radar performance in the unique reentry environment. The results of this flight test, as part of the rigorous performance testing and qualification efforts, will not only further the design of the W88 ALT 370 program, but also of the B61 LEP.

Significantly, through our surveillance and component evaluation programs, we were able to save tens of millions of dollars by requalifying the Bell XI sensor (originally used in the W88-0) and making it available for use in the W88 ALT 370 inertial navigation module. Like the B61 LEP, the W88 ALT 370 is being managed with increased program and cost rigor.

**Mk21 Fuze Replacement.** The Air Force has a requirement, validated by the NWC, to replace the Mk21 arming and fuzing assembly (AFA). Because of our expertise and ability to leverage similar work done for the W88 ALT 370, Sandia was chosen to replace the fuze. Leveraging other work enables efficiencies in design, development, production, and life cycle support. We entered Phase 6.3 of the program in August 2013. The team, including approximately 100 staff, is on track to establish the program baseline this summer.

During this fiscal year, a requirements review documented and confirmed key requirements that enabled us to launch full-scale engineering development in November 2013. A few months later, in January 2014, we conducted a key compatibility test for a Mk21 fuze component by using the U.S. Air Force test bed that simulates a missile interface. This test is significant because it confirms design decisions to enable the fuze to communicate effectively with the Air Force missile. It also demonstrates that the program is making appropriate progress toward fielding a replacement AFA.

Together, the B61 LEP, W88 ALT 370, and Mk21 Fuze Replacement provide substantive required upgrades to all three legs of the U.S. nuclear weapons triad.

**W76-1.** The W76-1 LEP continues with broad-ranging production across the entire national security enterprise. Beginning with the first production unit in the fall of 2008, Sandia has teamed with the NNSA and Navy to meet delivery schedules while working through the challenge of relocating the Honeywell FM&T Kansas City Plant to a new facility. Production is targeted for completion at the end of September 2019. Embedded in this effort is requalification of all the production lines and maintaining deliveries to the Pantex Plant.

Executing the modernization programs requires that we have absolute confidence in the safeguards and security aspects of our work. Sandia is committed to ensuring that we have trusted information systems, supply chains, and employees throughout all phases of the stockpile stewardship life cycle.

### **Future Modernization Efforts**

**W78/88-1 LEP.** In June 2012, the NWC authorized a Phase 6.2 study for a W78/88-1 LEP interoperable warhead. Based on recent NWC guidance, NNSA deferred this program and established a new projected FPU in FY 2030. NNSA does not propose to fund this life extension beyond FY 2014 until such time that the Phase 6.2 study is restarted. Remaining FY 2014 funds are directed toward a 120-day study to consider stand-alone warhead options for Mk21 and Mk5 aero shells and toward the orderly suspension of W78 LEP activities. The program will document the results of Phase 6.2 activities for the W78/88-1 LEP through end of FY 2014, archive program files, and develop a restart plan for use if and/or when future funding is allocated to the program.

**LRSO.** NNSA and the U.S. Air Force joined forces in a Phase 6.1 (concept assessment) Long-Range Standoff (referred to as LRSO) study to begin on July 1, 2014. Sandia will potentially be asked to conduct a Phase 6.2 and 6.2A (engineering feasibility; cost estimation) study from FY 2016 to FY 2018 and initiate a Phase 6.3 effort starting in FY 2019.

### **Budget Considerations**

First, I would like to express my appreciation for the bipartisan efforts of the Senate and the House to enact FY 2014 authorization and appropriations that recognize and support the most critical nuclear weapons modernization efforts. Specifically, the FY 2014 enacted authorization and appropriations provide the necessary resources for the modernization programs to remain on schedule and meet all the NNSA and Department of Defense performance requirements. As I stated in my testimony to this subcommittee in May 2013, fiscal years 2014, 2015, and 2016 are critical to maintaining the cost, schedule, and performance of the overall program.

In this regard, we are also pleased to see the strong support for the weapons program in the Administration's *FY 2015 Budget Request to Congress*. As I have previously testified, budget continuity is the most significant risk to maintaining schedule, and therefore overall program costs, on the life extension and alteration programs. In my opinion, the FY 2015 President's budget request for the nuclear weapons account, if fully supported, will provide such budgetary continuity and allow the nuclear security enterprise to continue on a successful path toward delivering on the modernization commitments. However, as I have stated in other sections of this testimony, support for the current stockpile and the underpinning infrastructure and capability presents challenges, particularly when viewed in the long term.

### **Overall Perspective on a Balanced National NW Program**

In the preceding sections of my testimony, I have discussed the progress my institution has made on the stockpile modernization programs. Given their overall scope and time urgency, it is appropriate that these programs dominate Sandia's work activities. However, as I discussed earlier, the entirety of the NW program must also be judged against the imperatives to steward the current stockpile and maintain the science and engineering base and infrastructure necessary to both sustaining and modernizing the stockpile now and in the future.

When I consider the FY 2015 budget request, I am concerned that the NW program is drifting out of balance as efforts to sustain the current stockpile, conduct appropriate levels of advanced and exploratory work, and support critical infrastructure continue to see reduced funding given the understandable emphasis on the modernization programs. The pressure on infrastructure extends even to support for projects necessary for the execution of the modernization programs. A case in point is the recapitalization of Sandia's facility for radiation-hardened microelectronics fabrication. FY 2015 is the third year in a 6-year \$150 million effort to mitigate production risk for the current modernization programs, but this recapitalization effort is not supported in the FY 2015 budget request. This example is symptomatic of what I see happening across the program, namely, budget pressure forces greater risk acceptance in areas not perceived to have immediate impact. Other clear examples are that, despite the stockpile being the oldest yet in our history, the surveillance program is facing further reductions and advanced and exploratory work has decreased by 80% in the past four years. Given the overall fiscal constraints facing the country, it is appropriate to set priorities in a way that preferentially reduces risk to the most urgent programs. I understand and support that approach; however, it is important that all of us engaged in the stewardship of the nation's nuclear deterrent acknowledge and explicitly look to minimize the overall risks that are increasing over time. In that regard, I urge both the Congress and NNSA to maximize program management flexibility within an overall budget level.

To understand the pressure the current program faces, I will make some historical comparisons. Although details are often hard to compare for different periods, I believe a simple high-level view of Sandia's weapons program in 2014 compared with two previous years is informative. Consider first 1987. At that time, Sandia was executing weapon design activity comparable with what we are doing today. The stockpile was essentially new and required little or no surveillance, our infrastructure was receiving continuous recapitalization, and we were executing a healthy advanced

and exploratory program. In constant dollars, the budget then was comparable with the budget today, but the demands on the program were very different. For example, we did not face the challenges posed by an old stockpile or the loss of nuclear testing. Now consider 2005, just 9 years ago. We were executing two full-scale engineering efforts although one (the W80) was terminated in that year; so, the scope of design work was less than it is today. In addition, we were making major investments in stewardship facilities (pulsed power and the microelectronics research and fabrication facilities) and in computing, and we were executing a robust surveillance program. In my view, the program in 2005 was in overall balance and at a budget level slightly higher than today. I believe that today, the program is not in balance. We are executing three modernization programs and are continuing needed stewardship tool application and development. However, we are deferring investments in the production infrastructure and curtailing surveillance activities for an aging stockpile. In addition, we also face labor cost drivers, such as pension and medical care costs, which were either nonexistent in 1987 and 2005 or considerably less in constant dollars. From this simple historical comparison, two overall points emerge about the program at Sandia:

1. More is being demanded of us today than at any other time since the end of the Cold War and the cessation of nuclear testing, yet budget levels are essentially flat or slightly down. This situation is leading to the imbalance and risk that I spoke to earlier.
2. The modernization programs are being executed with increased efficiency primarily because we are using the tools of stewardship (e.g., simulation) and overall enterprise cost reductions.

### **Sandia's Stockpile Surveillance and Assessment, Infrastructure, and People**

In this section, I will focus on our achievements and challenges in sustaining the current nuclear stockpile, maintaining the underpinning infrastructure and capabilities, and attracting the people who will carry the work of today into the future. I will refer to these aspects in the context of the Administration's *FY 2015 Budget Request to Congress*.

#### **Stockpile Surveillance and Assessment**

An effective surveillance program at Sandia has made it possible to sustain confidence in the current stockpile and requalify parts from the current B61 stockpile for an additional 20 years of use in the B61-12. It also enabled us to extend the life of neutron generators by better characterizing aging phenomena and to support life extension of the current W78 warhead by providing confidence that the warhead components are aging gracefully. These achievements represent significant cost savings while allowing us to sustain confidence in the stockpile.

As I testified last year, funding allocations for Sandia in fiscal years 2013 and 2014 required that we constrain surveillance efforts, and current indications are that FY 2015 funding for Sandia will impose additional constraints on our surveillance program. At Sandia, we recognize the realities of the current fiscal environment, and thus we continue to apply a risk-based prioritization approach to our surveillance activities and infrastructure. I am concerned, however, that continued funding shortfalls in this area over long periods will lead to fewer lab and flight tests, testing fewer of the full-range operational environments, and reduced safety testing.

## **Science-Based Infrastructure and Capabilities**

Sandia stewards the microelectronics research and fabrication facilities for the NW program, as well as for the Department of Energy's nonproliferation payloads. In those facilities, we design and fabricate an array of unique microelectronics, specialty optical components, and microelectromechanical system devices. When discussing the national NW program, I stated that the recapitalization of the facility for radiation-hardened microelectronics fabrication is not being supported in the FY 2015 budget request. This lack of funding will increase the risk for delivering the modernization programs.

We also have significant recapitalization needs at other experimental and test facilities critical to the success of the B61 LEP, W88 ALT 370, and future life extensions, particularly at the Tonopah Test Range and our large-scale test facilities. The FY 2015 budget request for recapitalization continues the downward trend from FY 2014 and therefore further restricts our ability to reduce risk to the modernization programs. These infrastructure needs are impacted by the FY 2015 budget request for the Readiness in Technical Base and Facilities program.

Sandia's high-performance computing capabilities, vital tools for our mission responsibilities in stockpile surveillance, certification, and qualification, continue to prove indispensable to our broader national security work. On a positive note, the resolution of the FY14 budget resulted in an executable program in high-performance computing that can support critical work for our modernization programs. We are pleased that the FY 2015 budget request continues to provide funding for high-performance computing.

Sandia is a recognized world leader in the development and applications of pulsed power, as evidenced by our Z facility and the research program that it supports. Z is indispensable to conducting high energy density physics research critical to the stockpile stewardship program. An important deliverable for FY 2015 is an assessment of the national program in inertial confinement fusion. Funding stability in this program area is needed for the long-term health of the stewardship program. The FY 2015 budget request takes a step in restoring the funding needed to efficiently develop and utilize the full capabilities of the Z facility.

## **Future Stewards of the NW Stockpile**

To execute the demanding modernization programs with which the nation has entrusted us, we knew we would have to attract and retain new staff, the future stewards of our stockpile. Since FY 2010, we have hired approximately 1,000 scientists and engineers—typically for us, two-thirds engineers and one-third scientists. These individuals were hired for the totality of our national security work. Fifty-seven percent of these new hires are in the first three years of their professional career and were recruited broadly from the nation's finest research universities with the highest standards. Coupled with our experienced staff, they are responsible for the execution and progress on the modernization efforts. These hires, however, have a different social contract. They no longer have a defined benefit pension plan, and they are encountering an operational environment of a complexity that they might not have anticipated. Yet they are fundamentally attracted to the Laboratory by the nature of our work. Consistent with our role as a federally funded research and development center (FFRDC), we hire new talent for the long term. When the modernization programs are completed, we expect that recently hired staff will continue in nuclear weapons or

other national security missions at Sandia. In recruiting, we have used the Laboratory Directed Research and Development program as a critical element, particularly for PhD candidates.

Staffing three modernization programs has been a tall order in two significant ways: attracting many new hires with the right qualifications expeditiously and maintaining a stable Lab size. We were successful on both counts. As discussed above, we have a strong contingent of new hires, and the overall size of Sandia grew by only about 2.5% since 2010. To keep the Lab size stable, we shifted some personnel among the national security missions conducted at the Laboratory. For example, Sandia engineers may be expected to work on the weapons program one day and on an effort for the Department of Defense the next day. To ensure their successful contributions to the programs on which they are working, we have developed common tool sets and defined the necessary experience and the expectations of doing engineering at the Laboratory.

### **Synergy between Our NW Mission and Other Key National Security Missions**

At the beginning of my testimony, I referred to the synergistic connection between Sandia's NW mission and other major national security missions. To energize and sharpen its nuclear weapons competencies and mitigate risk, Sandia relies on its broader national security work. The symbiotic relationship between the nuclear weapons mission and broader national security missions prevents insularity and creates a challenging, vigorous scientific and engineering environment that helps us attract and retain the new talent we need. Such an environment is essential for us to succeed against the challenges we now face.

**I strongly believe that today it is not possible for my Laboratory to deliver consistently on the commitments to the nuclear weapons program without the synergistic interagency work that attracts top talent, hones our skills, and provides stability through the cycles of the nuclear weapons program.**

Government commitment to the broad national security work of the laboratories is essential for the United States to ensure the preeminence of our nuclear weapons and to enable multidisciplinary technical solutions to other complex and high-risk national security challenges. In no way does our interagency work detract from our focus to execute our core NW mission.

In the next three sections, I will discuss some of the broader national security work we are conducting at Sandia, which we view to be particularly synergistic with the NW mission.

### **Reducing Global Nuclear Dangers**

Around the world, the risks posed by nuclear weapons, materials, and knowledge are increasing. The explosive growth of the nuclear power enterprise has resulted in at least 18 countries planning to build their first nuclear power plants, and major new construction is underway or planned around the globe. This nuclear power expansion, occurring with an unevenly applied approach to safety and security, may well increase the likelihood of proliferation over the long term. Nuclear "lockdown" is progressing, but work is still necessary to attain our security goals—both domestically and abroad. Sandia has a broad portfolio of nuclear nonproliferation activities, working collaboratively with Los Alamos, Lawrence Livermore, and several other DOE laboratories. Sandia has long-standing expertise in nuclear security and safeguards and engages cooperatively with partners in more than 100 countries to reduce the threat of proliferation and terrorism.

While the *FY 2015 Budget Request to Congress* understandably emphasizes stockpile stewardship and the life extension programs, we are concerned about the size of proposed decreases in nuclear nonproliferation programs. Cooperative relationships with nation states having at-risk nuclear materials and nuclear weapons programs are hard to establish and potentially harder to rebuild, so these cuts may reverse the benefits from important work already completed. There is not enough national attention on helping the civilian nuclear enterprise grow in a safe and secure manner. Similarly, increased focus is needed on the strategic requirements for next-generation technology and expertise to support our national nuclear nonproliferation policy goals. Sandia continues its commitment to helping reduce global nuclear dangers, but its resources for such work will need to shift to other activities if this budget is enacted as submitted.

### **Nuclear Assessments and Warning**

The long-term vision for Sandia's nuclear assessments and warning mission area is to ensure that the United States will achieve an integrated, comprehensive, persistent monitoring and responsive warning architecture for NW activities worldwide. To achieve this vision, we research, develop, and deploy products and services that ensure the effectiveness of our nuclear deterrent and counter foreign efforts from impacting our national security capabilities and interests. Thus, we provide sensing systems and analysis to detect nuclear detonations and nuclear material and to understand nuclear threats against the United States and its allies, covering all aspects of the nuclear timeline. One of our key programs is development and delivery of the satellite payloads for the U.S. nuclear detonation detection system. Through NNSA's NA-22 program, the satellite payloads program is fully funded in the FY 2015 President's budget request, which is critical to maintaining a strong nuclear warning program for the United States.

### **Cyberspace and Synergistic Defense Products**

Sandia's extensive cyber research and development program is rooted in its rich history of work in the command and control of nuclear weapons. Sandia integrates scientific understanding, technology development, and complex requirements-driven engineering to develop solutions to cyber challenges. Work in this mission area also involves management of trusted components for the modernization programs.

In the mission area we refer to as synergistic defense products, Sandia delivers a set of products in support of Department of Defense missions, such as combatting terrorism at home and abroad and dominance across the full spectrum of warfare. Among those products are real-time synthetic aperture radar and hypersonic vehicles, which actively draw from and feed back into the NW program.

### **Governance**

On the topic of NNSA governance, I look forward to the recommendations of the Congressional Advisory Panel. In our interactions with the Panel, we have stressed three important principles that we believe should shape the character of any recommendations:

1. *Mission.* In our view, the three nuclear weapons laboratories have evolved into unique national security science and technology institutions. Built around the core nuclear weapons

capabilities, they offer broad value to the country's 21<sup>st</sup> century national security challenges. Any governance construct should reinforce this mission reality.

2. *FFRDCs*. The laboratories are FFRDCs. Any governance construct should enable them to fully embody key features of the FFRDC model as described in the Federal Acquisition Regulation. Some of those key features are the following: The FFRDCs attract and maintain high-quality personnel; maintain currency in their fields of expertise; meet special long-term research or development needs; and operate autonomously in the public interest with objectivity and independence and are free from organizational conflicts of interest.
3. *Management fundamentals*. Any governance model must rely upon and demonstrate sound management principles. Clear line-management accountability, a focus on strategic outcomes as articulated by the government, and independent and effective oversight that supports continuous improvement are particularly important.

Based upon my 38-year career, including senior leadership positions in two U.S. laboratories, it is my opinion that the NNSA construct has made it more difficult to manage and lead these institutions in a manner that fully demonstrates the value of these principles.

## Conclusions

As I discussed at the beginning of my statement, Sandia is executing its NW mission by taking care of the current U.S. stockpile, sustaining the stockpile into the future, and maintaining and advancing Sandia's required engineering and science capabilities, operations, and infrastructure.

We are **currently executing three modernization programs**—the B61 LEP, W88 ALT 370, and Mk21 Fuze Replacement—**on schedule and on (or under) budget**. As I discussed earlier, **budget continuity remains the largest risk to these programs**. I believe that the FY 2015 budget request supports the modernization programs consistent with FPU plans.

**The overall demands of the NW program** are significant—in many respects, they are unprecedented—and I am concerned that they are **causing an imbalance in the program** by increasing risk. As discussed in this statement, a budget emphasis placed on modernization is understandable, but it presents challenges for supporting the current stockpile and the underpinning capability in the long term. By the same token, considering the fiscal constraints facing the country, **it is appropriate to set priorities in a way that preferentially reduces risk to the most urgent programs**. It is therefore all the more **important for all of us engaged in the stewardship** of the nation's nuclear deterrent **to acknowledge the risks and work hard to minimize them**. Significantly, **Sandia's broad mission space is essential to mitigating risk to the NW program and delivering unique value to solving the nation's national security challenges**.

**The recommendations of the Congressional Advisory Panel will be important** as I believe the NNSA construct has made it difficult to meet the original intent of strengthening the nuclear weapons enterprise.

Finally, I want to restate that Sandia is committed to fulfilling its service to the nation with excellence in all aspects of the program. We appreciate the leadership role of Congress in authorizing a sound path forward for U.S. nuclear deterrence.