

**DEPARTMENT OF DEFENSE AUTHORIZATION FOR  
APPROPRIATIONS FOR FISCAL YEAR 2011**

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**HEARINGS**

BEFORE THE

**COMMITTEE ON ARMED SERVICES**

**UNITED STATES SENATE**

**ONE HUNDRED ELEVENTH CONGRESS**

SECOND SESSION

ON

**S. 3454**

TO AUTHORIZE APPROPRIATIONS FOR FISCAL YEAR 2011 FOR MILITARY  
ACTIVITIES OF THE DEPARTMENT OF DEFENSE, FOR MILITARY CON-  
STRUCTION, AND FOR DEFENSE ACTIVITIES OF THE DEPARTMENT OF  
ENERGY, TO PRESCRIBE PERSONNEL STRENGTHS FOR SUCH FISCAL  
YEAR, AND FOR OTHER PURPOSES

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**PART 7**

**STRATEGIC FORCES**

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MARCH 10, 17; APRIL 14, 21, 2010



**DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 2011—Part 7**  
**STRATEGIC FORCES**

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Printed for the use of the Committee on Armed Services



Available via the World Wide Web: <http://www.fdsys.gov/>

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U.S. GOVERNMENT PRINTING OFFICE

62-160 PDF

WASHINGTON : 2011

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**DEPARTMENT OF DEFENSE AUTHORIZATION  
FOR APPROPRIATIONS FOR FISCAL YEAR  
2011**

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**WEDNESDAY, MARCH 10, 2010**

U.S. SENATE,  
SUBCOMMITTEE ON STRATEGIC FORCES,  
COMMITTEE ON ARMED SERVICES,  
*Washington, DC.*

**MILITARY SPACE PROGRAMS**

The subcommittee met, pursuant to notice, at 2:42 p.m. in room SR-232A, Russell Senate Office Building, Senator E. Benjamin Nelson (chairman) presiding.

Committee members present: Senators Ben Nelson, Udall, and Vitter.

Majority staff member present: Madelyn R. Creedon, counsel.

Minority staff member present: Daniel A. Lerner, professional staff member.

Staff assistants present: Kevin A. Cronin and Paul J. Hubbard.

Committee members' assistants present: James Tuite, assistant to Senator Byrd; Ann Premer, assistant to Senator Ben Nelson; Jennifer Barrett, assistant to Senator Udall; Rob Soofer, assistant to Senator Inhofe; Sandra Luff, assistant to Senator Sessions; and Michael T. Wong, assistant to Senator Vitter.

**OPENING STATEMENT OF SENATOR E. BENJAMIN NELSON,  
CHAIRMAN**

Senator BEN NELSON. Good afternoon, and welcome to our witnesses this afternoon.

I apologize for the delay in the start. Votes always seem to get in the way of our regular business, and so we suffer through that, as we must.

We have with us this afternoon: Gary Payton, Deputy Under Secretary of the Air Force for Space; General Robert Kehler, Commander of Air Force Space Command; Lieutenant General Larry James, Commander of the 14th Air Force and the Strategic Command Joint Functional Component Command for Space; Vice Admiral David Dorsett, Deputy Chief of Naval Operations for Information Dominance; Gary Federici, Deputy Assistant Secretary of the Navy for Command, Control, Computers, Intelligence and Space; and Christina Chaplain, Director, Acquisition and Sourcing Management, from the Government Accountability Office (GAO).

Welcome to all of you. We appreciate your being here.

Space is an essential element of almost every military operation. As various exercises and studies have demonstrated, including the Shriever series of war games, space provides a distinct and unique advantage to U.S. forces, one that they won't operate and can't operate without. But, as that advantage is becoming more well understood, more attention and leadership must be paid to protect space and the assets on orbit and on ground.

Improving Space Situational Awareness (SSA), and thus, improving the ability to protect space systems, is a major and welcome focus of the Air Force budget request for fiscal year 2011, and so, we look forward to working with you to sustain this much-needed focus.

After many years of discussing broken space acquisition programs that were years behind schedule and significantly over budget, it appears as if these programs have finally turned a corner. The Wideband Global Satellite (WGS) system now has three satellites on orbit, with more to come; the first of the IIF Global Positioning System (GPS) satellites, which should launch in the next few weeks; the first Advanced Extremely High Frequency communications satellite should launch this summer; and there is a possibility that the Space-Based Infrared Satellite-Geosynchronous Orbit (SBIRS-GEO) system will launch in late 2010 or early 2011. This is all excellent news.

There are still issues. The Navy Mobile User Objective System (MUOS) is about 2 years late, and the ultra-high frequency (UHF) Constellation that it will replace is increasingly fragile.

On the other hand, this week's decision to give serious consideration to an interim augmentation capability is positive. Launch costs have continued to increase, the space ranges need to be modernized, and there are growing concerns about the space industrial base. The operationally responsive space effort continues to wrestle with the challenges of establishing a responsive space capability, and small businesses still have difficulty bringing their innovative ideas to the table. Finally, the management coordination of space is fractured; some might even suggest, broken.

I look forward to hearing some of the ideas on how to improve that situation, as both the Air Force and the Office of the Secretary of Defense (OSD) are actively studying this problem, as well as on all the many facets of operating in, from, and through space.

We have quite a large panel this afternoon, a lot to cover. So, if we can, let's begin.

My ranking member, Senator Vitter, will be with us shortly, but all of our witnesses have prepared written statements, and those will be included in the record, without objection.

We're ready to go. Because we have this large panel, if we could highlight just the major issues, rather than giving a long, formal, oral presentation, and then we'll move straight to questions.

We'll start first with Secretary Payton.

**STATEMENT OF GARY E. PAYTON, DEPUTY UNDER  
SECRETARY OF THE AIR FORCE FOR SPACE PROGRAMS**

Mr. PAYTON. Yes, sir. Thank you, Senator.

As you mentioned, for the record, I submitted my opening statement, and so, I will forego a verbal opening statement, in the interest of time.

[The prepared statement of Mr. Payton follows:]

PREPARED STATEMENT BY GARY E. PAYTON

INTRODUCTION

Chairman Nelson, Senator Vitter, and distinguished members of the committee, it is an honor to appear before this committee as the Deputy Under Secretary of the Air Force for Space Programs, and to discuss our military space activities. I support the Secretary of the Air Force with his responsibilities as the Service Acquisition Executive for Space Programs.

I believe the overall soundness of our Air Force space program is best illustrated by our consecutive string of 64 successful national security space launches over the past 10 years, most recently demonstrated with the December 2009 launch of the third Wideband Global Satellite Communications (SATCOM) satellite aboard a Delta IV launch vehicle. This record is the result of a world-class team of space professionals across our government and industry, all dedicated to the single purpose of providing essential capabilities to our joint warfighters and allies around the world. With superior space systems we provide our leadership with intelligence and situational awareness that otherwise would be impossible to collect. Space enables us to employ military force in both irregular warfare and conventional situations—we see the battlefield more clearly and destroy targets with greater precision. While acknowledging the ever increasing advantages that these space capabilities provide, we acknowledge that many of the satellites and associated infrastructure have outlived their intended design lives.

To ensure the availability of these systems, the military space portion of the President's fiscal year 2011 budget submission is focused on the continuity of key mission areas including worldwide communication; global positioning, navigation and timing; global missile warning; weather; and launch. Simultaneously, we are enhancing the protection of our space capabilities through improved Space Situational Awareness (SSA), defensive counterspace, and reconstitution efforts. This calendar year we will bear the fruit of investments from previous years with the planned launches of four "first of" operational satellites. The four "first of" satellites are the Advanced Extremely High Frequency (AEHF) protected communications satellite, Space Based Space Surveillance (SBSS) satellite, Global Positioning System (GPS) II-F satellite, and Operationally Responsive Space (ORS) 1 satellite.

Worldwide communication is enabled through a ubiquitous space-based system with government and commercial platforms. Our users stretch from the Oval Office to the mountains of Afghanistan. Using protected, wideband, or narrowband communications, the President can command the Nation's nuclear forces, our UAV pilots can fly Predators over Iraq and Afghanistan from the United States, and Special Forces teams can call for exfiltration or tactical air support.

Global positioning, navigation and timing is a free worldwide service. It provides position accuracy down to the centimeter and time accuracy to the nanosecond over the entire planet, 24-hours a day, 7-days a week, and in any weather. The Department of Defense and the Intelligence Community depend on our GPS to support a myriad of missions and capabilities including weapon system guidance, precise navigation, satellite positioning, and communication network timing. The civil and commercial communities are equally reliant on GPS as the underpinning for a vast infrastructure of services and products including search and rescue, banking, map surveying, farming, and even sports and leisure activities.

Global missile warning through Overhead Persistent Infra-Red sensors is our unblinking eye ensuring that we know whenever a rocket launches from anywhere on Earth. Our missile warning system is fast, persistent, and accurate in determining missile launch directions. At the strategic level, it informs leadership as they determine courses of action to defend America and our allies, and at the tactical level our real-time warning provides theater commanders with superior battlespace awareness.

Weather observation and forecasting has greatly improved over the last 4 decades primarily due to space-based environmental sensing. Global, high resolution measurements of atmospheric temperature, density, and humidity populate mathematic models for weather prediction. Our warfighters need accurate, time-sensitive weather data as a key enabler for maneuver planning, weapons employment, and intelligence collection.

Our on-orbit assets continue to face greater threats that could deny, damage, or destroy our access to space capabilities. We must anticipate potential disruptions, either accidental or intentional, to our space operations or risk losing continuity of service. As such, we are expanding our ability to detect, identify, characterize, and attribute threats, as well as clearly discriminate between a hostile act and one that occurs naturally. In parallel, we are developing the organizational, operational, and technical enablers, including command and control systems, which will allow us to react swiftly and decisively when threats materialize.

Congress' support has been a vital component in improving our acquisition of space systems, maintaining continuity of service, and charting a course for the next generation of space capabilities that will enhance American security, freedom, and prosperity.

#### UPDATE ON SPACE PROGRAMS

I would like to briefly discuss some of the achievements we have had over the last year and the progress we are making with regard to the mission areas I described earlier.

##### *Missile Warning*

For over 35 years, our legacy Defense Support Program (DSP) satellites, in conjunction with ground based radars, have unfailingly met the Nation's missile warning needs. This legacy constellation, however, continues to age, while threats such as the proliferation of theater ballistic missiles and advanced technologies continue to grow. These threats are driving the need for increased coverage and resolution provided by the Space Based Infrared System (SBIRS).

SBIRS supports four mission areas: missile warning, missile defense, technical intelligence, and battlespace awareness, and is comprised of both geosynchronous earth orbit (GEO) satellites and highly elliptical orbit (HEO) payloads. Two HEO payloads are fully operational and, along with the DSP constellation, continue to perform the missile warning mission while providing increased support to the other three mission areas. Completion of the first SBIRS GEO satellite is planned for the end of 2010.

Our fiscal year 2011 funding request continues development and procurement of the GEO satellites, HEO payloads, and the necessary ground elements. This budget requests full procurement for a fourth GEO satellite, and contains future year requests for procurement of the fifth and sixth GEO satellites. The first GEO satellite completed environmental testing, and we continue to work the final qualification of flight software prior to a final integration test and delivery by the end of this year. Our budget request also continues the commercially hosted on-orbit Wide Field-of-View (WFOV) technology demonstration effort. By partnering with the commercial space industry, we will have the opportunity to conduct an early on-orbit scientific experiment of WFOV infrared data phenomenology using a Commercially Hosted IR Payload.

##### *Communications*

The U.S. military is a highly mobile and dispersed force that relies heavily on wideband, protected, and narrowband satellite communications (SATCOM) for command, control, and coordination of forces. SATCOM enables forces to receive real-time images and video of the battlefield, thereby accelerating decision-making from the strategic to the tactical levels. These images and video often come from Unmanned Aerial Vehicles (UAVs) controlled via SATCOM links, allowing the UAVs to fly far beyond the line of sight and to collect information without endangering U.S. forces.

On December 5, 2009 we successfully launched the third Wideband Global SATCOM (WGS) satellite as part of the Department's constellation of wideband satellites providing increased capability for effective command and control of U.S. forces around the globe. Each individual WGS satellite provides greater wideband capacity than the entire legacy Defense Satellite Communications System (DSCS) III constellation. Our funding request continues on-orbit support for WGS 1-3, continues production of WGS 4-6, contains full procurement for WGS 7, and advance procurement for WGS 8.

In the protected SATCOM portfolio, we are conducting final confidence testing of the first Advanced Extremely High Frequency (AEHF) satellite with a projected launch in the third quarter of 2010. This initial AEHF launch will complete the worldwide Medium Data Rate (MDR) ring, increasing the data-rate for low probability of intercept/detection and anti-jam communications from tens-of-kilobytes per second to approximately a megabyte per second. Our funding request supports the launch and on-orbit support of AEHF 1; assembly, integration, and test of AEHF

2–3 and the AEHF Mission Control Segment; and the production of AEHF 4. This budget requests advance procurement for AEHF 5, and contains a future year request for procurement of AEHF 6.

While near-term satellite communication needs will be met with a combination of military systems (WGS and AEHF) and leased commercial SATCOM, the Air Force continues to work closely with the other Services, the Office of the Secretary of Defense, Joint Staff, and the Combatant Commands to meet the Department of Defense's future protected and wideband communication needs. To this end, the Air Force will investigate options to harvest technologies matured by previous Transformational Satellite Communications System (TSAT) efforts, and evolve the next generation MILSATCOM architecture to provide connectivity across the spectrum of missions, to include land, air and naval warfare; special operations; strategic nuclear operations; strategic defense; homeland security; theater operations; and space operations and intelligence.

#### *Positioning, Navigation, and Timing*

The U.S. GPS continues to be the world standard for positioning, navigation, and timing (PNT). As a result, GPS has been incorporated into military, commercial, and civilian applications, to include navigation, agriculture, banking, cartography, telecommunications, and transportation. The current GPS constellation is robust and healthy, consisting of 30 operational satellites.

Last year, we launched the final of 20 GPS IIR satellites, the last 8 of which were upgraded GPS IIR–M satellites with military code (M-code) for additional anti-jam capability, and a second “L2C” civil signal for increased accuracy. The GPS IIR program was started over 20 years ago, and represents one of our most successful, enduring space acquisition programs. This year, we will launch the first GPS IIF satellite, and 12 GPS IIF satellites will sustain the constellation over the next 6 years. GPS IIF will continue to populate the GPS constellation with military capability and introduce a third “L5” civil signal.

Moving beyond GPS IIF, GPS III will offer significant improvements in navigation capabilities by improving interoperability and jam resistance. The procurement of the GPS III system will occur in multiple blocks, with the initial GPS IIIA contract awarded in May 2008. GPS IIIA includes all of the GPS IIF capability plus a 10-fold increase in signal power, a new civil signal compatible with the European Union's Galileo system, and a new spacecraft bus that will support a graceful growth path to future blocks. The next generation control segment (OCX) for GPS III contract was awarded on February 25, 2010, and is on-track to be in place to support the first GPS IIIA launch, as well as continue to support the legacy GPS satellites. Finally, development of Military GPS User Equipment (MGUE) continues with technology maturation of modernized receiver cards that will take advantage of the increased capability of GPS IIIA including a stronger and more secure M-code signal.

#### *Weather*

The Defense Meteorological Satellite Program (DMSP) continues to be the Nation's workhorse for terrestrial forecasting and space environmental sensing. DMSP Flight 18 was successfully launched in October 2009. We have two DMSP satellites remaining with Flight 19 and 20, and they are currently undergoing a Service Life Extension Program (SLEP) to repair, replace, and test components that have exceeded their shelf life. Flight 19 will launch in October 2012 and Flight 20 will launch in May 2014 or October 2016, depending on operational requirements.

On February 1, 2010, the Executive Office of the President restructured the National Polar-Orbiting Operational Environmental Satellite System (NPOESS) program to assign responsibility for each of the three planned orbits to the agency holding the majority of the interest in that orbit. Accordingly, the Department of Commerce will populate the afternoon orbit, the Department of Defense (DOD) will populate the early morning orbit, and the U.S. Government will continue to rely on capabilities from our European partners for the mid-morning orbit. For the morning orbit, DMSP satellites will continue to ensure weather observation capability. The DOD, in cooperation with partner agencies, will conduct a short requirements analysis for the morning orbit to serve as the basis to restructure the program in fiscal year 2011. While this analysis is conducted, DOD will work closely with the civil agency partners to ensure efforts to ensure continuity of the afternoon orbit continue productively and efficiently.

#### *Operationally Responsive Space*

ORS is focused on meeting the urgent needs of the Joint Force Commanders using a combination of existing, ready to field, and emergent systems. This program builds on the “back to basics” approach we have cultivated over the past several years by

providing enhanced mission capability through incremental blocks of small satellites and integration of other responsive space capabilities. Key tenets of the ORS program are to keep costs low, react rapidly to urgent warfighter needs, and reconstitute capability in contested environments. A clear example of these tenets is exemplified in the first ORS operational satellite (ORS-1), scheduled to launch at the end of 2010. It is being built for U.S. Central Command (CENTCOM) to monitor denied areas and will be taskable like other CENTCOM organic airborne ISR assets.

In the fiscal year 2011 budget request, ORS will continue to develop the enabling infrastructure of on-demand space support with Rapid Response Space Capability, whereby plug-and-play spacecraft will be assembled, integrated, and tested with Modular Open System Architecture (MOSA) payloads, spacelift, satellite control, and data dissemination capabilities. Tactical Satellite 3 (TacSat-3), launched in May 2009, demonstrated this “plug and play” modular, low cost spacecraft with a hyperspectral imaging payload. TacSat-3 provides a new capability for strategic and tactical reconnaissance from space, and continues to successfully provide military utility as a technology and test asset.

#### *Launch*

National Space policy requires assured access to space. Currently this requirement is satisfied by the Evolved Expendable Launch Vehicle (EELV) program consisting of the Delta IV and Atlas V launch vehicles. The first 30 EELV launches have all been successful, and are part of our consecutive string of 64 successful national security space launches. Efficiencies are achieved through combined engineering, production, and launch operations while maintaining the separate Delta IV and Atlas V families of launch vehicles for assured access. The fiscal year 2011 budget request funds EELV launch capability (ELC), or infrastructure activities and ongoing support for over eight launch services planned for 2011. In addition, we request funding for three EELV launch vehicles which will launch in 2013. We combined the two launch vehicle families into the United Launch Alliance (ULA), resulting in some cost savings due to labor reductions and facility consolidations; however, launch costs are still rising. Factors contributing to rising launch costs are the depletion of inventory purchased in prior years, reduced number of annual buys increasing unit costs, and a deteriorating subcontractor business base without commercial customers. These industrial base factors will also be affected by the decision to replace NASA’s Constellation program with a new, more technology-focused approach to space exploration, which will likely reduce the customer base for solid rocket motors and potentially increase demand for liquid engines and strengthen the liquid-fuel rocket industrial base. We have initiated several efforts to examine the severity of these business base issues and identify potential mitigation steps.

#### *Space Protection*

The need for increased space protection of our space assets is paramount, and requires enhanced Space Situational Awareness (SSA) capabilities and a legitimate battle management system. We need improved accuracy, responsiveness, timeliness, and data integration to support the warfighter. Our fiscal year 2011 budget request continues development of the Joint Space Operation Center (JSpOC) Mission System (JMS) to provide this capability and replace our aging mission systems. The JMS program will provide a single, theater-integrated, command and control, information technology system to allow informed and rapid decisions with real-time, actionable SSA. An operational utility evaluation effort will deliver the foundational infrastructure and mission applications to deploy a services-oriented architecture (SOA) with user defined applications

The JSpOC is our single focal point for monitoring space activity. Over the last year, the JSpOC has transitioned the Air Force’s commercial and foreign entities (CFE) pilot effort into U.S. Strategic Command’s (USSTRATCOM) SSA sharing program. This involved growing the capability to monitor and conduct conjunction assessments for all U.S. Government, commercial, and foreign active satellites, over 1,000 systems. As a result, the SSA sharing program screens for collisions daily, and has a formalized information sharing process that reports potential conjunctions to commercial and foreign satellite owners and operators.

The Space Fence and Space-Based Space Surveillance (SBSS) are two programs critical to providing increased SSA data. The Space Fence is a three station, world-wide, radar system to detect and track smaller sized space objects, while the SBSS satellite is an optical system to search, detect, and track objects in earth orbit, particularly those in geosynchronous orbit. The Space Fence replaces the Air Force Space Surveillance System (AFSSS), and SBSS builds upon our success with the Space Based Visible (SBV) technology demonstration. In the fiscal year 2011 budget, the industry teams working on the Space Fence program will complete a Prelimi-

nary Design Review, and the SBSS program will conduct on-orbit operations of the SBSS Block 10 satellite, planned to launch this summer. Additionally, we will continue efforts toward a SBSS follow-on by completing the acquisition strategy and conducting a full and open competition.

*Air Force Management of Space*

The Secretary of the Air Force recently directed a review on Headquarters Air Force management of space responsibilities. Since the Air Force's last reorganization of space management following the 2001 Space Commission, events and new authorities have changed how responsibilities were assigned. This study will assess the impact of those changes for planning and programming, acquisition, oversight, and coordination with other DOD components and agencies.

The Air Force Acquisition Improvement Plan serves as the strategic framework for re-instilling excellence in space systems acquisition. This plan focuses on workforce, requirements generation, budget discipline, source selections, and clear lines of authority. Additionally, the plan builds on our "Back to Basics" philosophy, and leverages enduring principles from over 50 years of space acquisition experience.

The Air Force is committed to providing the best possible education, training, and career development to these professionals who operate, acquire, and enable our systems. Institutions like the Air Force Institute of Technology, Defense Acquisition University, and the National Security Space Institute are at the forefront of our efforts to educate and train these warriors. These organizations continue to provide the education and training necessary to sustain the space workforce, our most vital asset.

CONCLUSION

Our space systems are the envy of the world. Our infrared surveillance satellites are able to detect missile launches anywhere in the world; no other nation can do that. Our strategic communications systems allow the President precise and assured control over nuclear forces in any stage of conflict, and our wideband SATCOM systems rapidly transmit critical information between the continental United States to our front-line forces; no one else has global, secure, anti-jam communications. Our weather satellites allow us to accurately predict future conditions half a world away as well as in space. Our GPS constellation enables position knowledge down to centimeters and timing down to nanoseconds; no one else has deployed such a capability. These sophisticated systems make each deployed soldier, sailor, marine, and airman safer and more capable.

In the fiscal year 2011 budget, continuity of service across our space portfolio and improved space protection is paramount. Our 'back to basics' strategy over the recent years is demonstrating results, as we continue toward securing the world's best space capabilities today and ensuring the same for our Nation's future.

The space constellations and space professionals that deliver these capabilities are our critical asymmetric advantage. We must ensure the recapitalization and health of these constellations and continue the professional development of our future space leaders. Delivering space capabilities is complex, challenging, costly, yet rewarding. Although we have faced significant challenges, we are also making significant progress. I look forward to continuing to work with this committee and thank you for your continued support of military space programs.

Senator BEN NELSON. Thank you.  
General Kehler.

**STATEMENT OF GEN. C. ROBERT KEHLER, USAF,  
COMMANDER, AIR FORCE SPACE COMMAND**

General KEHLER. Sir, thank you for inviting us.  
I will just make a couple of quick remarks.

First of all, as an airman, I have to note that, earlier today, over in the Capitol Visitor Center, the Congressional Gold Medal was awarded to the Women Air Force Service Pilots (WASPs) from World War II fame. I would just note that at the beginning of the hearing here. I'll paraphrase, our Secretary of the Air Force, Michael Donley, by saying that "we have a better Air Force today, because of the service that the WASPs gave, and the groundbreaking work that they did for all of us."

Regarding space, it's a real pleasure for me to be representing the 46,000 men and women of Air Force Space Command (AFSPC). It's a mixed group of Active Duty folks, it's Air National guardsmen, it is Air Force reservists, it is government civilians, and it is a key contractor team. Without that entire team, we would not be able to do the job that we are doing.

Everything that we do in our command begins and ends with the needs of the Joint Force commanders or the needs of the civil population or, in the case of GPS, that's really now a set of needs that we see from all over the world, and we take that responsibility very, very seriously.

We like to say, around our command, that space and cyberspace capabilities provide something important for our Joint Forces; they provide them with the ability to see with clarity, communicate with certainty, navigate with accuracy, strike with precision, and operate with assurance. That's a tall order for us. It's one that we take seriously and that we are proud to provide on behalf of the Joint Force.

The capabilities that we provide today are woven through the fabric of the Joint Force, and they're woven through our daily lives. Farmers in Nebraska, of course, are, today, navigating their fields using GPS and other space products that they receive. This has become a way of doing business, certainly in the United States and elsewhere around the world.

So, that means that as space is becoming more congested and contested, we have to be more mindful of ensuring that those capabilities are available when they're needed.

That leads us to a space protection program that we've been very aggressive with over the last couple of years, along with our partners at the National Reconnaissance Office (NRO). I think we're making good progress there, and I'd be happy to talk about that further as we go along.

Then, finally, I would just offer, sir, I would agree with you completely, that we have turned some very important corners, but there is also no question that we have some very tough challenges ahead. I would offer my thanks to the committee, the leadership of the committee, the members of the committee, who have spent quite a bit of time, over the last several years, number one, being patient with us, and number two, doing your own homework in understanding these issues and being very helpful as we worked our way through some tough issues.

I look forward to your questions, sir.

Senator BEN NELSON. I have to say, General Kehler, before we go to General James, you'll have to decide whether they were patient or acquired the appearance of patience. [Laughter.]

[The prepared statement of General Kehler follows:]

PREPARED STATEMENT BY GEN. C. ROBERT KEHLER, USAF

INTRODUCTION

Mr. Chairman, Senator Vitter, and distinguished members of the subcommittee, it is an honor to appear before you today as an airman and as the Commander of Air Force Space Command (AFSPC).

I am proud to lead and represent over 46,000 Active Duty, Air National Guard (ANG) and Air Force Reserve Command (ARC) airmen, government civilians, and contractors who deliver space and cyberspace capabilities to U.S. Strategic Com-

mand (USSTRATCOM), Joint Force Commanders, and myriad other users every minute of every day. The men and women of AFSPC accomplish their mission from “deployed in place” locations across all 50 States, 3 territories, and Washington DC, while simultaneously serving from forward and deployed locations around the globe.

We have completed an exciting and historic transitional year in AFSPC. In May 2009, we became the Air Force’s (AF) lead Major Command (MAJCOM) for cyberspace, and in August, we established a new Numbered Air Force, 24th Air Force, as the AF cyberspace operational component to USSTRATCOM. In response to direction from the Secretary of Defense, 24th Air Force has been designated Air Force Cyber (AFCYBER) to become the AF Component to U.S. Cyber Command, when approved. As we assumed responsibility for cyberspace, we transferred responsibility for the Nation’s Intercontinental Ballistic Missile force to the new Air Force Global Strike Command (AFGSC) in December. The Air Force’s top priority of reinvigorating our nuclear enterprise remains the number one goal of AFSPC.

Space and cyberspace capabilities shape the American approach to warfare, are embedded in an ever-more effective arsenal of modern weaponry, and are threaded throughout the fabric of joint operations. Our integrated space and cyberspace capabilities provide access, persistence and awareness. Through networks, we put the power of a large force in the hands of smaller forces that operate on a distributed battlespace, across all domains and sometimes across different continents. Space and cyberspace capabilities also enable vital civil and commercial activities, including financial transactions, the electrical grid, mass transit operations, personal navigation, cellular communications, emergency services and better farming and fishing operations.

At AFSPC, everything we do begins and ends with the Joint Force Commanders’ needs, and our measure of merit is how well we contribute to joint operations. Our mission is to provide an integrated constellation of space and cyberspace capabilities at the speed of need, and our vision is to be the leading source of those capabilities in the years to come.

#### THE WAY FORWARD

Joint Force Commanders today increasingly rely on space and cyberspace capabilities to enable vital effects across the spectrum of operational needs: irregular warfare, near peer competition, global assessment, and crisis management. Whether conducting combat operations or humanitarian relief efforts, they are facing security challenges that are diverse and dispersed, and an operational environment that is uncertain, contested, and changing. Emerging threats can be fleeting, anonymous, and distributed globally; they may strike anywhere at any time, increasingly taking advantage of the space and cyberspace domains.

In response, AFSPC is pursuing five primary goals: reliable and safe nuclear forces; assured combat power for the joint fight; professionalism and expertise; modernization and sustainment; and better acquisition.

*AFSPC Goal: Guarantee a Safe, Credible, Ready Nuclear Deterrent Force with Perfection as the Standard*

The Air Force moved aggressively to reinvigorate the nuclear enterprise by consolidating all strategic nuclear forces under the AFGSC Commander, by aligning all nuclear weapons sustainment and support under the Air Force Nuclear Weapons Center, and by working to expand our nuclear experience and expertise. The transfer of 20th Air Force’s three nuclear capable missile wings to AFGSC marked a new chapter in the long, proud history of our nuclear deterrent force. We remain committed to ensuring a safe, credible, ready deterrent force with perfection as the standard. AFSPC will continue to provide personnel, logistics, operations and fiscal support to AFGSC through fiscal year 2010.

*AFSPC Goal: Deliver Assured Combat Power to the Joint Fight*

AFSPC delivers combat power that allows joint forces to navigate with accuracy, see with clarity, communicate with certainty, strike with precision, and operate with assurance. To do this, our airmen acquire, launch, operate, and protect U.S. and allied spacecraft, keep watch on adversary activity, and assure the cyberspace mission. As Joint Force Commanders rely on AFSPC-provided capabilities, the Air Force has requested approximately \$11 billion in the Space Virtual Major Force Program, through the fiscal year 2011 PB to field and sustain leading-edge space capabilities. In addition, approximately \$3 billion will transfer to AFSPC in fiscal year 2011 to grow cyberspace professionals and provide integrated cyberspace capabilities to Joint Force Commanders.

*Overseas Contingency Operations (OCO)*

In 2009, we forward-deployed more than 2,500 AFSPC Airmen to various locations around the globe in support of combat operations. Approximately 2,100 deployed to the U.S. Central Command (CENTCOM) Area of Responsibility (AOR) in support of Operations Enduring Freedom, Iraqi Freedom, and Joint Task Force-Horn of Africa. During these operations, 45 AFSPC airmen were awarded Bronze Stars and two received Combat Action Medals.

Our humanitarian operations are also continuing. AFSPC is supporting disaster relief efforts during Operation Unified Response in Haiti. Precise GPS position and timing data, satellite communications, and real-time weather services, for example, help the Joint and multi-national disaster relief team with command and control, search, rescue, and mobility operations, and they distribute sharable situational awareness. Airmen from the 689th Combat Communications Wing, Robins AFB, GA, established critical network and communications infrastructure supporting thousands of humanitarian aid flights. In addition, airmen of the 67th Network Warfare Wing from Lackland AFB, TX, are integrating the mission critical networks of U.S. Government agencies in support of relief efforts.

The fiscal year 2011 budget request will allow us to continue this legacy of service by enhancing the protection of our space systems and cyberspace networks; improving Space Situational Awareness (SSA); assuring availability of launch; preparing to exploit new Overhead Persistent Infrared (OPIR) capabilities; increasing GPS navigational accuracy, availability, and signal security; modernizing military satellite communications (MILSATCOM); and enhancing our cyberspace posture and operations.

*Space Protection*

In its first full year of existence, the Space Protection Program (SPP) delivered a comprehensive compilation of space system capabilities and interdependencies to our Nation's key operations centers. This history-making "first" moved us closer to our goal of integrated space system protection for military, intelligence, civil, commercial, and allied space systems vital to our national security. Through SPP, we have developed a future vision to assure our space capabilities and are evaluating the architecture's effectiveness through the Schriever War Game Series. On the strategic policy front, SPP personnel delivered the first Space Protection Strategy, supported the Quadrennial Defense Review (QDR), and are contributing to the development of the new National Space Policy and Space Posture Review (SPR).

*Space Situational Awareness*

In concert with the SPP initiative, we continued to improve our SSA capability as the space domain becomes an increasingly contested, congested and competitive environment. The collision between an Iridium communications satellite and a Russian Cosmos communications satellite a year ago highlights the critical need for improved SSA. To posture our Nation for the future, AFSPC is filling critical SSA gaps with complementary programs to enhance our capability to detect, track, and identify smaller objects from low Earth orbit out to the geosynchronous belt. Modernizing and sustaining existing sensors greatly contribute to SSA capability. Complementary systems like the Space Based Space Surveillance system, Space Fence and the Space Surveillance Telescope (in cooperation with DARPA), will give us additional capacity to search and track more on-orbit objects, improve our ability to predict potential collisions, provide safety of flight, and rapidly track and catalogue new foreign space launches.

Additionally, we are making sure that the USSTRATCOM Commander will have better C2 and SSA capabilities by combining three programs for the Joint Space Operations Center (JSpOC): Integrated Space Situational Awareness (ISSA), Rapid Attack Identification and Reporting System (RAIDRS) and Space C2. The effort, named "JSpOC Mission System (JMS)," is under development using a streamlined requirements and acquisition approach.

Along with implementing capability solutions, we refined our tactics, techniques and procedures to reduce the possibility of future collisions. Through JSpOC SSA efforts, our ability to predict collisions increased 100 fold to include all active satellites, and now we conduct over 1,000 assessments per day. As a result, there have already been 56 instances where owner-operators maneuvered their satellites to avoid possible collisions.

In addition, on 22 December 2009, we transferred the Commercial and Foreign Entities (CFE) pilot program to USSTRATCOM, with operational responsibility continuing at the JSpOC. Not only do we provide conjunction analysis for capabilities critical to national security and homeland defense, but also we expanded our services to provide positional data to over 40,000 users and a number of partner nations.

*Launch and Range Enterprise Transformation (LET)*

It is our job to deliver assured space and cyberspace capabilities, and we can only do that if we have assured access to space. We now mark a full decade of successful national security space launches and over 7 years of successful Evolved Expendable Launch Vehicle (EELV) launches. We must maintain that perfect record: launch failures are too expensive, in money and lost capability. LET is our effort to make sure that success will continue, and it involves four major efforts: (1) transforming launch services acquisition, (2) upgrading range capability, (3) fully leveraging ARC and the ANG, (4) improving business practices to better support commercial providers.

As part of the launch services acquisition effort, we continue to look for ways to make EELV more cost-effective by working with the NRO and NASA for block buy opportunities. We are also defining “new entrant” criteria as part of our overall approach to space launch. We cannot neglect technology development; we are preparing a new reusable first stage demonstration and are pursuing technology for a new reusable rocket engine.

Launch services will also be affected by the recent announcement cancelling NASA’s Constellation program. Our initial steps will ensure that the industrial base interdependencies between EELV and other launch systems are considered to support a viable national launch industrial base.

The effort to upgrade range capability has been long in coming; our range infrastructure has been increasingly unsustainable and, unless addressed, will impose costly delays on national security, civil, and commercial launches alike. Our national space launch and weapon system test and evaluation capabilities demand a flexible range architecture. To address these demands, we are divesting redundant instrumentation while modernizing and increasing the reliability and availability of essential range assets. In addition, our future range design incorporates a telemetry-based architecture with an integrated GPS metric tracking capability.

*Position, Navigation, and Timing (PNT)*

The Global Positioning System (GPS) continues to provide highly accurate position and timing signals that enable highly precise Joint combat operations worldwide. GPS is also a free utility serving as an enabler for economic transactions and influencing the global economy by more than \$110 billion annually. We at AFSPC, the Air Force, and the Department of Defense do recognize and embrace our special responsibility to maintain GPS as the “gold standard” for space-based PNT.

We continue to modernize the system and are developing and fielding a more robust, taskable, third-generation GPS satellite which will provide improved operational capabilities to military and civil users. In 2009, we launched the last two GPS Block IIR–M satellites, and for 2010 we continue preparations to launch, deploy, and operate the first GPS Block IIF satellites. For civil users, these new Block IIF satellites will broadcast the first operational signals in the L5 frequency band, which is protected by internationally recognized spectrum rules to ensure robust service quality for safety-of-life applications, such as aircraft all-weather approach and landing. In addition, we are building the first increment of eight GPS III satellites and a new Next Generation Control Segment (OCX). Together, GPS III and OCX will improve user collaboration, incorporate an effects-based approach to operations, and establish a net-centric architecture accelerating the mission application of position and timing information.

Recognizing the joint team’s constant demand for enhanced GPS capabilities in geographically challenging areas where terrain can degrade GPS signal coverage, we partnered with USSTRATCOM and developed a plan called “Expandable 24.” This approach not only benefits military operations in places like Afghanistan, but all GPS users around the world, by taking advantage of the largest on-orbit GPS constellation in history. Over the next 2 years, we will gradually reposition GPS satellites to increase the number of satellites in view, thereby improving availability and accuracy worldwide.

We continue to develop Military GPS User Equipment (MGUE) to exploit the features of our new GPS satellites and control segment features. A key aspect of MGUE is the development of a common GPS module facilitating easy integration of GPS solutions into multiple platforms. Overall, our GPS enterprise efforts maintain the highest service performance levels to the civil community while transforming and modernizing GPS into a robust, taskable system tailored to meet unique military needs in today’s operational environments.

*Satellite Communications (SATCOM)*

The Joint Force Commanders rely on military and commercial SATCOM (especially in austere environments) to communicate securely and receive data, imagery,

and full motion video from Remotely Piloted Aircraft. Those services will depend heavily on our Wideband Global SATCOM (WGS) system. Mission operations began last August with the second WGS (WGS-2) satellite, positioned over the Southwest Asia AOR, and it is now delivering ten times the capability that we had with the legacy Defense Satellite Communications System (DSCS). Last December we launched the third WGS (WGS-3) which is being positioned over the EUCOM and AFRICOM AORs.

The demand for wideband MILSATCOM capability never slows, and so we have requested \$595 million to continue production of WGS-4 & 5 and procurement of WGS-7. Later this year we expect to accept and launch the first Advanced Extremely High Frequency (AEHF) satellite, a new system that will increase the protected communications data rate more than 5-fold and provide more coverage opportunities than Milstar. The end result will be enhanced national command and control satellite networks for the President, Secretary of Defense, and combatant commanders. Meanwhile, we are evaluating the right strategies to evolve future MILSATCOM capabilities to support COCOM requirements.

#### *Overhead Persistent Infrared (OPIR)*

Only from space can we be assured of comprehensive missile warning and missile defense information. The first two Space Based Infrared System (SBIRS) Highly Elliptical Orbit-1 (HEO-1) and HEO-2 payloads provide our Nation with comprehensive missile warning and missile defense data. This critical information in the hands of warfighters, particularly in contested areas and where no other assets are available, is invaluable. Furthermore, Congress added \$13.8 million in fiscal year 2010 for exploitation initiatives providing Joint Force Commanders with advanced Battlespace Awareness and Technical Intelligence.

While the Joint Force Commanders benefit from the advanced SBIRS HEO detection and data exploitation efforts, we requested \$530 million for the SBIRS Geosynchronous Earth Orbit (GEO) development program. As part of our OPIR portfolio, the SBIRS GEO payload will provide enhanced detection and data processing capabilities to the warfighter and the Intelligence Community. Recognizing a significant achievement, the first SBIRS GEO (GEO-1) space vehicle successfully completed Thermal Vacuum (TVAC) testing and is undergoing subsequent flight hardware replacement and software qualification. We look forward to final launch readiness and delivery to meet GEO-1 launch in 2011.

#### *Space Control*

As we enter the 19th year of continuous combat operations in the Persian Gulf, AFSPC continues to provide sustained defensive counterspace capability to USCENTCOM. We are in our sixth year of continuous presence in theater with Silent Sentry which provides critical electromagnetic interference detection and geolocation tools and highlights the need for a global capability.

As part of evolving our support to the Joint fight, we are developing and fielding a follow-on system, RAIDRS Block 10 (RB-10). RB-10 is integrated as part of JMS and will provide transportable ground systems located around the world. In addition, the RB-10 capability will route SATCOM interference detection and geolocation data to the JSpOC thereby helping us protect military communication channels.

#### *Operationally Responsive Space (ORS)*

The ORS program is exploring ways in which the urgent needs of Joint Force Commanders might usefully be addressed, and AFSPC works with the ORS office on projects involving communications, SSA, surveillance and reconnaissance. For example, TacSat-3 was launched on 19 May 2009, as an experimental system designed to demonstrate the military utility of a small satellite, taskable by a tactical user in the field to search and collect specific hyper spectral images and downlink the results directly to deployed ground units. We are assessing the utility of transitioning TacSat-3 to a residual DOD-operated reconnaissance system upon completion of its experimental period in May 2010.

Later this year another ORS satellite, the ORS-1, should begin providing multi-spectral imagery of regions selected by ground force commanders. Existing ground systems will process and distribute the resulting images, and this development should also help inform a multi-mission modular approach that might prove useful in the future.

#### *Space Weather—National Polar-orbiting Operational Environmental Satellite System (NPOESS)*

On 1 February 2010, the Executive Office of the President directed a major restructuring of the NPOESS program, whereby procurement of the system will no

longer be joint. NOAA and NASA will take primary responsibility for the afternoon orbit, and the Air Force will take primary responsibility for the morning orbit. As we work through this transition, we will continue to foster our longstanding productive partnerships with NOAA and NASA, by sharing data, coordinating user needs and operating satellites.

*AFSPC Goal: Forge a Battle-Ready Team by Attracting, Developing and Retaining America's Best*

AFSPC will continue to be a leader in attracting, developing and retaining Airmen and civilians with the professional skills needed to succeed. Recognizing the critical roles of our families, we continue to extend the wingman culture to help nurture success on the home front. During 2010–2011, we will improve training and professional development programs; refine career paths and take necessary steps to care for our Airmen and their families.

#### *Developing Airmen*

Over the past year, we integrated space education and training into mainstream Air Force processes to enhance professional development and ensure continued sustainment. This construct equips our space professionals with a sound foundation at Undergraduate and Initial Qualification Training, expands their operational and strategic perspective of space through Space 200 and 300 continuing education and adds tailored advanced operational training at subsequent career milestones. Our programs have now developed over 13,000 space professionals who are experienced in today's real-world and combat operations.

Since my last appearance before your subcommittee, we worked with Air Education and Training Command (AETC) to restructure the National Security Space Institute (NSSI). In essence we created two complementary space academic organizations. The new NSSI is focused on "graduate level" continuing education and is now aligned under Air University, charged with specific responsibility for Air Force-wide Professional Continuing Education (PCE). AFSPC retained responsibility for advanced operational system training, fundamentals courses and pre-deployment training, now provided by the Advanced Space Operations School (ASOpS). Together the NSSI and ASOpS are the premier focal points for advanced space education and training, providing instruction to 1,728 students in 2009 including students from the Air Force, Army, Navy, Marine Corps, civil service and allied partners. This year, we will begin construction on a \$19.9 million facility housing both schools on Peterson AFB, CO.

We are carefully crafting a similar force development approach for our cyberspace professionals. Equipped with the vision outlined in "The Air Force Roadmap for the Development of Cyberspace Professionals," and the experience gained by our Space Professional Development Program, we are building a parallel career development model for cyberspace. The goal is to ensure that cyberspace professionals have the proper academic credentials, the right training and education and requisite experience to establish, protect and leverage this critical domain. This year AETC will open the doors to Undergraduate Cyber Training (UCT) courses for the newly established Cyberspace Operations officer specialty and the Cyberspace Defense Operations and Cyberspace Support enlisted specialties.

Missions conducted in and through the cyberspace domain will require Airmen with specific technical education and network-savvy aptitude. Working with academia and industry partners, we have defined academic prerequisites for cyberspace accessions, and are addressing the challenge in identifying and recruiting such people. To do this right, we need effective, innovative recruiting strategies and meaningful incentives to attract and retain cyberspace professionals.

In addition to UCT, we are working with Air University and the Air Force Cyberspace Technical Center of Excellence to establish Cyber 200 and 300 courses along with advanced operations courses for cyberspace professionals. Course curricula are under development and we expect to teach classes on an interim basis in October 2010 with a permanent approach in place in fiscal year 2012.

#### *Families and Quality of Life*

The year 2010 is the "Year of the Air Force Family." In AFSPC, we recognize the sacrifices and contributions of our families by extending our wingman culture and emphasizing suicide prevention, safety and family support. In addition, we are working to attract and retain our Airmen and their families by providing quality housing and enhancing the sense of community on our installations.

AFSPC significantly improved mission capabilities and the quality of life for its Airmen and their families in 2009 by investing \$453 million on over 700 projects to sustain and modernize facilities, infrastructure and housing. We also executed \$149 million of American Recovery and Reinvestment Act funds on another 280

projects to improve our working, living, and recreational environments. The combined \$602 million was invested in areas to include housing, dormitories, a new child development center, fitness centers, community activity centers, launch and nuclear mission facilities; and electrical, heating/air conditioning, water and road infrastructure. For 2010, we will invest \$118 million in MILCON projects for a child development center, facilities construction, and key projects across AFSPC.

*AFSPC Goal: Modernize and Sustain AFSPC's Enduring Missions and Mature Emerging Missions*

As the Air Force lead for cyberspace, AFSPC will provide cyberspace capabilities that, when integrated with air and space capabilities, enable combat effects in a new way. As we have done with our space capabilities, we will establish a path to grow cyberspace operations, education, training, and development. We will also identify specific areas to draw on the combined resources of the ANG, ARC, and government civilians. Our plan is laid out in the "The United States Air Force Blueprint for Cyberspace," which we will use in working closely with our Joint fight partners to provide complementary capabilities. The blueprint describes how we will align cyberspace activities and functions, evolve and integrate these unique capabilities, and build operational capacity. We must ensure that we can both defend against attacks and "fight through" and respond to attacks, in order to assure mission accomplishment.

The newly activated 24th Air Force serves as the Air Force's operational cyberspace component to USSTRATCOM and is charged to integrate, employ and present Air Force cyberspace capabilities. Structured pursuant to direction from the Secretary of the Air Force and Air Force Chief of Staff, the 24th Air Force achieved Initial Operational Capability (IOC) a few weeks ago (22 January 2010).

*Total Force*

In 2009, AFSPC continued to leverage ARC support to AFSPC missions. Our Total Force Integration (TFI) Strategy capitalizes on existing ARC presence and inherent strengths of the Reserve and Guard components. As we stood up 24th Air Force, our TFI partnerships played a key role in our success. Across AFSPC, our ARC partnerships in satellite and launch range operations, SSA, and battlespace awareness provide critical continuity and surge capacity. We are also preparing to increase ARC presence in missile warning, space control, and cyberspace operations.

*Schriever War Game Series*

The recurring Schriever War Game series has proven insightful in identifying key strategic and policy issues. At the end of our fifth Schriever War Game in March 2009, we addressed key issues involving space deterrence, capability employment, and policy implementation and planning with senior leaders throughout the national security community. This war game also identified areas requiring additional emphasis and highlighted the close relationships between space and cyberspace capabilities, and informed our strategic development efforts in both the QDR and SPR. We are now preparing for this year's wargame and look forward to increased international and industry participation.

*AFSPC Goal: Reengineer Acquisition to Deliver Capability at the Speed of Need*

No one doubts that we need to push relentlessly to improve acquisition. Our vision is to provide what the Joint Force Commander needs, when he needs it—capability at the speed of need. We have far to go, but recent successes show that we are on the right track. As mentioned earlier, in the past year we increased on-orbit capability with GPS IIR-20M and 21M, DMSP-18, WGS-2, and WGS-3. We are on track to deliver new capabilities as we have completed a GPS III Preliminary Design Review as well as GEO-1 and AEHF SV-1 TVAC testing.

We will continue to pursue our "back to basics" philosophy and block-build approach, fund to the most probable cost, increase our acquisition workforce and expertise, improve relations with industry, and implement strict requirements control. Our Space and Missile Systems Center will deliver five major systems in the next 24 months for SBIRS, AEHF, GPS IIF, ORS-1 and SBSS. The GPS III, OCX and Space Fence development programs are on the right track.

As we reengineer acquisition processes, we are focusing efforts to rebuild the acquisition workforce and strengthen relationships across Industry and DOD. In an effort to recapture acquisition excellence, the USAF implemented an Acquisition Improvement Plan (AIP) to revitalize the acquisition workforce; improve requirements generation processes; instill budget and financial discipline; improve major systems source selections; and establish clear lines of authority and accountability within organizations. Overall, the AIP increases accountability at higher leadership levels, in-

creases communication between MAJCOMs and between product centers and MAJCOMs.

Furthermore, we implemented a Human Capital Strategic Plan to recruit, develop and retain acquisition expertise. As part of the recruitment effort, we are developing and marketing a recruitment strategy that targets individuals with the desired education, experience, and skill sets. Taking advantage of favorable job market conditions and expedited hiring authorities, we hired over 300 recent college graduates.

#### CONCLUSION

Space and cyberspace capabilities allow warfighting commands to meet the challenge of protecting the American people, their livelihoods and interests with precision at the moment of need. At AFSPC, our vision, our mission, our job, and our dedication is to make sure those commanders have the very best capabilities that we can humanly provide. With the continued support of Congress, we will be able to assure that our country will have the space and cyberspace forces it needs tomorrow and in years to come.

Senator BEN NELSON. Thank you very much.  
General James.

#### **STATEMENT OF LT. GEN. LARRY D. JAMES, USAF, COMMANDER, 14TH AIR FORCE, AIR FORCE SPACE COMMAND, AND COMMANDER, JOINT FUNCTIONAL COMPONENT COMMAND FOR SPACE, U.S. STRATEGIC COMMAND**

General JAMES. Mr. Chairman, again, thank you for the opportunity to be here again this year.

As the Commander of Joint Functional Component Command (JFCC) Space and 14th Air Force, I represent over 20,000 men and women around the world who really are responsible for conducting operations for all of our Department of Defense (DOD) space systems. Whether that's satellite systems, whether that's our missile warning systems, whether that's space surveillance systems, or our launch systems, these are the men and women that actually execute those operations and make sure that we get the job done, day in and day out—as General Kehler said, both for the military, the Joint Forces commander, and all the civil users and other users around the world that rely on the products we provide.

Sir, we have a great task in front of us, but these men and women execute that mission every day, and they provide the support that the world needs from a space perspective.

I look forward to your questions.

[The prepared statement of General James follows:]

#### PREPARED STATEMENT BY LT. GEN. LARRY D. JAMES, USAF

Mr. Chairman, Ranking Member Vitter, and distinguished members of the subcommittee, I am honored to be here once again to appear before you as U.S. Strategic Command's (USSTRATCOM) Commander of the Joint Functional Component Command for Space (CDR JFCC SPACE) and 14th Air Force.

It's an honor for me to represent the soldiers, sailors, airmen, and marines of JFCC SPACE who operate and protect some of our Nation's most critical systems for global communications, navigation, strategic warning, and situational awareness. These men and women are a tireless and innovative joint force, working hard to ensure critical space capabilities are available 24 hours a day, 365 days a year, for our global forces. We operate in an increasingly congested and contested environment and ensuring access to all our Department of Defense (DOD) space capabilities for worldwide users is an absolute priority.

Today I will focus my discussion on the space operational environment and how it's changed over the last year. I'll describe our priorities of Warfighter Support, Command and Control, Integration, and Readiness and then close with a look at new challenges we see in the months and years to come.

## FRAMING THE OVERALL ENVIRONMENT

Space continues to be the ultimate “high ground” from which to operate. Every military operation utilizes space capabilities in some way. Whether it's the Global Positioning System (GPS), overhead imagery, secure communications, or meteorological reports, ground and air commanders rely upon space capabilities constantly. However, space is becoming an increasingly congested and contested environment. As of 1 February 2010, the operators at the

Joint Space Operations Center (JSpOC) track approximately 21,500 objects on orbit. That is an increase of 1,700 from just last year. There are nearly 10,000 pieces of debris, 3,700 dead satellites and rocket pieces, and 6,800 unknown objects orbiting the Earth. Included in these objects are over 1,100 active satellites owned by more than 60 different countries and corporations. As the environment continues to grow in its complexity, our need for real-time space situational awareness (SSA) is becoming more obvious. Our ground sensors are critical elements of our Space Surveillance Network (SSN) dedicated to watching the skies and keeping track of all space objects. Across the globe, we have dedicated radar and optical sensors. These sensors track thousands of objects every day and automatically upload their observations to a computer database. These sensors cannot cover all of the sky all the time, so to enhance coverage, we have more collateral and contributing sensors. These sensors are used for space tracking when not supporting in their primary mission. All orbital observations come together in the JSpOC at Vandenberg AFB, CA, for analysis and computational predictions.

Sensors and computers cannot discriminate between active satellites and debris among the thousands of objects on orbit. That's where our most crucial component of JFCC SPACE comes in—its people. There are more than 29,000 military, civilians, and contractors conducting operations day to day for both JFCC SPACE and 14th Air Force. Our missions demand a continuous 24–7 focus. Members of JFCC SPACE and 14th Air Force live and work in places such as Greenland, Diego Garcia, Kwajalein Atoll, Guam, and Alaska. Such commitment takes the dedication of a Total Force. JFCC SPACE is built of a cadre of marines, sailors, soldiers, and airmen. Of the 7,500 military men and women, more than 1,100 are Air National Guard, Air Force Reserves, and Individual Mobilization Augmentees from all Services. Of these, a relatively small number of people, only about 300, at the JSpOC are the single DOD focal point for monitoring all space activity.

The JSpOC maintains our SSA, provides command and control of assigned forces, and supports all theater forces with space capabilities as needed. SSA is the cornerstone of JSpOC activities. The SSN central mission system is maintained and analyzed at the JSpOC by a collection of military and civilian analysts. These individuals keep track of what satellites are active, predict when pieces of debris or satellites will re-enter the atmosphere, recommend when a payload can be safely launched, and prevent potential satellite collisions. Over the last year, we have grown our JSpOC capabilities to not only monitor and protect DOD satellites, but monitor and conduct collision assessments for all commercial and foreign active satellites as well. After the COSMOS/IRIDIUM collision of 2009, we began increasing our personnel and computing power to allow for collision screening for all active satellites. I am proud to report that we achieved that goal ahead of schedule and now screen for collisions daily and report potential conjunctions to satellite owner/operators through USSTRATCOM's SSA Sharing Program. To date, we have reported hundreds of potential conjunctions, with more than 50 resulting in the owner maneuvering a satellite.

While SSA is the cornerstone of our capability, our number one priority is supporting our deployed U.S. and coalition forces. We've provided more than 20,000 GPS accuracy predictions in the last year, supporting resupply air drops and personnel recovery actions. Space capabilities have aided in the recovery of 128 service men since 2003. We've covered more than 12 air and ground missions with tailored coverage by overhead sensors watching for hostile or insurgent activity within a specific area of concern.

The criticality of space effects to the warfighter will continue to be vital to our Nation's success in ongoing operations. We must protect our space assets against intentional and unintentional acts in order to preserve our essential space capabilities to ensure USSTRATCOM's ability to execute and integrate operations across all lines of operations and provide real-time, actionable data to our joint warfighters, the combatant commanders.

## JFCC SPACE PRIORITIES

To set a clear and unambiguous vision, we established four priorities for JFCC SPACE in late 2008: Warfighter Support, Command and Control, Integration, and Readiness. These priorities set the vector for all our efforts.

## WARFIGHTER SUPPORT

Warfighter Support is our core focus and key factor in determining manpower requirements, technology needs, and operational processes. From launch through operational employment to re-entry disposal, our space capabilities are built around warfighter needs. Launch capabilities remain the foundation of our space program. Over the last year, we've seen a total of 27 successful launches from both Eastern and Western Ranges. Although our launch safety record is exemplary, we are transforming our launch operations to modernize our range safety equipment and streamline our range footprints. Sixty percent of the Western Range systems are being replaced or upgraded over the next 2 years and the Eastern Range command system will receive upgrades during the next fiscal year.

JFCC SPACE directly supports warfighter requests through the JSpOC. Recent direct support for deployed forces includes GPS accuracy, overhead infrared, and Military Satellite Communications (MILSATCOM) support. GPS is the most widely used space capability on the planet. Our forces use GPS for everything from urban foot patrols to Predator flights. We receive requests for GPS accuracy predictions daily through the JSpOC. On average, we send 400 GPS accuracy predictions to forward-deployed forces each week. To enhance coverage to all GPS users, we are repositioning three of our GPS satellites to assist users in terrain-challenged ground environments. The first of our new GPS IIF satellites will launch this Spring and add new capabilities for civilian and military users. GPS IIF will bring a civilian safety-of-life signal and provide a more robust signal availability for military users. To ensure warfighters understand the full capabilities and vulnerabilities of the GPS system, the Joint Navigation Warfare Center (JNWC), a component of JFCC SPACE, maintains an active outreach program with the Combatant Commands (COCOMs), Services, and agencies. The JNWC ensures that Navigation Warfare (NAVWAR) considerations are included across the spectrum of operations, to include COCOM planning, exercises, disaster response, to full conflict.

Overhead Persistent non-Imaging Infrared (OPIR) capabilities have grown beyond providing strategic ballistic missile warning only. Today's OPIR can provide battlefield commanders a wider range of situational awareness of the ground and air environments. We have provided support to ground troops during base exfiltrations to ensure demolition activities were successful. Overwatch of high-priority missions can ensure threats in the area are detected and reported before they cause a problem for the aircraft or ground commander. Consequently, OPIR's traditional mission of ballistic missile detection and warning has seen remarkable increases in integration with intelligence systems. Launch information from multiple agencies flowed into the JSpOC, where operators had direct contact with higher headquarters. However, this operational picture is manually created by JSpOC operators. We need a system that automatically provides this to our operators and leaders.

Technology advancements in overhead detection continue to advance and we are constantly finding new ways to provide better technical intelligence to the ground commanders. The Space-Based Infra-red System (SBIRS) in its Highly Elliptical Orbit (HEO) gives significant coverage over the northern hemisphere for infrared detection and technical intelligence gathering. We can now detect and report, in near real-time, natural, and man-made infrared events. The quality of data provided by SBIRS HEO is a key part in our operators' ability to characterize launches and predict threatened areas within minutes. SBIRS Geosynchronous (GEO) satellites will give us the ability to stare and collect for days and weeks worldwide. We will be able to characterize events that paint a picture for national leadership of new foreign technology development and proliferation information. We will be able to expand our warfighter support beyond the ballistic missile threat to include enemy air defenses, surface to air missiles, and even personnel recovery actions.

Information technologies have truly revolutionized our capability to operate globally. From combat operations to humanitarian assistance, we use MILSATCOM every day. Secure communications allows survivable, joint communications for diplomatic travels through orders dissemination such as Nuclear Force Command and Control. Our Integrated Tactical Warning and Attack Assessment (ITW/AA) dissemination relies heavily on our MILSTAR constellation that is exceeding design life expectations. The new Wideband Global SATCOM (WGS) is performing superbly and is an outstanding replacement to our aging Defense Satellite Communications System (DSCS) fleet. Our WGS system will have over 10 times the capacity of our

DSCS system and provides enhanced information security. WGS gives us automatic Digital Network/automatic Secure Voice Communications, Secret Internet Protocol Router Network and Joint Worldwide Intelligence Communication System access from space. It can also carry Defense Message System, Defense Switched Network, Diplomatic Telecommunication Service Communications, and real-time Unmanned Aerial Vehicle (UAV) video for ground mobile forces. WGS-1 and WGS-2 will be joined by WGS-3 in spring 2010 after operational checkout and acceptance.

Our priority of warfighter support stretches into the theater itself. For each theater's Director of Space Forces (DS4), we maintain a close and dedicated relationship to ensure they have the most relevant information and current operational view of our space capabilities. Quarterly DS4 conferences bring all theater DS4s together to share tactics and insight, as well as allow them to identify new requirements in front of the JFCC SPACE staff firsthand. Our Silent Sentry capability has developed into a premier interference detection tool for satellite communications. The Silent Sentry team monitors all friendly SATCOM for unintentional interference or hostile denial attempts. Additionally, JFCC SPACE maintains in-theater capabilities for counter space activities directly supporting forces in harm's way. Requested support from ground troops flows through the theater Air and Space Operations Center to the JSpOC and execution can occur within minutes of a request.

JFCC SPACE is forging ahead in our efforts to provide new, operationally responsive space effects to the warfighter. We are actively engaged with Air Force Space Command and U.S. Strategic Command in developing the concepts and command relationships that may allow us to transition experimental capabilities to operational use. For example, TACSAT-3 is an experimental, hyperspectral imagery satellite that has shown great promise in areas such as which can be used to support ground troops. At the same time, we are supporting DOD's Operationally Responsive Space concept development with the goal of providing rapid replenishment of space capabilities on the order of days to weeks, not months to years, using deployment-need assets. We are working with our Service partners to finalize and field the command and control architecture for Operationally Responsive Space-1, a purpose-built, small spacecraft that will supply urgently-needed imagery to USCENTCOM and other theater operators.

#### COMMAND AND CONTROL

JSpOC Mission System (JMS) is planned to replace our aging mission systems with a command and control information technology system consisting of infrastructure and mission applications. It will be a service-oriented architecture with the capability of user-defined applications. It will be much more than just a positional catalog. We envision a single, theater-integrated system with intelligence feeds, communications status, integrated missile warning, and status of forces all displayed on one operational picture. We expect it to automate much of what we do by hand today. Instead of the human analysis required in determining that a conjunction may occur, the system will automatically receive updates from sensors and alert operators to potential conjunctions. The operator will only need to confirm the conjunction and alert the owner of the satellite. JMS will be delivered in multiple releases, with Release 0 consisting of the initial Service-Oriented-Architecture infrastructure, due this summer.

SSA has seen the greatest advance in operational utility in its history over the past year. We have increased daily conjunction screening at the JSpOC from 110 primary satellites to over 1,000. With that increase, we have seen conjunction warning notifications increase from 5 to up to 35 per day and our interaction with commercial and foreign space agencies has increased likewise. Information sharing with commercial and foreign entities is now a formalized process within JFCC SPACE. We currently have data-sharing agreements with 16 commercial and foreign partners. However, we still suffer from an aged and limited sensor network to gather our most basic resource, orbital observations. Observations from the SSN are the foundational base of all SSA. Many of our SSN sensors operate on a one-object-at-a-time system and none of them are networked with one another. The CONUS-based space fence can detect and observe multiple objects at one time and contributes more to our network than any other sensor. Additionally, we have considerable gaps in coverage in the southern hemisphere. Objects can be un-observed for a significant period of time while over areas such as Antarctica, Australia, Africa, and South America. Placement of a space fence in the southern hemisphere will improve our coverage considerably. The Space-Based Surveillance System (SBSS) will provide additional sensing capabilities. This sensor will operate from space, free of boundaries, borders, or atmospheric effects to distort or obscure viewing. The first SBSS satellite is scheduled to launch this summer and will be operated by the 1st

Space Operations Squadron in Colorado. SBSS will revolutionize how we observe satellites. With a potential capability to track objects much smaller in size, we will detect more objects in orbit, re-enforcing the need for a replacement SSA analysis system such as JMS.

#### INTEGRATION

As space becomes even more critical to global operations and the access to space expands, it will be more critical than ever to work closely with friends, allies, the commercial space sector, and perhaps all space faring nations. Integration amongst all space agencies within the U.S. Government is essential to safe and effective operations. We continue to improve our linkages with intelligence community partners and build long-lasting, permanent relationships between our organizations. We continue to strengthen an already strong relationship with the National Reconnaissance Office through sharing facilities and permanent liaison positions and partnering during exercises and real-world events. We are working to create a wider relationship between the space and intelligence communities through a data sharing and collaborative information systems. The Joint Exploitation Fusion Cell will fully integrate multiple intelligence sources into one database for operators. This will allow for efficient integration of intelligence data into our assessments and verification of operational successes.

Coalition and commercial integration have taken significant leaps forward over the last year. Cross-Atlantic visits to and from the United Kingdom and France have forged significant relationships and continue the dialog to improve coalition space operations. Australia, Germany, and Japan have all sent delegations to tour the JSpOC and witnessed how we accomplish our missions. Our experiences in coalition exercises have taught us valuable lessons; most notably that threats can come from multiple venues, so it is prudent to act together with our allied and commercial partners. Schriever 5 Wargame impressed upon U.S., Allied, and commercial partners on the importance of relationships with threats in this type of integrated global domain. We will continue to develop partnership processes in Schriever 10 this year. Since the COSMOS/IRIDIUM collision, commercial space operators have realized how much capability JFCC SPACE has to offer protection for their systems. Likewise, commercial users in space maintain some of the most accurate positional information of their own systems. It benefits both sides to share relevant information.

JFCC Network Warfare (NW) is tasked with operating and defending DOD networks under the command and control of U.S. Strategic Command. Cyber and space are inherently linked as effective force multipliers and share similarities in the non-kinetic warfare environment. Our staffs have established continuous linkages as we operate common and complementary capabilities supporting each other as well as global joint forces. We fully recognize the benefits and are sharing tactics, intelligence, and procedures. In many scenarios, capabilities JFCC SPACE lacks, cyber forces can fulfill, and vice versa. Our intelligence, plans, and operations divisions share information and processes to determine where capabilities overlap and they diverge. We have begun collaborative work on new tactics that will deliver new capabilities to theater commanders and will continue to develop linkages between the two components.

Integration across domains, borders, and industries requires a significant investment by those involved. Critical to effective integration are systems and facilities. Today the JSpOC performs its operational mission using a converted missile assembly building. Over 50 years old and designed for an entirely different purpose, the building presents significant challenges towards meeting our integrated space operations mission. Successful integration with U.S. and coalition forces, as well as commercial partners will depend upon facilities designed specifically for space command and control.

#### READINESS

“Perfection is our Standard.” This is our motto within JFCC SPACE and 14th Air Force. The readiness of our forces is a key priority. Without adequate and ready forces, we will fall short of achieving our goals as a joint force. Readiness includes health of the force, training, preparedness, and compliance. Our forces must be healthy and able to fight, trained for the fight, equipped to fight, and compliant with the law of armed conflict and other legal and policy constraints. Within JFCC SPACE and 14th Air Force, readiness issues exist in training and personnel numbers. Our Operational Readiness Inspections and Unit Compliance Inspections are the tools we use to evaluate unit readiness and compliance levels. Within the last 2 years, all 14th Air Force wings have been found compliant and ready, but are still lacking in resources and training to commit to a full-time, warfighting posture for

extended periods. Every new satellite system brings new mission requirements. Acquisition of new missions, while continuing to maintain legacy missions, places more and more requirements on our personnel and hardware systems. Continued modernization of our systems and efficient use of our personnel are absolutely essential to the success of our future operations.

#### CHALLENGES

We will face operational challenges in the space domain as capabilities expand and more nations utilize space systems. Improvement in data management will become increasingly important with the increase in the amount of observations from SBSS. Any future sensors will create even more additional data sources that we will have to integrate into our mission systems. We will continue to be challenged by the acquisition speed of new command and control systems and space capabilities. Off-the-shelf technologies have caught, if not surpassed, some of our own technology. We must acquire new systems, as General Kehler has put, "At the speed of the need". As long as forces are dispersed across the globe, we will have challenges with integrating with the joint warfighter. Multiple information systems across multiple theaters hurt efficiency and delay generation of desired effects for forces. Common information systems and a complete, integrated operational picture will allow commanders in direct and supporting roles to share common battlespace awareness. Advances in space technologies will not slow or end. Our operational environment will continue to grow in complexity as more nations, corporations, and even individuals place smaller and more capable satellites on orbit. Satellites will continue to get smaller and more capable. Our sensor network and mission systems are challenged to keep pace with the expanding orbital environment. Finally, as we venture into discussions with cyber forces, mission requirements will grow and our environment will expand to include the virtual as well. In our fixed-personnel and resource-restrained reality, we will have to find ways to operate more efficiently and effectively.

#### CONCLUSION

Space operations and needs will continue to rapidly evolve. We must continue to search out ways to better support our forces around the globe, especially those in harm's way. We will continue to coordinate with other government agencies to enhance overall support, ensuring the right effect is delivered at the right place at the right time. We will strive to strengthen our relationships with allied space partners, ensuring our global capabilities remain available for those requiring them. Perfection is our standard, and you can be proud of your soldiers, sailors, marines, and airmen that I am honored to lead. I thank the committee for your continued support as we work to preserve our critical space capabilities for our Nation.

Senator BEN NELSON. Thank you.  
Dr. Federici.

#### **STATEMENT OF GARY A. FEDERICI, DEPUTY ASSISTANT SECRETARY OF THE NAVY FOR COMMAND, CONTROL, COMMUNICATIONS, COMPUTERS, INTELLIGENCE, AND SPACE**

Dr. FEDERICI. Chairman Nelson, thank you for the opportunity to appear before you today with Vice Admiral Jack Dorsett to discuss our space programs and space-related activities.

The MUOS is clearly our most critical space program. We have had some challenges, and I think we are looking for a way ahead. We were pleased to submit a report to you last week with some options that may help mitigate gaps in the future and support the on-orbit fragile Constellation.

So, thank you very much.  
Senator BEN NELSON. Thank you.  
Admiral?

**STATEMENT OF VADM DAVID J. DORSETT, USN, DEPUTY CHIEF OF NAVAL OPERATIONS FOR INFORMATION DOMINANCE (N2/N6), AND DIRECTOR OF NAVAL INTELLIGENCE**

Admiral DORSETT. Mr. Chairman, thank you for the opportunity to be here, especially on behalf of the men and women of the U.S. Navy. It's a privilege for me to be able to testify before you today.

I want to reiterate one point for you, that I believe you're already aware of, and that's that the U.S. Navy is critically dependent upon space. Our ships, submarines, aircraft operate across the farflung reaches of the globe, often operating independently. The one thing that keeps them tied together, I think, is space-based capabilities, whether that's communications, the networks that support them, whether it's the navigation and precision geolocation data that comes from space, weather and environmental sensing information is absolutely vital to the U.S. Navy.

Truly, when it comes down to precision weapons, we need that detailed precision geolocation information that can only come from space.

Our intelligence resources, also, from space, provide a critical component of what the U.S. Navy's intelligence organization needs. Then, ultimately, I think the need for space to support our missile defense capabilities is on the rise.

I have two points to make. One is regarding MUOS. Dr. Federici has mentioned it, and you have, as well. MUOS is in the midst of another delay. Last year, you were informed that MUOS was going to be delayed by about 11 months. Our estimate at this point is that the first MUOS satellite is expected to be launched in September 2011, with an on-orbit capability of December 2011. That's about a 10-month delay from what you were briefed previously. We can go into details regarding what the purpose or the reason for that delay is, if you'd like.

The other point that I'd like to make is to inform you that we do have a mitigation plan. You've received the report from the Assistant Secretary of the Navy this past week. We do vigorously fund the mitigation plan. We are vigorously funding the MUOS capability itself to ensure that we deliver the entire capability. We are looking and working with our partners to mitigate the challenges that we face. It has our full attention, sir.

With that, I'm certainly prepared to take any of your questions.

[The joint prepared statement of Dr. Frederici and Admiral Dorsett follows:]

JOINT PREPARED BY VADM DAVID J. DORSETT, USN, AND DR. GARY A. FEDERICI

INTRODUCTION

Mr. Chairman, distinguished members of the subcommittee, we are honored to appear before you today to address your Navy's space activities. Navy Leadership expects to be prominent in the fields of intelligence, cyber warfare, command and control, knowledge management and space. By fusing these capabilities, he expects to attain command and control overmatch against any adversary. To achieve this important goal, Chief of Naval Operations (CNO) has restructured the Navy staff to bring all Navy information-related capabilities and systems under a single resource sponsor—Deputy Chief of Naval Operations (Information Dominance). In the information and cyberspace domain, the CNO has also established Fleet Cyber Command/U.S. Tenth Fleet as the global operator for many of Navy's critical mission areas, including space operations.

Our Maritime Strategy demands a flexible, interoperable, and secure global communications capability to support the command and control requirements of highly mobile, geographically dispersed U.S. and coalition forces. Our satellite communications capabilities confer to our deployed forces a decisive advantage across the spectrum of military operations from peacetime engagements to humanitarian relief efforts to major combat. The Mobile User Objective System (MUOS), which is the next generation Ultra High Frequency (UHF) Satellite Communication system, is a critical element of our space architecture and will provide more capable tactical communications to meet the growing demands of our joint, mobile warfighters.

#### NAVY SPACE REQUIREMENTS

The Navy's interests in space, however, are not limited solely to communications. Intelligence, reconnaissance, surveillance, position, navigation, timing, missile warning, meteorology and oceanography each have significant space components. We must ensure that all of the Navy's space equities and interests are well understood throughout the Department of Defense (DOD) and by our interagency partners so that our combatant commanders and Navy's operating forces have the space capabilities they need to succeed in their missions.

The Navy is critically dependent on space to conduct not only our wartime mission but also our core capabilities of forward presence, deterrence, sea control, power projection, maritime security, humanitarian assistance, and disaster response. A wide array of national, joint, and commercial satellites currently provides Navy commanders with essential worldwide support. Space capabilities are vital to our Nation's maritime operations and are foundational to our ability to operate in a networked and dispersed manner. These seminal space capabilities support tactical strike, expeditionary warfare, anti-submarine warfare, anti-surface warfare, mine warfare, special operations, undersea warfare, ballistic missile defense, maritime domain awareness, and information dominance missions.

The Navy's mission of ensuring the security of our citizens at home and abroad requires a global reach and persistent presence. We must constantly be ready to deliver on a mission of mercy or rapidly deploy decisive combat power, while supporting a myriad of complex maritime operations that fall between these extremes. Our ability to respond, in concert with the other Services and coalition partners, depends on assured space capabilities with inherent flexibility and responsiveness to support our worldwide responsibilities.

The Navy is one of the largest 'users' of space in DOD, yet we rely on our partnership with the Air Force and the Intelligence Community (IC) to develop and field the majority of our space systems. Future U.S. satellite programs are now being developed that promise additional benefit and capabilities to Navy warfighters. Due to the long lead times involved in complex space programs, it is essential that naval requirements and maritime missions are factored into the pre-launch design and planned on-orbit operation of future satellite acquisitions. Your Navy is actively engaged with key national and joint space-related organizations to ensure current and future Navy needs in space are identified and incorporated. Venues for this engagement include the DOD Space Posture Review, the Quadrennial Defense Review, the National Security Space Program plans and assessments, and the Operationally Responsive Space Executive Committee.

#### NAVY SPACE INVESTMENTS

Of Navy's current fiscal contributions to space, nearly 50 percent is dedicated to the acquisition, development and management of the UHF Follow-On and MUOS communications satellite systems. The remainder is predominantly apportioned to acquisition of the various satellite receiver terminals and equipment for Navy units, and space based navigation, oceanography, and meteorology. All these acquisitions are consistent with DOD's High Priority Performance Goals in the President's Fiscal Year 2011 Budget's Analytic Perspectives volume (page 77-8).

Navy's investment in space-related Science and Technology Research and Development has been modest—roughly 4 percent of our total space-related funding. In this fiscally-constrained environment, investment in projects and studies that address maritime-related capability gaps is critical to the successful execution of our Nation's maritime strategy. The innovations produced by the Office of Naval Research, Naval Research Laboratory, and the OPNAV N2/N6 Technology Insertion Branch (Navy's Tactical Exploitation of National Capabilities (TENCAP) entity) are vital to this effort. Our active involvement and influence with non-Navy space-related research activities, centers and agencies are necessary to leverage ongoing efforts that complement and support our unique maritime challenges and requirements.

The Navy depends on space capabilities now and expects the demand for space capabilities to grow in the future, especially for satellite communications (SATCOM). The Navy's major space segment responsibility to the joint community is the UHF narrowband satellite communications constellation. Today this constellation consists of eight UHF Follow-On satellites, two residual Fleet Satellites (FLTSAT), one Leased Satellite (LEASAT 5), and leased capacity on SKYNET 5C. MUOS will begin to replace these systems in 2011. Based on evolving warfighting concepts, UHF satellite communications requirements are expected to grow, and MUOS, as designed, will be able to support those requirements.

#### MOBILE USER OBJECTIVE SYSTEM

MUOS, the next generation UHF satellite constellation, will consist of four operational satellites with one on-orbit spare. MUOS will support Unified Commands and Joint Task Force Components, DOD and non-DOD agencies, and our allies by providing worldwide tactical narrowband netted, point-to-point, and broadcast voice and data services in challenging environments including double canopy foliage, urban environments, high sea states, and all weather conditions. MUOS will carry two distinct payloads. The legacy UHF payload will provide the capability of a UHF Follow-On satellite, while a new UHF waveform payload will significantly increase the number of accesses while also increasing available throughput to the Warfighter. The dual-payload design will allow backward compatibility with legacy UHF terminals while providing a next generation waveform to support "communications on the move" capabilities and provide disadvantaged platforms (hand held terminals, aircraft, missiles, UAVs, remote sensors) higher data rates per access (up to 64 kbps/access).

MUOS will be the common denominator for future command and control, by enhancing the capability to communicate from the tactical edge to theater headquarters. MUOS will allow more comprehensive and coordinated support to regional engagement efforts, providing the capability to synchronize actions with other Services and agencies. This capability will be realized through the fielding of MUOS capable Joint Tactical Radio System (JTRS) terminals and by upgrading existing legacy UHF software programmable terminals.

#### DELIVERING MOBILE USER OBJECTIVE SYSTEM

The timely delivery of MUOS is a high priority for Navy, and we recognize both our responsibility and commitment to providing this vital warfighting capability to all our DOD and IC partners. The delay in delivery of the MUOS, coupled with the age and fragility of the current UHF satellite constellation, has our full attention and focus. The program has been reviewed by an ASN (RDA) directed National Review Team, and the program has subsequently been re-baselined following the team's recommendations.

If gaps in UHF satellite availability occur, a series of mitigation options have been developed and can be incrementally implemented to minimize the operational impact. One mitigation initiative that has already been employed is a payload reconfiguration to UFO satellite Flight 11, which increased the number of available channels. This action was completed at no cost and with very low risk to the spacecraft. The Navy continues to lease supplemental UHF resources from two commercial satellites, LEASAT and SKYNET. If necessary, we are also positioned to lease an additional channel on an Italian space-based communications system (SICRAL).

We are also pursuing options to make more efficient use of available satellite resources. The Integrated Waveform (IW), a software upgrade to UHF SATCOM tactical terminals and Control System, is in development and will optimize UHF satellite channels by doubling the number of accesses that can be supported by a single 25 kHz channel. DOD is also coordinating a Memorandum of Understanding with the Australian Ministry of Defense to procure/use channels on an Australian-hosted payload covering the Indian Ocean region, in exchange for future use (commencing 2018) of equivalent UHF SATCOM accesses in the Pacific Ocean Region. Finally, we are exploring the use of TACSAT-4, an Office of Naval Research and Naval Research Laboratory led development that supports Operationally Responsive Space Office efforts. TACSAT-4 may provide a very limited operational capability when it reaches on-orbit capability later this year.

#### ENVIRONMENTAL REMOTE SENSING

The Navy continues to address vital interests in environmental remote sensing. In support of Undersea Warfare, we are procuring the Geosat Follow-On (GFO) II satellite altimeter to maintain continuity in mapping global ocean temperature profiles which provides critical input to our global and regional ocean models. The Navy

relies upon partnerships with the Air Force and the National Oceanic and Atmospheric Administration for its general meteorological and oceanographic remote sensing capabilities and is involved in defining the requirements for the DOD portion of the restructure of the National Polar Orbiting Environmental Satellite System. The imagery and data collected by these satellites are essential to our ability both to characterize the environment and assemble vital maritime information that provides an asymmetric advantage over our adversaries. In support of the Navy's unique responsibility to provide precise positioning and navigation data, we are embarking on a new program, the Joint Milli-Arcsecond Pathfinder Survey (JMAPS), which will enable necessary upgrades to the master star position catalogs to meet the DOD positioning accuracy requirements into the next decade.

#### INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE

The Navy applauds the National Geospatial Intelligence Agency and the National Security Agency's exploitation and dissemination of both geospatial and signals intelligence data, as well as the National Reconnaissance Office's (NRO) operation of the space-based sensors. A robust architecture of SIGINT and GEOINT systems to meet current and emerging requirements remains crucial to successful maritime operations. While much progress has been made in improving the planning and programming of space-based sensors, it is imperative that replacements for older systems be funded and fielded in sufficient quantity and capacity to sustain continuity of space-based intelligence data throughout the maritime domain. Accordingly, we fully support the Office of the Director of National Intelligence collaboration with combatant commands and Services to ensure emerging requirements are adequately supported by IC-funded future collection systems.

#### COMMERCIAL SPACE SYSTEMS

For Navy, commercially provided systems have the ability to augment, but not replace, national systems. These commercial capabilities have become increasingly useful in bridging the gap between requirements and capabilities. The Navy has utilized commercial communication satellites since the early 1990s to augment bandwidth requirements not satisfied by military communication satellites. Technical advances in the commercial sector can provide opportunities for rapid capability implementation, and are potential "game-changers" in the National Security Space Strategy. The Navy continues to work with the commercial sector to explore options to address multiple maritime mission requirements, and we continue to field systems, such as Commercial Broadband Satellite Program terminals, to fully leverage available commercial capability.

#### SPACE CADRE

Our Navy equities, requirements, operations and management of space resources are the responsibility of a small but agile corps of space professionals that make the Navy's use of space possible. The Navy's Space Cadre is comprised of approximately 1,350 Active Duty, Reserve, and civil service personnel from all warfighter designators and communities, and is a key component of the DOD's 15,000 military and civilian space professionals. Part of our Total Workforce strategy is to ensure that fully qualified Navy Space Cadre personnel are consistently assigned to our most critical and consequential space billets. This strategy requires the Navy to continue to recruit and retain a talented and highly skilled workforce to fill vital space leadership positions now and into the future. We are committed to providing active career management and continued opportunities for Navy Space Cadre professionals to ensure that Navy and Joint space-related assignments complement and enhance career progression paths and promotion opportunities while infusing naval operational expertise back into the space community.

Approximately one third of active duty space billets and a number of our civil service personnel are acquisition billets located throughout the Space and Naval Warfare Systems Enterprise and at the NRO. The Navy is fortunate to hold a key Flag-level billet within the NRO. Rear Admiral Liz Young, who is "triple-hatted" as PEO Space Systems and Commander, SPAWAR Space Field Activity, oversees the largest concentration of Navy Space Cadre members, and provides space systems engineering and acquisition expertise to OPNAV N2/N6 as well as to all Navy systems commands and research centers. It is essential that we continue to assign talented personnel to represent unique Navy requirements for space systems in the joint acquisition processes at the NRO and at the Air Force Space and Missile Center. As the newly established Fleet Cyber Command and U.S. 10th Fleet reaches full organizational maturity, they will assume a leading role in Navy's space planning and operations.

## CONCLUSION

In closing, we would like to reiterate that space capabilities have and will continue to be critical to our Nation's success in the maritime domain. We now operate in a dynamic and challenging global environment that demands increased capability and capacity to operate in a networked but geographically dispersed fashion. Space capabilities are no longer nice to have; they are essential.

Thank you for the opportunity to share our efforts with you today. The continued support from Congress in general, and this subcommittee in particular, is deeply appreciated.

Senator BEN NELSON. Thank you.  
Ms. Chaplain.

**STATEMENT OF CRISTINA T. CHAPLAIN, DIRECTOR, ACQUISITION AND SOURCING MANAGEMENT, GOVERNMENT ACCOUNTABILITY OFFICE**

Ms. CHAPLAIN. Thank you, Mr. Chairman.

I'm focused on the acquisition side of space, and your opening statement covered a great deal of what I was going to say, so I'm just going to emphasize a couple of points about the efforts that DOD is making to improve space, and what we see are the remaining challenges.

I think a lot of credit goes to DOD for the wide range of actions they've been taking to improve their acquisitions. They include such things as strengthening cost estimating, strengthening testing oversight, contractor oversight, strengthening the requirements process, strengthening their acquisition policy. Many of these began before the most recent Weapons Systems Reform Act (WSRA).

But, we're not really out of the woods yet; there are still a lot of challenges. I think reform itself will take a long time to produce results, just because space programs take a long time themselves. We have very few new programs on the horizon.

Reform will also be difficult to achieve if the right bench strength isn't there to execute space programs. This includes technical and program experts. It has been very challenging for DOD to address gaps in the space workforce.

Likewise, reform will be difficult if there are gaps in the industrial base expertise, if there's lax contract management and oversight, if there are insufficient resources for testing new technologies, and, as you mentioned, if we can't get innovation in the form of our small businesses into the programs. All of these issues, we've identified before as needing attention.

Moreover, there are still a lot of questions that need to be resolved about how space should be best organized, led, and supported. Studies concur that there's a need for stronger centralized authority for space, and our own studies consistently show space programs have difficulty coordinating their ground, user, and space components, as well as getting agreements on requirements that cross boundaries. Moreover, without a central point of accountability, it may be difficult to sustain reform efforts underway.

With that, I would like to just conclude and say, I look forward to the questions you have.

[The prepared statement of Ms. Chaplain follows:]

## PREPARED STATEMENT BY CRISTINA T. CHAPLAIN

Mr. Chairman and members of the subcommittee:

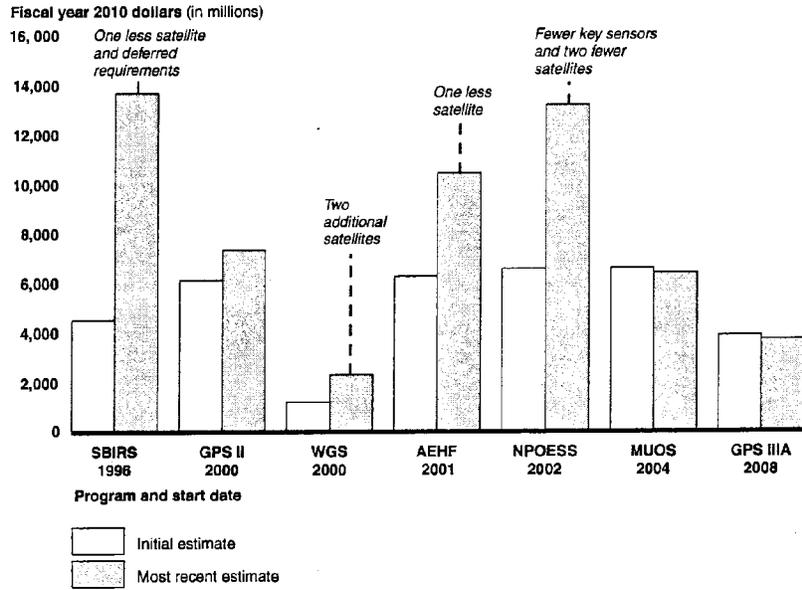
I am pleased to be here today to discuss the Department of Defense's (DOD) space acquisitions. Each year, DOD spends billions of dollars to acquire space-based capabilities to support current military and other government operations, as well as to enable DOD to transform the way it collects and disseminates information. Despite the significant investment in space, the majority of large-scale acquisition programs in DOD's space portfolio have experienced problems during the past two decades that have driven up costs by hundreds of millions and even billions of dollars and stretched schedules by years and increased technical risks. To address the cost increases, DOD altered its acquisitions by reducing the number of satellites it intended to buy, reducing the capabilities of the satellites, or terminating major space systems acquisitions. Moreover, along with the cost increases, many space acquisitions have experienced significant schedule delays—of as much as 8 years—resulting in potential capability gaps in areas such as missile warning, military communications, and weather monitoring. These problems persist.

My testimony today will focus on: (1) the status of space acquisitions, (2) the efforts DOD is taking to address causes of problems and increase credibility and success in its space systems acquisitions, and (3) what remains to be done. Notably, DOD has taken the important step of acknowledging the acquisition problems of the past and is taking action to address them, including better management of the acquisition process and oversight of its contractors. Moreover, several high-risk space programs have finally resolved technical and other obstacles and are close to begin delivering capability. However, other space acquisition programs continue to face challenges in meeting their cost and schedule targets and aligning the delivery of space assets with the ground and user systems needed to support and take advantage of new capability. Additionally, it may take years for acquisition improvements to take root and produce benefits that will enable DOD to realize a better return on its investment in space. Lastly, DOD still needs to decide how to best organize, lead, and support space activities. If it does not do so, its commitment to reforms may not be sustainable.

## SPACE ACQUISITION CHALLENGES PERSIST

A longstanding problem in DOD space acquisitions is that program and unit costs tend to go up significantly from initial cost estimates, while in some cases, the capability that was to be produced goes down. Figures 1 and 2 reflect differences in total program and unit costs for satellites from the time the programs officially began to their most recent cost estimates. As figure 1 shows, in several cases, DOD has had to cut back on quantity and capability in the face of escalating costs. For example, two satellites and four instruments were deleted from the National Polar-orbiting Operational Environmental Satellite System (NPOESS) and four sensors are expected to have fewer capabilities. This will reduce some planned capabilities for NPOESS as well as planned coverage. The figures below reflect the total program costs developed in fiscal year 2009. (Last year, we also compared original cost estimates to current cost estimates for the broader portfolio of major space acquisitions for fiscal years 2008 through 2013. However, we were unable to perform this analysis this year because, for most of its major weapon system programs, DOD in fiscal year 2009 did not issue complete Selected Acquisition Reports, which contain updated yearly program funding estimates needed to conduct the analysis.)

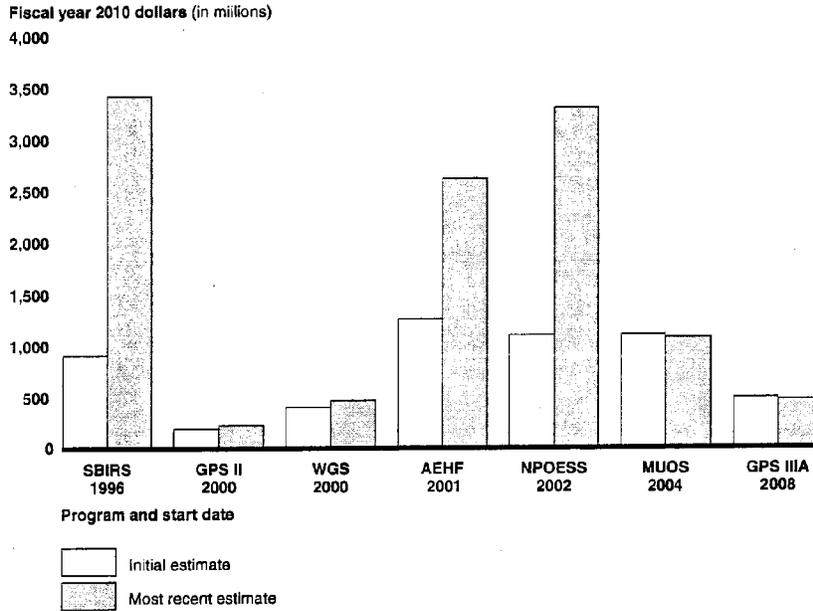
**Figure 1: Differences in Total Program Costs from Program Start and Most Recent Estimates (Fiscal Year 2009)**



Source: GAO analysis of DOD data.

Legend: SBIRS = Space Based Infrared System; GPS = Global Positioning System; WGS = Wideband Global SATCOM; AEHF = Advanced Extremely High Frequency; NPOESS = National Polar-orbiting Operational Environmental Satellite System; MUOS = Mobile User Objective System

**Figure 2: Differences in Unit Costs from Program Start to Most Recent Estimates (Fiscal Year 2009)**

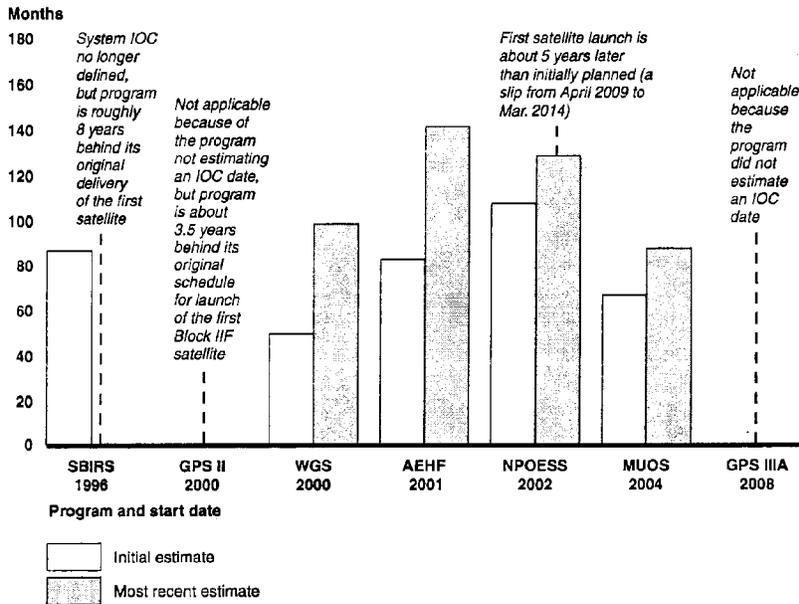


Source: GAO analysis of DOD data.

Legend: SBIRS = Space Based Infrared System; GPS = Global Positioning System; WGS = Wideband Global SATCOM; AEHF = Advanced Extremely High Frequency; NPOESS = National Polar-orbiting Operational Environmental Satellite System; MUOS = Mobile User Objective System

Several space acquisition programs are years behind schedule. Figure 3 highlights the additional estimated months needed for programs to deliver initial operational capabilities (IOC). These additional months represent time not anticipated at the programs' start dates. Generally, the further schedules slip, the more DOD is at risk of not sustaining current capabilities. For example, according to Air Force officials, they have requested information from the space community on how best to address a potential gap in missile warning capabilities.

**Figure 3: Differences in Total Number of Months to IOC from Program Start and Most Recent Estimates**



Source: GAO analysis of DOD data.

Legend: SBIRS = Space Based Infrared System; GPS = Global Positioning System; WGS = Wideband Global SATCOM; AEHF = Advanced Extremely High Frequency; NPOESS = National Polar-orbiting Operational Environmental Satellite System; MUOS = Mobile User Objective System.

*Some Acquisition Programs Have Overcome Problems and Have Satellites Ready for Launch*

DOD has made progress on several of its high-risk space programs and is expecting significant advances in capability as a result. In 2009, DOD launched the third Wideband Global SATCOM (WGS) satellite, broadening communications capability available to warfighters—and a fourth WGS satellite is slated for launch in 2011. DOD also launched two Global Positioning System (GPS) IIR–M satellites, although one has still not been declared operational because of radio signal transmission problems. Lastly, DOD supported the launch of a pair of Space Tracking and Surveillance System satellites, designed to test the tracking of ballistic missiles in support of missile defense early missile warning missions—these suffered many delays as well. The Evolved Expendable Launch Vehicle (EELV) program had its 31st consecutive successful operational launch last week.

Moreover, though it has had longstanding difficulties on nearly every space acquisition program, DOD now finds itself in a position to possibly launch the first new satellite from four different major space acquisition programs over the next 12 months that are expected to significantly contribute to missions and capabilities. These include the GPS IIF satellites, the Advanced Extremely High Frequency (AEHF) communications satellites, and the Space Based Space Surveillance (SBSS) satellite—all of which struggled for years with cost and schedule growth, technical or design problems, as well as oversight and management weaknesses. Table 1 further describes the status of these efforts.

**Table 1: Systems Nearing Launch That Have Overcome Technical and Other Problems**

GPS IIF	The first GPS IIF satellite is expected to launch in mid-2010 and will upgrade timing and navigation accuracy, and add a new signal for civilian use. The satellite has been delayed over 3 years from its original launch date to May 2010—representing a further 6 month slip since we reported last year. Also, the cost of the GPS IIF program is now expected to be about \$1.7 billion—almost \$1 billion over the original cost estimate of \$729 million. (This approximately 133 percent cost increase is not apparent in figures 1 and 2 because the GPS II modernization program includes the development and procurement of 33 satellites, only 12 of which are IIF satellites.) According to the GPS Wing, the remaining technical issues with the first IIF satellite were resolved and will not affect the scheduled launch date—the last technical issue was a desire to provide additional fault protection and this is being addressed with enhanced ground operations procedures. Additionally, the GPS Wing stated that the ground control software needed to support the first IIF launch has been thoroughly tested and in place since early this month.
AEHF	AEHF, which appears to have overcome its technical problems that delayed the first satellite's launch and increased program cost, is expected to launch in September 2010, and is expected to deliver 10 times the communications bandwidth that is available today for secure and protected communications. The launch of the first satellite has slipped almost 6 years. DOD intends to buy three more satellites, bringing the total to six (two of these additional satellites are not reflected in figures 1 and 2). The program has decided that the design specifications for the first three satellites will remain unchanged for satellites four through six, which will thus be clones except for the replacement of obsolete parts. The program office estimates that the fourth AEHF satellite will cost significantly more than the third satellite because some components that are no longer manufactured will have to be replaced and production will have to be restarted after a 4-year gap. Because of these delays, IOC has slipped about 5 years—from 2008 to 2013. The AEHF program office estimates the cost of the fifth and sixth satellites to be about \$1.6 billion and \$1.7 billion (then-years dollars), with estimated launch dates in 2018 and 2020, respectively.
SBSS	The first SBSS Block 10 satellite is expected to launch in 2010 and is expected to provide greatly improved space situational awareness to help better understand location and mission capabilities of all satellites and other objects in space. The launch is expected to be about 3 years later than originally planned—in part because of launch vehicle issues unrelated to the satellite. Program officials and the SBSS contractors are studying the feasibility of launching the SBSS satellite on a Delta II rocket. The program was restructured in 2006 after an independent review found that the requirements were overstated and its cost and schedule targets could not be met.

Source: GAO analysis of DOD data and previous GAO reports.

One program that appears to be overcoming remaining technical problems, but for which we are still uncertain whether it can meet its current launch date, is the Space Based Infrared System (SBIRS) satellite program. The first of four geosynchronous earth-orbiting (GEO) satellites (two sensors have already been launched on a highly elliptical orbit) is expected to launch in December 2010 and is expected to continue the missile warning mission with sensors that are more capable than the satellites currently on orbit. Total cost for the SBIRS program is currently estimated at over \$13.6 billion for four GEO satellites (and two sensors that have already been delivered and are operational), representing an increase of about \$9.2 billion over the program's original cost, which included five GEO satellites. The most recent program estimate developed in 2008 set December 2009 as the launch goal for the first GEO satellite, but program officials indicate that the first GEO launch will be delayed at least another year, bringing the total delay to approximately 8 years. The reasons for the delay include poor government oversight of the contractor, technical complexities, and rework. The program continues to struggle with flight software development, and during testing last year, officials discovered hardware defects on the first GEO satellite, though the program reports that they have been resolved. The launches of subsequent GEO satellites have also slipped as a result of flight software design issues. Program officials indicate that they again intend to re-baseline the program to more realistic cost and schedule estimates by mid- to late-2010. Because of the problems on SBIRS, DOD began a follow-on system effort, now known as Third Generation Infrared Surveillance (3GIRS), to run in parallel with the SBIRS program. For fiscal year 2011, DOD plans to cancel the 3GIRS effort, but also plans to provide funds under the SBIRS program for one of the 3GIRS infrared demonstrations nearing completion.

#### *Other Programs Still Susceptible to Cost and Schedule Overruns*

While DOD is having success in readying some satellites for launch, other space acquisition programs face challenges that could further increase cost and delay targeted delivery dates. The programs that may be susceptible to cost and schedule challenges include NPOESS, Mobile User Objective System (MUOS), and GPS IIIA. Delays in both the NPOESS and MUOS programs have resulted in critical potential capability gaps for military and other government users. The GPS IIIA program was planned with an eye toward avoiding problems that plagued the GPS IIF program, but the schedule leaves little room for potential problems and there is a risk that the ground system needed to operate the satellites will not be ready when the first satellite is launched. Table 2 describes the status of these efforts in more detail.

Table 2: Programs Still Susceptible to Cost and Schedule Overruns

NPOESS	The NPOESS program has continued to experience technical problems resulting in further cost and schedule increases. The program was restructured in 2007, which led to a reduction in the number of satellites from six to four and deletions or replacements of satellite sensors. NPOESS was originally estimated to cost \$6.5 billion but the latest estimate is about \$13.2 billion—representing more than a 100-percent cost increase. Furthermore, the launch of the first satellite has slipped about 5 years—from April 2009 to March 2014. While the goal of the restructure was to lower future cost and schedule risks, it increased the risk of a satellite coverage gap and significantly reduced data collection capabilities. DOD programmed funds for NPOESS for fiscal year 2011, but according to the White House's Office of Science and Technology Policy, the NPOESS program is to be restructured. This would allow DOD and the Department of Commerce to embark on separate weather satellite programs to meet their unique needs. The cost and schedule estimates for the NPOESS program cited above do not reflect the latest events surrounding the program. At this juncture, many questions surround DOD's strategy for moving forward, including the following: (1) How does DOD intend to use the funding programmed for fiscal year 2011? (2) Is the NPOESS contract to be terminated, and if so, what are the anticipated termination costs for work under contract? (3) What aspects of the NPOESS program will continue to be utilized for future efforts? (4) Will the approach going forward be more or less costly, and will the delivery of capability be sooner or later than that of NPOESS? While many of these details have yet to be worked out, this major redirection so late in the acquisition process may pose significant risk to the nation's ability to reconstitute its weather satellites in a timely fashion to mitigate lapses in data collection capabilities.
MUOS	The MUOS communications satellite program now estimates a 21-month delay—from March 2010 to December 2011—in the delivery of on-orbit capability from the first satellite. This represents an additional 10-month slip from the slip we reported last year, which was caused by continuing satellite development challenges. In July 2009, a Navy-initiated review of the program found that while the technical challenges the program was experiencing could be solved, the MUOS budget was inadequate and its schedule was optimistic. Subsequently, in late 2009 the Navy established new cost and schedule baselines for the program (we have yet to obtain the new cost baseline, and as such, figures 1 and 2 do not reflect updated MUOS cost estimates). In January 2011, communications are predicted to degrade below the required level of availability and remain so until the first MUOS satellite is available for operations. The MUOS program office is addressing the potential capability gap by activating dual digital receiver unit operations on a legacy satellite, leasing commercial ultra-high-frequency satellite communications services, and examining the feasibility of expanded digital receiver unit operations on the legacy payloads of the MUOS satellites.
GPS IIIA	While the GPS IIIA program has been structured by the Air Force to prevent the mistakes made on the IIF program, the Air Force aims to deliver the GPS IIIA satellites 3 years faster than the IIF satellites. According to Air Force officials, the IIIA contractor retained some of its workforce from the IIF-M program and plans to incorporate a previously developed satellite bus—efforts that reduce program risk. However, we continue to believe the IIIA schedule is optimistic given the program's late start, past trends in space acquisitions, and challenges facing the new contractor. <sup>4</sup> To increase confidence in the schedule for delivering the ground control system for IIIA (the next generation operational control segment known as OCS), the GPS Wing added 16 months of development time to the effort. This means that OCS is now scheduled to be fielded after the May 2014 launch of the first GPS IIIA satellite. The Wing is currently assessing alternate approaches for resolving the fielding issue, which will likely have cost consequences.

Source: GAO analysis of DOD data and previous GAO reports.

<sup>4</sup>GAO, *Global Positioning System: Significant Challenges in Sustaining and Upgrading Widely Used Capabilities*, GAO-09-325, (Washington, D.C.: April 30, 2009).

### Challenges in Aligning Space System Components

This past year we also assessed the levels at which DOD's satellites, ground control, and user terminals were synchronized to provide maximum benefit to the warfighter.<sup>1</sup> Most space systems consist of satellites, ground control systems, and user terminals, though some space systems only require ground control systems to provide capability to users. Ground control systems are generally used to: (1) download and process data from satellite sensors and disseminate this information to warfighters and other users; and (2) maintain the health and status of the satellites, including steering the satellites and ensuring that they stay in assigned orbits.

User terminals, typically procured by the military services and managed separately from associated satellites and ground control systems, can range from equipment hosted on backpacks to terminals mounted on Humvees, airborne assets, or ships. Terminals can be used to help the warfighter determine longitude, latitude, and altitude via GPS satellites, or securely communicate with others via AEHF satellites. Some user terminals are not solely dedicated to delivering capability from a specific satellite system. For example, the Joint Tactical Radio System is the primary user terminal associated with the MUOS program, but the system is also designed to be the next generation of tactical radios, allowing extensive ground-to-ground communication as well.

Overall, we found the alignment of space system components proved to be challenging to DOD. Specifically, we found that for six of DOD's eight major space system acquisitions, DOD has not been able to align delivery of satellites with ground control systems, user terminals, or both. Of the eight major space system acquisitions, five systems' ground control system efforts are optimally aligned to deliver ca-

<sup>1</sup>GAO, *Defense Acquisitions: Challenges in Aligning Space System Components*, GAO-10-55 (Washington, DC: Oct. 29, 2009).

pability with their companion satellites, while three are not. For the five space systems requiring user terminals, none was aligned. In some cases, capability gaps of 4 or more years have resulted from delays in the fielding of ground control systems or user terminals. When space system acquisitions are not aligned, satellite capability is available but underutilized, though in some cases, work-around efforts can help compensate for the loss or delay of capability. Moreover, when ground systems, user terminals, or both are not aligned with satellites, there are significant limitations in the extent to which the system as a whole can be independently tested and verified.<sup>2,3</sup>

#### *Launch Manifest Issues*

Another risk facing DOD space programs for the next few years is the potential for increased demand for certain launch vehicles. DOD is positioned to launch a handful of satellites across missions over the next 2 years that were originally scheduled for launch years ago. Until recently, DOD had four launch pads on the east coast from which to launch military satellites. In 2009, DOD launched the final two GPS IIR-M satellites using the Delta II launch vehicle, thereby discontinuing its use of the Delta II line and its associated launch infrastructure. DOD now plans to launch most of its remaining satellites using one of DOD's EELV types—Atlas V or Delta IV—from one of two east coast launch pads. At the same time, the National Aeronautics and Space Administration (NASA) plans to use the Delta II to launch at least three major missions before that launch vehicle is retired. In addition, NASA is already manifesting other major missions on the Atlas V. Given the expected increased demand for launches—many of which are considered high priority—and the tempo of launches DOD has achieved with EELV, it appears that the launch manifest is crowded. As a result, if programs still struggling with technical, design, or production issues miss their launch dates, the consequences could be significant, as it may take many months to secure new dates. Some of DOD's satellites are dual integrated, which means they can be launched on either type of EELV. The Air Force deserves credit for designing the satellites this way because it offers more flexibility in terms of launch vehicle usage, but there are also cost and schedule implications associated with rescheduling from one EELV type to the other. Moreover, DOD can request its launch provider to speed up the transition time between launches, although this would also increase costs. Nevertheless, Air Force officials stated that they were confident that the higher launch rates could be achieved, especially if a particular satellite's priority increased. According to Air Force officials, they have already begun to implement means to address these issues.

#### DOD IS TAKING ACTIONS TO ADDRESS SPACE AND WEAPON ACQUISITION PROBLEMS

DOD has been working to ensure that its space programs are more executable and produce a better return on investment. Many of the actions it is taking address root causes of problems, though it will take time to determine whether these actions are successful and they need to be complemented by decisions on how best to lead, organize, and support space activities.

Our past work has identified a number of causes behind the cost growth and related problems, but several consistently stand out. First, on a broad scale, DOD starts more weapon programs than it can afford, creating a competition for funding that encourages low cost estimating, optimistic scheduling, overpromising, suppressing bad news, and for space programs, forsaking the opportunity to identify and assess potentially more executable alternatives. Second, DOD has tended to start its space programs too early, that is, before it has the assurance that the capabilities it is pursuing can be achieved within available resources and time con-

<sup>2</sup>In making determinations about whether space system acquisitions were aligned, we examined whether there were gaps between fielding dates of satellite capabilities compared to ground system capabilities and whether lower percentages of user terminal types were planned to be fielded by the space system acquisitions' planned initial capability. Generally we considered aspects of a space acquisition unaligned if there was a gap of years, rather than months, between the fielding dates of significant capabilities. Regarding user terminals, we only considered these unaligned compared to satellite capabilities when user terminals did not meet DOD's measure of synchronization for military satellite communications space acquisitions. This measure, established by the U.S. Strategic Command, a primary user of DOD space systems, asserts that 20 percent of any type of user terminal should be fielded by a space system acquisition's initial capability date and 85 percent should be fielded by its full capability date.

<sup>3</sup>It should be noted that while there are criteria for communications satellites, there are no criteria available in DOD that determine the optimum alignment or synchronization for the broader portfolio of satellite programs. This is principally because of inherent differences in satellite missions and their associated ground and user assets, according to officials involved in space system development as well as acquisition oversight.

straints. This tendency is caused largely by the funding process, since acquisition programs attract more dollars than efforts concentrating solely on proving technologies. Nevertheless, when DOD chooses to extend technology invention into acquisition, programs experience technical problems that require large amounts of time and money to fix. Moreover, there is no way to accurately estimate how long it would take to design, develop, and build a satellite system when critical technologies planned for that system are still in relatively early stages of discovery and invention. Third, programs have historically attempted to satisfy all requirements in a single step, regardless of the design challenge or the maturity of the technologies necessary to achieve the full capability. DOD has preferred to make fewer but heavier, larger, and more complex satellites that perform a multitude of missions rather than larger constellations of smaller, less complex satellites that gradually increase in sophistication. This has stretched technology challenges beyond current capabilities in some cases and vastly increased the complexities related to software. Programs also seek to maximize capability on individual satellites because it is expensive to launch.

In addition, problematic implementation of an acquisition strategy in the 1990s, known as Total System Performance Responsibility, for space systems resulted in problems on a number of programs because it was implemented in a manner that enabled requirements creep and poor contractor performance—the effects of which space programs are still addressing. We have also reported on shortfalls in resources for testing new technologies, which coupled with less expertise and fewer contractors available to lead development efforts, have magnified the challenge of developing complex and intricate space systems.

Our work—which is largely based on best practices in the commercial sector—has recommended numerous actions that can be taken to address the problems we identified. Generally, we have recommended that DOD separate technology discovery from acquisition, follow an incremental path toward meeting user needs, match resources and requirements at program start, and use quantifiable data and demonstrable knowledge to make decisions to move to next phases. We have also identified practices related to cost estimating, program manager tenure, quality assurance, technology transition, and an array of other aspects of acquisition program management that could benefit space programs. These practices are detailed in appendix I.

DOD is implementing an array of actions to reform how weapons and space systems are acquired. For space in particular, DOD is working to ensure critical technologies are matured before large-scale acquisition programs begin; requirements are defined early in the process and are stable throughout; and that system design remains stable, according to the Director of Space and Intelligence under DOD's Office of the Secretary of Defense for Acquisition, Technology and Logistics. DOD also intends to follow incremental or evolutionary acquisition processes versus pursuing significant leaps in capabilities involving technology risk. The Director of Space and Intelligence also told us that DOD is revisiting the use of military standards in its acquisitions and providing more program and contractor oversight. The approach described to us by the Director of Space and Intelligence mirrors best practices identified in our reports. Moreover, some actions—described in the table below—have already been taken to ensure acquisitions are more knowledge-based.

**Table 3: Actions being Taken to Address Space Acquisition Problems**

Requirements	The Air Force leadership signed the Acquisition Improvement Plan which lists five initiatives for improving how the Air Force obtains new capabilities—one of these initiatives covers requirements generation and includes the direction for the Air Force to certify the acquisition community can successfully fulfill required capabilities in conjunction with the Air Force Requirements for Operational Capabilities Council. Certification means the required capabilities can be translated in a clear and unambiguous way for evaluation in a source selection, are prioritized if appropriate, and organized into feasible increments of capability.
Program Management	The Space and Missile Systems Center—the Air Force's primary organization responsible for acquiring space systems—resurrected a program management assistance group in 2007 to help mitigate program management, system integration, and program control deficiencies within specific ongoing programs. This group assists and supplements wing commanders and program offices in fixing common problems, raising core competencies, and providing a consistent culture that sweeps across programs. According to the GPS Wing Commander, this group was an integral part of the overall process providing application-oriented training, templates, analyses, and assessments vital to the GPS IIIA baseline review.
Workforce	The Air Force is continuing efforts to bring space operators and space system acquirers together through the Advanced Space Operations School and the National Security Space Institute. The Air Force anticipates that this higher-level education will be integral to preparing space leaders with the best acquisition know-how.
Cost Estimating	Both the Air Force and the National Reconnaissance Office (NRO) are taking actions to strengthen cost-estimating. For example, we recommended that the Secretary of the Air Force ensure that cost estimates are updated as major events occur within a program that could have a material impact on cost, and that the roles and responsibilities of the various Air Force cost-estimating organizations be clearly articulated. <sup>4</sup> An Air Force policy directive now requires that cost estimates for major programs be updated annually, and lays out roles and responsibilities for Air Force cost-estimating organizations. Furthermore, in its attempts to make more accurate cost estimates for commercial-like programs (characterized by use of fixed-price contracts, less complex satellites, lower costs, and short development timeframes), the NRO cost analysis improvement group has developed a cost-estimating methodology that considers acquisition complexity (such as level of oversight and amount of program reporting), in addition to program technical complexity, and stated it is considering applying the methodology to more traditional satellite acquisition programs.
Acquisition Policy	DOD recently eliminated the tailored national security space acquisition policy and moved the acquisition of space systems under DOD's updated acquisition guidance for defense acquisition programs (DOD Instruction 5000.02). DOD is currently developing an addendum for the Instruction that would introduce specific management and oversight processes for acquiring major space systems.
Alignment of Ground Control Systems	In better aligning space system components, DOD acknowledged that the integration and consolidation of satellite ground control systems has many benefits, and established the Space and Intelligence Office to more effectively conduct oversight of the space and intelligence enterprise. DOD further disestablished two oversight boards that were deemed less effective in providing oversight.

Source: GAO analysis of DOD data and previous GAO reports.

<sup>4</sup>GAO, *Space Acquisitions: DOD Needs to Take More Action to Address Unrealistic Initial Cost Estimates of Space Systems*, GAO-07-96, (Washington, D.C.: November 17, 2006).

Congress has also acted on a broader scale through the Weapon Systems Acquisition Reform Act, which was signed into law on May 22, 2009.<sup>4</sup> The goal of this new statute is to improve acquisition outcomes in DOD, with specific emphasis on major defense acquisition programs (MDAP) and major automated information systems. According to the President of the United States this legislation is designed to limit cost overruns before they spiral out of control and will strengthen oversight and accountability by appointing officials who will be charged with closely monitoring the weapons systems being purchased to ensure that costs are controlled. DOD states in its 2010 Quadrennial Defense Review<sup>5</sup> that the law also will substantially improve the oversight of major weapons acquisition programs, while helping to put MDAPs on a sound footing from the outset by addressing program shortcomings in the early phases of the acquisition process. DOD also states that it is undertaking a far-reaching set of reforms to achieve these goals and to improve how DOD acquires and fields critical capabilities for current and future wars and conflicts.

ADDITIONAL DECISIONS ON LEADERSHIP, ORGANIZATION, AND SUPPORT ARE STILL NEEDED

The actions that the Air Force and Office of the Secretary of Defense have been taking to address acquisition problems are good steps. However, there are still more significant changes to processes, policies, and support needed to ensure that reforms can take hold. Recent studies and reviews examining the leadership, organization, and management of national security space have all found that there is no single authority responsible below the President and that authorities and responsibilities are spread across the department. In fact, the national security space enterprise comprises a wide range of government and nongovernment organizations responsible for providing and operating space-based capabilities serving both military and intelligence needs.

<sup>4</sup>Pub. L. No. 111-23, 123 Stat. 1704 (2009).

<sup>5</sup>Department of Defense, Quadrennial Defense Review Report (Washington, D.C., Feb. 1, 2010).

In 2008, for example, a congressionally chartered commission (known as the Alard Commission)<sup>6</sup> reported that responsibilities for military space and intelligence programs were scattered across the staffs of DOD organizations and the intelligence community and that it appeared that “no one is in charge” of national security space. The same year, the House Permanent Select Committee on Intelligence reported similar concerns, focusing specifically on difficulties in bringing together decisions that would involve both the Director of National Intelligence and the Secretary of Defense.<sup>7</sup> Prior studies, including those conducted by the Defense Science Board and the Commission to Assess U.S. National Security Space Management and Organization (Space Commission),<sup>8</sup> have identified similar problems, both for space as a whole and for specific programs. While these studies have made recommendations for strengthening leadership for space acquisitions, no major changes to the leadership structure have been made in recent years. In fact, an executive agent position within the Air Force that was designated in 2001 in response to a Space Commission recommendation to provide leadership has not been filled since the last executive resigned in 2007.

Diffuse leadership has a direct impact on the space acquisition process, primarily because it makes it difficult to hold any one person or organization accountable for balancing needs against wants, for resolving conflicts among the many organizations involved with space, and for ensuring that resources are dedicated where they need to be dedicated. Many of the cost and schedule problems we identified for the GPS IIF program, for instance, were tied in part to diffuse leadership and organizational stovepipes, particularly with respect to DOD’s ability to coordinate delivery of space, ground, and user assets. In fact, DOD is now facing a situation where satellites with advances in capability will be residing for years in space without users being able to take full advantage of them because investments and planning for ground, user, and space components were not well-coordinated.

Congressional and DOD studies have also called for changes in the national security space organizational structure to remove cultural barriers to coordinating development efforts and to better incorporate analytical and technical support from an organization that is augmented with military and intelligence community expertise.

Finally, studies have identified insufficient numbers of experienced space acquisition personnel and inadequate continuity of personnel in project management positions as problems needing to be addressed in the space community. Our own studies have identified gaps in key technical positions, which we believed increased acquisition risks. For instance, in a 2008 review of the EELV program, we found that personnel shortages at the EELV program office occurred particularly in highly specialized areas, such as avionics and launch vehicle groups.<sup>9</sup> These engineers work on issues such as reviewing components responsible for navigation and control of the rocket. Moreover, only half the government jobs in some key areas were projected to be filled. These and other shortages in the EELV program office heightened concerns about DOD’s ability to effectively manage the program using a contracting strategy for EELV that required greater government attention to the contractor’s technical, cost, and schedule performance information. In a recent discussion with GAO, the Director of Space and Intelligence under DOD’s Office of the Secretary of Defense for Acquisition, Technology and Logistics stated that the primary obstacle to implementing reforms in space is the lack of “bench strength,” primarily technical and systems engineering expertise.

#### *Concluding Remarks*

In conclusion, DOD space is at a critical juncture. After more than a decade of acquisition difficulties, which have created potential gaps in capability, diminished DOD’s ability to invest in new space systems, and lessened DOD’s credibility to deliver high-performing systems within budget and on time, DOD is finally positioned to launch new generations of satellites that promise vast enhancements in capability. Moreover, recent program cancellations have alleviated competition for funding and may have allowed DOD to focus on fixing problems and implementing reforms rather than taking on new, complex, and potentially higher-risk efforts. But these changes raise new questions. Specifically, when can investments in new pro-

<sup>6</sup>Institute for Defense Analyses, Leadership, Management, and Organization for National Security Space: Report to Congress of the Independent Assessment Panel on the Organization and Management of National Security Space (Alexandria, VA, July 2008).

<sup>7</sup>House Permanent Select Committee on Intelligence, Report on Challenges and Recommendations for United States Overhead Architecture (Washington, DC, October 2008).

<sup>8</sup>Department of Defense, Report of the Commission to Assess U.S. National Security Space Management and Organization (Washington, DC, Jan. 11, 2001).

<sup>9</sup>GAO, Space Acquisitions: Uncertainties in the Evolved Expendable Launch Vehicle Program Pose Management and Oversight Challenges, GAO-08-1039 (Washington, DC: Sept. 26, 2008).

grams be made? How can reforms really take hold when leadership is diffuse? How can reforms take hold when there are still organizational barriers that prevent effective coordination? Lastly, how can acquisitions be successful if the right technical and programmatic expertise is not in place? Clearly, there are many challenges ahead for space. We look forward to working with the DOD to help ensure that these and other questions are addressed.

Mr. Chairman, this concludes my prepared statement. I would be happy to answer any questions you or members of the subcommittee may have at this time.

#### CONTACTS AND ACKNOWLEDGEMENTS

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## Appendix I: Actions Needed to Address Space and Weapon Acquisition Problems

### Before undertaking new programs

- Prioritize investments so that projects can be fully funded and it is clear where projects stand in relation to the overall portfolio.
- Follow an evolutionary path toward meeting mission needs rather than attempting to satisfy all needs in a single step.
- Match requirements to resources—that is, time, money, technology, and people—before undertaking a new development effort.
- Research and define requirements before programs are started and limit changes after they are started.
- Ensure that cost estimates are complete, accurate, and updated regularly.
- Commit to fully fund projects before they begin.
- Ensure that critical technologies are proven to work as intended before programs are started.
- Assign more ambitious technology development efforts to research departments until they are ready to be added to future generations (increments) of a product.
- Use systems engineering to close gaps between resources and requirements before launching the development process.

### During program development

- Use quantifiable data and demonstrable knowledge to make go/no-go decisions, covering critical facets of the program such as cost, schedule, technology readiness, design readiness, production readiness, and relationships with suppliers.
- Do not allow development to proceed until certain thresholds are met—for example, a high proportion of engineering drawings completed or production processes under statistical control.
- Empower program managers to make decisions on the direction of the program and to resolve problems and implement solutions.
- Hold program managers accountable for their choices.
- Require program managers to stay with a project to its end.
- Hold suppliers accountable to deliver high-quality parts for their products through such activities as regular supplier audits and performance evaluations of quality and delivery, among other things.
- Encourage program managers to share bad news, and encourage collaboration and communication.

Source: GAO.

#### APPENDIX II: SCOPE AND METHODOLOGY

In preparing this testimony, we relied on our body of work in space programs, including previously issued GAO reports on assessments of individual space programs, common problems affecting space system acquisitions, and DOD's acquisition policies. We relied on our best practices studies, which comment on the persistent problems affecting space acquisitions, the actions DOD has been taking to address these problems, and what remains to be done, as well as Air Force documents addressing these problems and actions. We also relied on work performed in support of our annual weapons system assessments, and analyzed DOD funding estimates to assess cost increases and investment trends for selected major space acquisition programs. The GAO work used in preparing this statement was conducted in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide 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 findings and conclusions based on our audit objectives.

Senator BEN NELSON. Thank you.

This really goes to Mr. Payton, General Kehler, and Admiral Dorsett. In 2001, the Space Commission, established in the National Defense Authorization Act for Fiscal Year 2000, to review the management and organization of space, concluded that a number of “disparate space activities should be promptly merged, chains of commands adjusted, lines of communication opened, and policies modified to achieve greater responsibility and accountability.”

Here we are, 9 years later. Has the situation changed since the Commission made this finding? If so, is it better or is it worse?

I guess we start first with you, Secretary Payton.

Mr. PAYTON. Yes, sir. A lot has changed since 2000 and 2001: establishment of the Director for National Intelligence (DNI) and the assignment of the NRO to that Director; the acquisition rules that were established as a result of that 2001 legislation have been changed again, and now space programs are back under the standard, routine acquisition policies that the rest of the Pentagon abides by.

There has been a myriad of changes since that 2001 era. Recognizing that, Secretary Donley, back in December, asked Mr. Rich McKinney, an experienced Air Force employee, to look at how Air Force Headquarters should be organized, in light of all these changes since 2001. The results of Mr. McKinney’s analysis will go to Secretary Donley in late March, early April. Mr. McKinney has surveyed 56 people, to include Congress and the Army, Navy, and Air Force, all across the country. So, he has collected a wealth of data and is distilling that into some recommendations for Secretary Donley to consider.

We are responding to all the changes that have occurred since 2000 and 2001, and Secretary Donley will have that to digest here, within a few weeks.

Some of the potential suggestions do include help from Congress, and so, we will be fully open and transparent with Congress if we decide to move down certain paths.

Senator BEN NELSON. General Kehler?

General KEHLER. Sir, I would offer that, in the management of space activities, there are two major and complementary segments that we have to look at. One is the operational segment, and the other is the acquisition segment.

For operations, I would say, unequivocally, we are far better today than we were in 2001. It is clear who is in charge of our space operations, and that begins with the President giving the mission responsibilities to the Commander of U.S. Strategic Command (STRATCOM) whose predecessors have established the functional component for space. It’s a joint activity, where we have now pulled together the operational pieces of what used to be a fragmented activity. I think that now 6, 7, or more years of combat experience have helped hone how we do space operations. My take on this is that, in the operational side of this equation, we have made great strides, and we are far better for it today.

On the acquisitions side, I think I would give us a mixed review. In my own command, for example, AFSPC, as a result of that committee’s work in 2001, I now have a hybrid major command in the

Air Force. I have a command that has responsibility to organize, train, and equip space forces to give to General Chilton at STRATCOM, but I also have an acquisition arm inside AFSPC; I'm the only one of the Air Force major commands like that. That was done specifically so we could pull operations and acquisition and requirements, from a four-star perspective, all together, and to make clear where the accountability and authorities were in all of that. So, in that regard, I think that we have also come a long way inside the Air Force.

The question now is, in light of the changes that Secretary Payton mentioned, whether we are where we need to be. I think that's where this review that Secretary Donley has begun is good and it's timely. We'll look forward to discussing this with the Secretary as we go forward.

Certainly, there are some places where we still have work to do in the management area. The question is, in light of the changes that occurred since 2001, how best to go forward. We are participating in that study. It's focused inside the Air Force, but, of course, it has implications for other things, as well, and we're looking forward to that being completed.

Senator BEN NELSON. How would that relate to policy? I understand operations. I understand acquisition. But, what about policy, to make sure that the overall picture is complete and all the pieces are in place, or what it takes to put all the pieces in place? Somebody has to truly be in charge to make all those decisions and see how each and every one of these pieces fits together to make the picture. What would you say to that?

Mr. PAYTON. Yes, sir, I would offer, that is part of the charter that Secretary Donley laid out for this comparatively short study. How we relate to the rest of the Pentagon, to OSD, and how we relate to the other Services is part of the scope of that study.

Senator BEN NELSON. All right.  
Admiral Dorsett?

Admiral DORSETT. Mr. Chairman, I agree with General Kehler, that, on the operations side, there is great progress and improvement that's been made, in terms of operational management and oversight of space activities. But, I also share, I think, your concern that it's not just policy, it's not just acquisition, but it's the resources and how they are managed across DOD. While I'm probably a little bit out of my lane here, from my vantage point, there are a fair number of different players, with different roles and responsibilities across OSD, and it is not as clear to me that this is, perhaps, necessarily, the perfect organizational alignment. Whether it's within the secretariat of OSD itself or whether it's within the Joint Staff, there are different players and different organizations that have responsibilities, and it could probably be tuned up a bit.

In terms of the Navy, I do want to bring to your attention, within the last year, the Chief of Naval Operations (CNO), Gary Roughead, made a couple of significant changes that have streamlined the Navy's focus on space and its management of space.

In my office, the Deputy CNO for Information Dominance has assigned one individual responsibility for space. We had multiple flag officers on the Navy staff, previously, that had responsibility for space.

In the fleet, he stood up the 10th fleet. The commander of the 10th fleet, a three-star admiral, is now the one individual who's responsible for space, operationally, for the Navy. In the secretariat, my compatriot, Dr. Federici, has that responsibility. So, we've streamlined our organizational alignment, and we're already seeing the benefits of that in the dialogue.

We have some actions to take to actually make some additional progress. But, the alignment, organizationally, I think, has been very positive for us.

Senator BEN NELSON. Thank you.

Senator VITTER.

Senator VITTER. Thank you, Mr. Chairman.

Thank you all for your testimony and service.

I apologize I was late because of other meetings.

General Kehler and Mr. Payton, I want to focus on space and the potential impacts of the National Aeronautics and Space Administration (NASA) budget changes to what you do. The Evolved Expendable Launch Vehicle (EELV) certainly assures our access to space, has a remarkable success record, and is a real workhorse. But, as we all know, assured access to space is not cheap, and the cost is trending up. In that context, I want to understand what you think of the decisions, just announced with regard to NASA, to retire the Shuttle very quickly and, even more significantly, cancel the Constellation program. How will that affect future launch costs that you deal with? If you all could offer your thoughts on that.

Mr. PAYTON. Yes, sir. In fact, on February 1st, I called a dear friend of mine, Bill Gerstenmaier, over in NASA headquarters, and he was very open to work with the Air Force and the entire DOD as NASA puts together their plan for the future.

Clearly, we share an industrial base with NASA. We share an industry workforce with NASA. That industrial base is, in many places, not healthy. Concentrating more flights per year in the EELV program would possibly help us in acquiring the components of a launch vehicle. But, we have to be very careful and understand and manage that relationship very closely, because it would not be beneficial for either organization to have a unique EELV for NASA applications and a unique EELV for DOD applications. That would aid neither agency.

If EELV does become part of NASA's future, either through government flights or commercial flights, we would have to watch very closely any design changes, as well as any production line changes of that sort of detail, and work very closely with NASA to understand and make sure we both end up with a better product.

Senator VITTER. Let me back up, because I was really focused on something a little different.

Mr. PAYTON. Okay.

Senator VITTER. Maybe the more direct way to ask my question is this. This administration wants to cancel the Constellation program. Does that have an impact on you all, and, if so, what is it?

Mr. PAYTON. Tomorrow, I have a session with several NASA folks, and NRO folks, to understand their immediate and longer-term future for the cancellation of Constellation and so that we can learn what the ramifications and the ripple effect could be. But,

again, that's a relationship we intend to manage and understand very closely, and NASA has been very cooperative with us.

Senator VITTER. General?

General KEHLER. Sir, in looking at the NASA decision, first of all, we were asked, by the Augustine panel, to provide some input prior to the decisions, which we did. In that assessment that we provided before the decisions were made, we listed almost two columns. Column one was a set of what we saw as opportunities. As you look at the NASA decision today, the investment that is planned there, in terms of research and development for a new liquid engine, is a good opportunity that we would like to collaborate with them on. We see that as a good opportunity for the country, going forward. We see their desire to improve the launch infrastructure—especially on the east coast, related to the Kennedy Space Center, where we and the Air Force join at Cape Canaveral Air Force Station—as a benefit.

We also see an opportunity, here, with the increased demand on commercial activities. We have said for a very long time, that part of our “assured access to space” plan includes commercial launch vendors that are viable. This pulling on commercial, we also think is a positive thing.

There is a challenge, here, regarding solid rocket motors, and that's the most immediate challenge that we see. The largest demand today, on the solid rocket motor industrial base, comes from NASA, although DOD, the Air Force, and the Navy, as well, rely on that same industrial base for both the land-based and the sea-based strategic deterrent, for other launch-vehicle solid-rocket strap-ons, for example, that we need for EELV and other things. Part of the review that's now going on, that Mr. Payton is heading, is, in fact, drilling down into that area of concern that we have, to find out whether that's a real concern, or whether it is not. I can't give you the details of that today, because what we recommended prior to the decision was, if this is the decision that's made, we will then have to go off and sit down and take a hard look at what the implications will be for the industrial base. That is where we stand today.

We don't have answers yet. What we do have is a potential concern. Perhaps it will turn out not to be a concern, but we don't know that yet.

Senator VITTER. Let me explore that a little bit, because I don't understand how it wouldn't be a concern, at the end of the day. As I understand it, for solid-rockets, there's a set industrial base. The majority of support comes from NASA. The minority of support comes from DOD. If that majority support from NASA goes away, and you still need to have and depend on that industrial base, I assume your costs go way up, absent some other help or some other factor. Am I missing something?

Mr. PAYTON. I don't know, and that's the issue. That would be an obvious concern, but I don't have facts that say that is, in fact, what will happen. I don't know what will happen. I think that we need to pursue the course that we are on here, which is, we have people off studying this, working with NASA, working with the rest of the partners that we have, to make sure that we understand it.

Senator VITTER. Okay. Some initial estimates are that the booster cost, because of what I'm describing, could go up as much as 100 percent. Is that within the realm of possibility, based on what you know now?

Mr. PAYTON. The information we've seen is that the propulsion systems for our EELVs might double in price, not the whole launch vehicle, but the propulsion which is both solid propellant and liquid propellant rocket engines.

Senator VITTER. Okay. So, in fact, your admittedly early estimates would confirm a 100 percent figure for that category.

Mr. PAYTON. For that specific part of the EELV equation. We're also looking at different ways to buy EELVs. That could perhaps save costs.

Senator VITTER. Okay.

Mr. PAYTON. There's a wealth of studies that we're doing right now to look at what an EELV should cost; a should-cost study.

Senator VITTER. That look includes this block-buy approach?

Mr. PAYTON. Yes, sir.

Senator VITTER. Okay.

If I can switch gears, quickly—and you may have covered this already, to some extent; I apologize, if you did. There is concern about not having a designated executive agent for space or Space Posture Review (SPR), even as we make major investments—nearly \$11 billion in fiscal year 2011. Who, within DOD, is ultimately responsible for developing and coordinating that sort of departmentwide space strategy?

Mr. PAYTON. The SPR was conducted with all elements of the Department. It was led by the OSD that handles policy for the SPR.

Senator VITTER. So, the entity responsible for leading it is that office?

Mr. PAYTON. For the SPR, yes, sir.

Senator VITTER. When will the Secretary designate an executive agent for space?

Mr. PAYTON. Secretary Donley has asked Rich McKinney, a very experienced Air Force individual, to look at how the Air Force should be organized, in light of many changes that have occurred in the past decade, relative to the authorities and responsibilities of the executive agent for space. Mr. McKinney's report, again, will be delivered to Secretary Donley in late March.

Senator VITTER. Okay. Compared to that timing, what's the current status of the SPR?

Mr. PAYTON. There will be an interim report that comes to Congress that, I understand, has been signed by the DOD representative, as of today. Then the Office of the DNI also has to sign that interim report, and then it can come over to Congress.

Senator VITTER. Will that final version be done in time to inform the fiscal year 2012 budget within the Department?

Mr. PAYTON. The interim report clearly will be. The final summation of the SPR will not be available until after the White House finishes a national space policy update.

Senator VITTER. Okay.

Ms. Chaplain, your testimony ties diffuse leadership to acquisition problems. What, exactly, do you mean by “diffuse leadership,” and how do you think it’s affecting programs?

Ms. CHAPLAIN. In some of the programs we review, it becomes unclear if there’s a real person in charge or a single point of authority to resolve conflicts and gaps in coordinating assets.

When we looked at the GPS program, for example, we found disconnects between the ground segment, the space segment, and the user terminal. Sometimes these gaps added up to years. So, our question is, who is the person in charge to resolve these gaps and make sure resources are dedicated to where they need to be? We never really found that single point of accountability. We’re looking at SSA now, and some of those questions come up again, like, who’s really the point person for SSA? It’s so broad, and it covers so many organizations.

That is just what tends to happen in space, because there are so many players. Even outside of DOD, there’s an Intelligence Community, there’s NASA, there’s the National Oceanic and Atmospheric Administration (NOAA)—any number of players involved in any one project. Who’s the one that brings it all together and has a strong say in what’s going on in these programs?

I think it’s echoed, in a large sense, in some of these studies that have been done per various congressional mandates.

Senator VITTER. Okay.

Mr. Chairman, if I could just hit one final topic, which is the National Polar-orbiting Operational Environmental Satellite System (NPOESS).

Senator BEN NELSON. Sure.

Senator VITTER. If I can turn to the Air Force leadership. Did the Air Force help initiate the decision to divorce NPOESS? What was your input into the process that led to that decision?

Mr. PAYTON. The Air Force participated, along with the Office of Science and Technology Policy (OSTP) and NOAA and NASA and the National Security Council (NSC), to put together the White House decision on NPOESS.

Senator VITTER. What was that input? Was the route that was taken—did it, in part, come from you, or was it enforced on the Air Force?

Mr. PAYTON. It was a decision that OSTP made and the NSC made, but with multiple inputs from the Air Force on alternative future programs. If the programs stayed together, what would the future look like? So, our job was to offer technical advice and warfighter needs, and to offer the potential ramifications of certain decision paths.

Senator VITTER. Did the Air Force have a fundamental opinion whether its interests would best be served with a divorce, or not?

Mr. PAYTON. We deferred that to the NSC.

Senator VITTER. What steps are being taken to ensure that Defense recoups the technologies it has already funded?

Mr. PAYTON. In fact, the OSTP and the NSC sent all the participants a letter defining the near-term immediate steps. We helped put that letter together, and it includes harvesting the sensor technologies and gaining access to all the intellectual property that is necessary for future designs. So, we will have access to all of that.

Our initial step, though, is to work with the Joint Chiefs of Staff (JCS) and do a military user requirements scrub to determine what the best requirements are for the warfighter that the Air Force would then design into a successor spacecraft for our part of the weather picture that we are responsible for, which is one of the three orbits; the Air Force will field the systems necessary to satisfy one of the three orbits that everybody needs.

Senator VITTER. Okay.

Final question, jumping back to NASA-related issues. Obviously, canceling the recommendation, which is not law yet, of canceling Constellation is a major departure from the past. Was the Air Force explicitly asked the impact on you of canceling Constellation before the decision was made?

Mr. PAYTON. No, sir.

Senator VITTER. Okay.

Thank you, Mr. Chairman.

General KEHLER. Sir, may I clarify—on the executive agent question that you asked, just one other point?

Senator VITTER. Sure.

General KEHLER. I sensed, in the question, that maybe there is a view that there is not an executive agent today. That is not so. The directive that implemented the Space Commission's recommendation about an executive agent says that the Secretary of the Air Force will be the executive agent. Then the Secretary can delegate that to the Under Secretary. Without an Under Secretary, we haven't delegated that authority anywhere, but the Secretary himself is still the executive agent for space for DOD.

He has three primary responsibilities in that job: plan, program, and acquire. Space policy has always been under the purview of the Under Secretary of Defense for Policy. Just for clarification.

Senator VITTER. General, my reaction to that would be, you can have a piece of paper that says the President of the United States is the executive agent, but that obviously wouldn't be meaningful, given his other responsibilities. Admittedly, to a lesser extent, my response to that would be, it's the same problem with the Secretary of the Air Force. Do you have a response to that?

General KEHLER. No, sir. I understand exactly what you're saying. I thought that what you were saying was that there was not an executive agent. Technically, there is.

Senator VITTER. Thank you, Mr. Chairman.

Senator BEN NELSON. Thank you, Senator Vitter.

Ms. Chaplain, last year the GAO issued a report that resulted in some significant and very negative press coverage about the health and reliability of the GPS system. Could you update us on the GAO's assessment, now, of the GPS system?

Ms. CHAPLAIN. Yes. We're currently conducting a follow-on review. The two programs we looked at, on the satellite side last year, were the IIF program and the IIIA program. The IIF program has made some progress, and it's getting ready for a launch fairly soon.

The IIIA program is meeting its schedule currently. We still have concerns about the compressed nature of the schedule, and all of the very difficult activities ahead for GPS IIIA, but it is not encountering any severe problems at this point.

When we look at the health of the constellation, our findings are pretty similar to last year's. One thing we weren't discussing in last year's report, that should probably be brought out more when we talk about it this year, is some of the options the Air Force has available to it to manage GPS if they experience some dips in the constellation availability. There are options that they have to get through those periods.

Our concern is, you don't want to find yourself in a state where you're looking at those kinds of options; you want to make sure you do everything you can to keep the program healthy, resourced, and on track.

Senator BEN NELSON. One of the key impacts to the Air Force looks to be the EELV upper-stage engine. The infrastructure cost may double, as we understand it, for the Air Force, because NASA has stopped buying these engines. Dr. Payton, General Kehler, could you enlighten us on this?

Mr. PAYTON. Yes, Senator. That's part of the propulsion doubling end cost that we have seen. We haven't experienced it yet. It has been predicted. It's both the upper-stage engine, called an RL-10, and the first-stage engine, called an RS-68, on one of the EELVs.

The company that makes those two rocket engines has shrunk its overhead, facility-wise, by 50 percent in the past few years, but with the drawdown of the Space Shuttle main engine, which that company also works on; and the cancellation of a rocket engine called the J2X, which is part of the Ares launch vehicle. If that does come about, even though they've already reduced their overhead dramatically in the past few years, they will still have more overhead, more facility space than they need to produce the first-stage engine and the second-stage engine. That's, again, part of the industrial-base ramifications that we have to manage very tightly.

Additionally, the flight rates for the EELVs have not materialized, due to a drawdown in commercial launch sales. That has been part of the problem, too; just not enough rocket engines being built compared to what the original plans were.

Senator BEN NELSON. That puts us at a disadvantage of some sort. Is it just economic, or is it the potential of not being able to have parts or replacement or anything that would relate to continuity?

Mr. PAYTON. The first word out of my mouth, when I talk to either the Air Force folks or the industry folks, when it comes to launch, is reliability. We cannot afford a failure in a launch. So, we will not do anything that sacrifices reliability. We have, again, six studies ongoing right now, all the way from mission assurance to detailed should-cost studies, to look at how much manpower the industry is charging to the EELV program. So, we have a series of six studies going on right now to look at how we can maintain the mission assurance, maintain the reliability, and reduce these costs that we're seeing on the horizon.

Senator BEN NELSON. Secretary Payton, the Air Force reconfigures and uses excess strategic assets for space launch. I understand there may be some issues arising, from a competition perspective, with regard to the use of these assets. Is there a way to save money, with respect to the assets, and avoid destruction costs? Does the Air Force have a view on this?

Mr. PAYTON. These rockets, that use excess Intercontinental Ballistic Missile (ICBM) stages, are called Minotaurs. There are four different sizes of Minotaur. Every time we use one, we get Secretary of Defense approval to do that, for that very reason. But, these launchers launch satellites that are much smaller than what EELV rockets can launch. So, it's a different class, a different, almost, market space, a different market for these class of launchers, compared to EELVs.

Senator BEN NELSON. All right.

Ms. Chaplain, you mentioned in your testimony that one of the problems facing DOD in the future is a lack of adequate engineers and technicians with space experience. Is this a problem not only with DOD, but is it also just a general problem in the industry, as a whole?

Ms. CHAPLAIN. Yes, I think it is a general problem. The one thing to note is that NASA has some special flexibilities, in terms of hiring people and retaining them and recruiting them, that the DOD may not have on the space side, but, generally, in aerospace, I think there's an increasing shortage in key technical expertise, that everybody is dealing with.

Senator BEN NELSON. From the standpoint of the Air Force—and perhaps from the Navy, as well—Secretary Payton and Dr. Federici, could you give us some idea of your experience in being able to field technically competent engineers? While we may have it under control at the moment, or getting it under control, what does the future hold?

Dr. FEDERICI. Within the Navy, we have the Naval Research Lab (NRL), and they have been in the space engineering, space science and technology, for well over 50 years.

Senator BEN NELSON. Does that mean you're growing your own, in effect?

Dr. FEDERICI. We use the NRL as pretty much a pipeline to grow engineers on the civilian side. We also have a military cadre there, as well, that augments it.

We also have a very strong Navy element at the NRO, and we have had that element for a long time. I believe we have about 240-plus people out there, all participating in acquisition programs. We also hold leadership positions out there. Admiral Liz Young is the systems engineer for the NRO. We also have Andrew Cox, who runs their Communications Directorate. Those are the key areas where we try to grow our people, and especially the people in the NRO—mostly military—and a civilian segment, as well. We try to take the military and try to move them back to the fleet, when we can, bring them back into space, as well, so that we always are bringing the fleet views of space support within this technology arm of the National Security Space Office.

Senator BEN NELSON. Secretary Payton?

Mr. PAYTON. The Air Force has something called an Acquisition Improvement Program for not just space, but across the board—air and space and cyber. Part of that is hiring 900 new acquisition personnel for space itself. We've already brought on over 50 of those 900. That 900 will spread over the course of a few years. So, that's on one end of the spectrum, where we're attracting into Air Force

space folks who are already skilled in space acquisition engineering.

On the other end of the spectrum, there are brand new lieutenants. The Air Force Academy has a superb astrodynamics department, where the cadets actually design, build, and fly satellites. So, we're working the problem on both ends of the career spectrum.

General KEHLER. Since the Space and Missile Systems Center (SMSC) is in AFSPC—over the last year, or a little bit more now, we have seen a sharp increase in the number of young people coming out of college who are interested in coming to work at SMC, to the tune of almost 300. Now, there are reasons for why they are there. It has to do with the economy and some other issues, of course. But, nevertheless, that's about 300 young people that we would not have had otherwise. We believe that—given the nature of the work that they will do there, and the fact that many of them were interested in interning with us before they actually came to work for us, we think that we will retain a sufficient number of them, or a high percentage of them. That's good news for us, and that's one of the brightest spots that we've had in a number of years. So, that piece is good.

I think the experience level of our program managers is going up. We have committed to keeping some of our program managers in place longer, for example, than we had in the past, and I think that's paying some dividends, as well. So, working through this Acquisition Improvement Program, I think that we have seen some strides here. The question is whether we can sustain that. When the Air Force presence at the NRO, as well, which has been a very large presence over the years—we also see more experience there, and, in fact, some additional program management opportunities and other things out at the NRO, as well.

The two places where we procure most of the Nation's national security space devices—AFSPC and the NRO—have seen some improvements over the last year or 2.

Senator BEN NELSON. Mr. Secretary, over 80 percent of the satellite communications in Iraq and Afghanistan are handled by commercial satellites, and most of this capacity is purchased on an annual basis and funded through the supplemental or contingency operations funding. In your view, should there be a more strategic approach to buying commercial communications? What's the right mix of commercial and military capacity?

Perhaps, General Kehler, I would begin with you.

General KEHLER. Mr. Chairman, there should be a more strategic view about how to go forward. There is no question that satellite communications is one of those places where we rely very heavily on what commercial can provide; and, as you say, we essentially buy it by the pound.

As we look to the future, of course, we have tended to provide the very high-end protected communications. The Navy does UHF for tactical and operational purposes; we've now been launching the wideband global service satellite. But, we still see room in the future for commercial, and one of the issues that has been taken on in the SPR is, what that mixture should look like as we go forward.

At the same time, we are also looking at what the architecture should be, with the cancellation of the Transformational Satellite

System. What does that mean for the future of protected satellite communications and this mixture? We are back looking, again, to revalidate our requirements, so that we can understand what that mixture should be as we look at the future.

Senator BEN NELSON. Okay. Thank you. I think that will suffice there.

Senator Udall.

Senator UDALL. Thank you, Mr. Chairman.

Panelists, thanks for taking time to join us today.

Welcome, General Kehler. I know you took the medium-length journey from Colorado to join us today; and I understand that you, in part, came to be a part of the wonderful ceremony we had in Emancipation Hall, with the WASP pilots. It was moving and inspirational.

My mother was a pilot. She was inspired to become a pilot both by the example of Amelia Earhart and the WASPs. I remember, fondly, her throwing three or four of her children, including me, into the airplane, and off we went, in Arizona.

I'm reminded, Mr. Chairman and Ranking Member Vitter, when we want to come together, it seems to be the American women that bring us together. It was very, very inspirational to be there today.

Let me, if I might—and, Secretary Payton, turn to you, as well—to talk about NPOESS. I now understand we're calling it the Joint Polar Satellite System, and that seems to be an important step, as we move to reconfigure what we do, rename it, as well. I've watched its progress, or lack thereof, in some cases, both in the House of Representatives and now in the Senate. The budget has ballooned, and the schedule was slipped. But, I was encouraged by the President's decision to separate the acquisition responsibilities and move away from that tri-agency management structure that a lot of reviewers, independent and internal, said was, in part, why we had some troubles.

I think we have the beginnings of a workable program. I'm going to continue to follow its progress and look to you all for leadership in the Air Force. I'll give the Navy a pass for the time being. But, this is so important to have this continuity of weather and climate data.

We haven't heard a lot of detail about the direction that we're going to take, so I'd appreciate if you'd share what you know of the timeline, the expected requirements for the morning orbit, and how you plan to determine them. In other words, will the legacy capabilities of the Defense Meteorological Satellites Program (DMSP) satellites be sufficient, or do you need capability along the lines of the NPOESS satellites?

A lot of questions, but I'll yield time to you all to share your thoughts.

Mr. PAYTON. Yes, sir. Part of the stress and strain inside the NPOESS program was a desire for both Earth science climate data and operational weather observations to come off of the same platform. That's difficult to do from an engineering perspective, as well as from a sensor resolution perspective. That's a difficult design systems engineering task. That's really why the program was delayed as long as it was. I think, fundamentally, that difference lies at the split of the program. For Earth sciences, that afternoon orbit

is the best orbit for observing for Earth sciences purposes. For military operational weather observations, the early morning orbit is the best orbit. So that logic played into that division of responsibilities.

We are still going through the details of what sort of military requirements would be necessary for that morning orbit. The JCS are doing that for us. The good news is that we have a large workforce, both in industry and the government; operators and acquirers that are familiar with this mission area. We don't have a learning curve with the people who are doing this, and so everything should be accelerated in that regard.

Again, we're going to confirm military requirements for the morning orbit and fold in any other Earth science requirements that may be satisfied in that orbit. But, predominantly, the requirements scrub will be followed by acquisition decisions about which sensors we need, on what size platform, and then we can do the appropriate budgeting for the fiscal year 2012 Future Years Defense Program.

General KEHLER. Sir, I would just add, we have two DMSP satellites left, and so, we have a little bit of flexibility here. We are faced with decisions that we have to make, but we don't have to make them today. We have to be deliberate about how we make those decisions. I think that's what Secretary Payton is suggesting, that we are on a pathway to make some deliberate decisions here.

Every review panel that looked at our acquisition programs over the last, maybe, 10 years that I've been paying really close attention to this in leadership positions has cautioned us against trying to do too much on any one given platform. I think that's what Secretary Payton was just saying, as well; these are very difficult integration issues when it comes to that.

At this point, the thinking is that we will still have a shared operational structure that will surround these various weather satellites, but that the acquisition will be placed in the right places for the right tasks. Now, it's important for us to figure out what those "right tasks" are, to put in the acquisition houses that are best set up to do those, and make sure that we can do that in a timely way, harvesting the technologies that have already been paid for, essentially, through the development of the NPOESS program.

We now have to go do our homework and make sure that we understand what best way to go forward here so that we're not repeating any mistakes that have been laid out for us very capably and very painfully by a lot of the acquisition reviews.

Senator UDALL. Can and should we continue to ask you some hard questions about all of this as you reconfigure and make these decisions?

General KEHLER. Absolutely, sir, absolutely. [Laughter.]

Yes, sir.

Senator UDALL. I know I have the support of the chairman in that regard.

If I might, Mr. Chairman—cut me off if my time expires—but I had two other questions.

I'm excited about the restructuring of the National Security Space Institute (NSSI) and the construction that will begin to

house it and the Advanced Space Operations School at Peterson. I'm a homer in that regard, just like Senator Nelson is for his State.

You talked, I know, in your testimony about the synergy between space and cyber, and I know that was a part of why the 24th was located under Space Command. I'd like you to expound a little bit more about those lessons and how you're gaining from the synergies that are in front of us.

General KEHLER. Yes, sir. First let me offer that, again, almost 9 years ago, when the Space Commission reported that we needed to do a better job preparing our space professionals, one of the outputs of that was to construct what is now known as the NSSI to do continuing education, if you will; postgraduate-level education for our space operations people, for our space acquisition people, for our space intelligence people, space weather people, and others who are all now part of that cadre of space professionals. It's a joint activity; Navy folks come, Army folks, a handful of marines, et cetera. We have now taken that NSSI and its continuing education, and we've aligned that under the Air University, so that it's going to get mature faster, we think, with a university structure over top of it. So far, it's going well. We will, in fact, break ground on a new building for them here in the not-too-distant future.

The second piece, though, is advanced operational training; and that we've aligned with the Air Force Warfare Center. That will be done in Colorado Springs, because that's where the expertise is. But, this is advanced operational training that prepares our people to go forward, that prepares people for General James and his operational activities. I'd be willing certainly to listen to his comments on this, as well.

I think we have that aligned the right way now. I think we have it aligned for our future. As I look over my shoulder at the young space professionals that are coming behind us, I think they are far better than we have ever seen before for a lot of reasons. These are some of those reasons.

Regarding the Air Force's decision to move out on the Secretary of Defense's direction to prepare for cyberspace activities, yes, the Air Force has done a couple of important things.

First is, we have decided that the major command responsibility for cyber will be in AFSPC. We think there's a natural relationship there, engineeringwise, technologywise, and networkwise, where space is largely about networks. Cyber is largely about networks, and its operational business, in our view. So, putting it under a command like AFSPC made sense; standing up an operational organization—24th Air Force, which parallels General James' 14th Air Force for Space. Second is, training the people, essentially paralleling the way we are training space people, I think, has us on the right track for the future.

So, all those pieces together we did based upon many of the things that we have done for space and the success that we have seen in doing those.

Senator UDALL. General James, do you care to comment?

General JAMES. Yes, sir. On the training aspect, as General Kehler said, really, there are two key areas. Number one is looking at how you grow up a space professional, and how you get them

the depth that they need to execute the mission. I think over the last 10 years, as we've frankly been executing combat operations around the world, we've gained a lot of experience to know what do those space professionals have to know in order to support those combat operations around the globe. So, we've tailored our training to that.

The second piece, as General Kehler mentioned, is the Air Warfare Center. We've really put into the curriculum there a lot more thinking about how you operate in an environment where space is absolutely essential, but it will be contested. We are also making sure our operators understand: How do we operate in those particular environments? What sort of experiments do we need to do at the Warfare Center so that all of this is relevant to the combat operation around the globe?

We're really ramping up quite quickly with the Air Warfare Center to understand all of those implications as we send people to Red Flags and the Warfare School and those sorts of things. We're making a lot of progress in both of those areas.

Senator UDALL. Congratulations.

I see my time has expired.

Mr. Chairman, I have another question. We can go another round, if that works for you.

What I hear you saying is, you have outer space, you have inner space, and the two of them are definitely linked, and there are lessons that apply to both realms.

Thank you.

Senator BEN NELSON. Thank you.

General Kehler and Secretary Payton, has there been a decision as to how the fiscal year 2010 NPOESS funds and the fiscal year 2011 funds will be spent? I heard you say fiscal year 2012 is where you're beginning to look, but what about 2010 and 2011?

Mr. PAYTON. Senator, we would suggest continuing the industry work on the sensors and the spacecraft design and, of course, the continuing realtime operations and algorithm development that are going on, so that when the sensor information comes down, the computers on the ground can digest it. We need to continue that work for both NASA's utility and the Air Force's utility, because the sensors that the Air Force will need will probably be very similar to the sensors that are under construction right now.

Senator BEN NELSON. General Kehler, do you have anything that you would like to add?

General KEHLER. No, sir. In light of the decisions, some of it is still being worked out, and it's being spent the way Secretary Payton says.

Senator BEN NELSON. Admiral Dorsett and General Kehler, for years the committee has challenged the Department to pull together an integrated and funded satellite communications architecture. This follows up on the Afghan and Iraq question. To date, we really don't have any architecture. Given the significant increase in the use of manned and unmanned air systems, as publicly discussed by Secretary Gates and Secretary Donley, does a strategic plan exist to address the associated significant increase in satellite communications support for these systems? Perhaps equally important, is that plan fully funded?

Admiral DORSETT. Mr. Chairman, I'm not aware that there's a plan, nor am I aware that it's fully funded. As I look at just the Navy's portion of satellite-based communications, I would say that my observation is that there's clearly a need for an integrated DOD-wide approach to space-based communications.

As I discussed earlier about our MUOS challenges, we in the Navy have not even necessarily taken a completely integrated approach. The one thing that I can offer, though, is that our CNO focus on networks, on information, and on space, is at such a high pitch at this point that in our next budget deliberations, he's putting great pressure on us to focus on the networks, the communications, the flow of information. So, we are basically ramping up our focus on this.

Across the Department, I certainly would applaud a more integrated approach. The Navy has gone it alone, with the communications satellite systems and programs that we've managed previously, sir.

Senator BEN NELSON. Dr. Federici, I see you nodding approval.

Dr. FEDERICI. I agree. To answer your question from my perspective, there is no integrated communications architect. A lot of architecture work is ongoing in different pockets of DOD and the NRO and elsewhere.

A lot of these architecture studies though, in my view, are being done separate from the planning and programming and budgeting process. Somehow, we need to develop mechanisms and appropriate structures to bring those together, and there needs to be somebody that's held accountable for this at a top level. That has not been done yet.

Architecture work has been ongoing, but it's more architecture on paper, and it doesn't translate into budget and programs or impact programs. It doesn't necessarily have to be a program in itself, but we really need to impact programs. It could turn to a policy, but we can't have policies that are unfunded mandates. We need to make sure the policy, if it's being derived from an architecture, is then linked to programs appropriately, and appropriately funded, as well.

Senator BEN NELSON. General Kehler?

General KEHLER. I couldn't agree more. We have done a series of individual architectures over the years for space. What we have not done is an integrated communications architecture, which is really what needs to be done, which is an air, space, and terrestrial architecture that would really pull all the pieces together. Work is underway to do such an architecture. That's a very difficult architecture to construct.

I can tell you that the Chief of Staff of the Air Force has looked at me recently and said—much like the CNO has looked at his staff—and he has said: "I want you to come back to me with a single air, space, and terrestrial Air Force network for one Air Force network that becomes part of the bigger architecture." But, in terms of across the Department, this is something that we know is a missing link, and something that we need to go get after.

Senator BEN NELSON. Secretary Payton, will that study that the Secretary of the Air Force is working on be one of the essential ele-

ments to getting the architecture across the board for all the elements of air, terrestrial, and otherwise?

Mr. PAYTON. Truthfully, the first step on air, terrestrial, and space communication requirements is being led by NII within OSD—NII and the Joint Chiefs—J-8. They're putting together something called a bandwidth study that looks at the total requirements—air, space, and terrestrial.

Senator BEN NELSON. In the process of doing that, that could be the group that puts it together, but ultimately, there has to be somebody that will have responsibility for it. Could we have that as a result of the Secretary's study—if I understand what you're explaining in Secretary Donley's study?

Mr. PAYTON. Yes.

Senator BEN NELSON. You get both. I understand. You have to have the architecture, then you have to have somebody that's responsible for the policy, of seeing it through?

Mr. PAYTON. To execute the programs and deliver the architecture.

Senator BEN NELSON. Execute it?

Mr. PAYTON. Yes, sir.

General KEHLER. Mr. Chairman, I don't think there's any lack of desire on the part of the Services or others to have such an architecture. This is really hard.

Senator BEN NELSON. Even if we get somebody in place, it doesn't mean it's going to be a chip shot. Is that fair?

General KEHLER. It depends on how you shoot, sir. [Laughter.]

Senator BEN NELSON. Some days, it's good golf. [Laughter.]

General KEHLER. Yes, sir.

Senator BEN NELSON. Going back to the Air Force. Currently, there is no funding in the Air Force budget for a technology maturation line for overhead infrared capability. At the same time, the Missile Defense Agency (MDA) has included in its budget funds for a new infrared satellite capability for missile tracking. The age-old question: Have the Air Force and the MDA coordinated on the requirements and technology for the program, to your knowledge?

Mr. PAYTON. No, sir. When he first got on the job, General O'Reilly came to talk to the Air Force about his ideas about this program called the Precision Tracking Space System (PTSS). We have to remember, though, that that program is for what they call midcourse tracking, where the rocket has already burned out and is now coasting through space. That is a different sort of infrared, different mission than overhead persistent infrared, which is looking for hot things, and globally. The PTSS will be more geographically constrained than what we can tolerate for the overhead persistent infrared sensor systems.

Senator BEN NELSON. Okay.

Senator Udall, would you like to finish up with your questions?

Senator UDALL. Thank you, Mr. Chairman.

Let me just start out by thanking Dr. Federici and Admiral Dorsett for being here.

The United States has been, is today, and will always need to be a maritime power, so my questions to the Air Force are not meant with any disrespect for the important roles that you play and the way in which you let us project force.

General Kehler, you noted that approximately \$3 billion will transfer to AFSPC in fiscal year 2011 to grow cyberspace professionals and provide integrated cyberspace capabilities to Joint Force commanders. Could you outline how that \$3 billion breaks down?

General KEHLER. Yes, sir. It's existing money, first of all. It transferred as we pulled together cyberpieces from around the Air Force. It's not new money that we've put in the direction of cyber. So, first of all, it is largely to do those things that we have been doing for quite some time. Just as the Navy did, when they pulled together pieces of the Navy into their new organization, we pulled, largely, our communications and computer activities into my command and inside 24th Air Force.

Much of what we are doing is continuing to provide those basic network communications, computer sorts of services that we had been doing in a scattered way throughout the Air Force, but now we've brought focus to all of that.

The other thing that we are doing is, we're revising our training activities to make sure that we are now building cyberprofessionals from the beginning who have certain academic prerequisites, who enter our training pipeline, who go through a deliberate preparation time, much like we do with pilots or space operations people. We are putting all of those pieces together inside air education and training command.

We are also continuing to provide expeditionary cyberforces, combat communications people, who go forward—some of them are in Haiti, for example, still as we speak; others are forward deployed in the U.S. Central Command area of responsibility, et cetera.

Then, of course, we are working on a new operations center, which will be part of 24th Air Force, which will be our Service component to the joint cyberspace organization—STRATCOM today. If and when we get to U.S. Cyber Command, 24th Air Force will be part of that. That \$3 billion a year does everything from purchasing long-haul communications that we have to purchase—and, by the way, the demand continues to go up—through doing our normal communications functions—deployable air traffic control systems, all of the pieces that go with that—that we've inherited as part of the new cyberbusiness.

Then, the new things that we're doing to be able to do the primary responsibility, which we have for our service in cyber, which is protecting ourselves and making sure that these intrusions that go on, while we may not be able to prevent them all or stop them all, that they don't impact our missions. So, our focus has become a mission-assurance-under-duress kind of a focus, so that we can continue to operate, even in the face of these intrusions that go on.

Senator UDALL. Two comments on those points before I turn to General James for my last question. I would anticipate that, much like other areas of endeavor in the civilian arenas, that soon we will be competing—the military, that is—Federal Government—for personnel with those who have needs to protect their own assets in cyberspace, whether it be the banking system or our electricity grid and a number of other areas in which we see those sorts of threats.

I would also imagine that the ideal cyberprofessional would be an additional asset if they spoke Russian, Chinese, Hebrew, or French, given where some of the challenges are arising right now.

General James, let me turn to you and talk a little bit about SSA. SSA is obviously crucial for keeping our assets safe. We're relying more and more on commercial capabilities to satisfy our requirements. At the same time, those commercial providers, I understand, need to be given access to accurate SSA, as well. This was being done through the Commercial and Foreign Entities (CFE) pilot program, I think, right? I understand that has been made permanent, transferred to STRATCOM. Can you update us on your efforts to make sure that we have the capacity to share that information between government and commercial satellite operators?

General JAMES. Yes, sir. The folks that do that are out at the Joint Space Operations Center at Vandenberg Air Force Base, and that's where all the data comes in from our worldwide sensors to make sure that we can track all the objects on orbit and then do, essentially, what we call conjunction assessments, which determine if one satellite is about to be hit by another piece of debris or another satellite. Over the last year, we've ramped up that capability. We were looking at about 110 satellites at the beginning of 2009, and now, at the end of 2009, we are really assessing over 1,100 operational satellites to determine if there is going to be a possible collision between that particular satellite and another satellite or a piece of debris.

We've ramped up our capability, and that's primarily in support of what was the CFE program, now called SSA Sharing. So, we provide on the order of hundreds of assessments a week to various owner-operators around the globe to determine whether or not there is going to be a close approach.

To date, over 50 satellites—owner-operators—have elected to maneuver their spacecraft, based on the data that we are providing to them. That's commercial entities, that's foreign entities—it really cuts across the gamut. That's what we have implemented with this Space Situational Awareness Sharing program.

We're still in the middle of determining the level of accuracy of data we can provide, because there are certain capacities that we want to protect. But, that's all ongoing, to determine how we do that. But, the owner-operators around the globe have been relying on our Joint Space Operations Center to get them that information, and it has worked very well over the last year.

Senator UDALL. How much of that debris is from the Chinese weather bird that they unnecessarily destroyed? Was that over a year ago, now?

General JAMES. It's over 2 years ago.

Senator UDALL. Is it 2 years ago?

Mr. PAYTON. January 2007.

Senator UDALL. I don't mean to sound whimsical, but I know that was—in retrospect.

General JAMES. The debris creation there was significant.

Senator UDALL. Yes, please.

General JAMES. I don't remember the exact numbers, but several-percentage-point increase in the overall total of space debris in

the low Earth orbit area. So, yes, sir, we manage that quite closely, to make sure that none of that's going to impact our systems.

Senator UDALL. Maybe that was a lesson to the world, as unfortunate as maybe it was, that that's not necessary in the future to show a capability. Hopefully, there are other ways to communicate with each other.

General JAMES. Yes, sir.

Senator UDALL. Thank you, Mr. Chairman.

Senator BEN NELSON. General Kehler, the Air Force has increased the budget for SSA programs. Why is this important? What happens if this request isn't fully supported? I'd like to know for the record how important this is so that we can consider that.

General KEHLER. Sir, as General James just said, today we are tracking over 21,000 manmade objects in Earth orbit—debris, active pieces, or those that have outlived their usefulness or become dormant in some way.

While there's a great volume of space there in which they can move, they're all traveling at a very high rate of speed, and as space becomes more congested, it's even more important that we understand where these objects are and what they're doing. First, we have a responsibility to help NASA understand for human spaceflight where this debris is and whether people are at risk. General James' people draw an imaginary bubble, if you will, around the International Space Station and around the Shuttle and other human-occupied vehicles when they're flying, to make sure that we can be very precise about what potential threats may be, because even relatively small objects traveling at those speeds—spacecraft, typically, are fairly fragile devices so, it's important that we understand where these objects are. First, for safety of flight. Second, to preserve capability and investment. This an issue not only for national security purposes, but for economic purposes, as well. Where we saw the unintended collision between the Iridium satellite and the dead Russian Cosmos satellite, we caught a glimpse of what can happen here if space becomes more congested and we're not able to keep pace.

Much of the SSA investment is to move us from just being able to maintain a catalog to this term that we use, called situational awareness, which is a dynamic understanding of what is actually happening. Because the final reason that we need to make sure that we understand what's happening on orbit is so that we detect, if you will, acts that would be malicious in some way, whether they would be done as part of a conflict in the future or whether they would be done as part of an unintended consequences, even from a maneuver that might go on.

With our investment, with the importance of what we do there, with the way not only our warfighters but our economy and others rely on what comes from space, it's very, very important for us to have a better and better and better awareness of what is happening in space.

Sir, I would add one more point. That also extends to cyberspace, because there is a relationship between cyberspace and space, and our situational awareness in cyberspace needs to improve, as well.

Senator BEN NELSON. Dr. Federici, the Navy's recent report on UHF augmentation is a shift from the previous approaches, and in-

cludes a revisit of commercial UHF options. This committee has supported a more aggressive approach to mitigation so this is a welcome development. What implications, if any, will this decision have for the Navy's fiscal year 2011 budget? When will you be able to provide details of the commercial options?

Dr. FEDERICI. We have looked at several options in the past. We're going to revisit those options. We're going to look at some other offerings in the next few weeks. I believe we'll want to begin something soon. We'll need to be working with your staffs, in coordinating some of our thoughts. We really have to work with Admiral Dorsett's staff as well on any funding in fiscal year 2011 that may be needed once the bill is passed. So, that's something we'll need to work with your staffs on as well.

But, it is an option that we have on the table now. We're going to press forward. We need to take a look at what those options all are. We need to do the best business-case analysis that's available, but we need to do it quickly; we need to get something underway.

We have identified, as the report mentions, a number of mitigation options, but, when you take all the options together, they don't really give you a full capability of a single UHF. We really want to now explore that option. It could be a hosted payload, leased, or it could be a purchase. We want to take a look at that.

Senator BEN NELSON. Admiral Dorsett, from an operational perspective, what are your major concerns about not having adequate UHF capability and plans to develop mitigation and augmentation capacity? If you didn't have it, what does that do to your operations?

Admiral DORSETT. First of all, the approach that we are taking now, by looking at a commercially hosted payload, is the right approach. It reduces the risk that we otherwise would have. Last year, we made a decision that we could afford more risk, with the additional delay on the MUOS. We made a decision that we no longer could afford that risk.

It does come down to an issue of risk and how much capability you're going to be able to provide to the warfighters. We're looking at this from a joint perspective, since we're providing this UHF capability across DOD. We're at the point right now where we need to do additional mitigations.

I think today we're okay, but if there were to be any other delay in MUOS, or any delays in the entire MUOS constellation, we'd be placing the Joint Force at a level of risk that, frankly, would not be appropriate.

So, I'm concerned about that from a warfighter's point of view. I'm also concerned about it from the provider-of-the-capabilities' point of view.

Senator BEN NELSON. In that regard, what are your thoughts on making the DOD UHF spectrum available to encourage commercial investment in meeting the long-term government communications requirements, as well? Do you have some thoughts about how that might work?

Admiral DORSETT. I have not delved into it. I think Dr. Federici would be better to answer that. I'd only make one comment, and I'd say that that is part of what we're looking at when we're looking at mitigation. You have to put that into the calculation.

Dr. FEDERICI. That is an area we'll need to work with ASD NII on. I believe there's been precedent set in the past that that has been done; I believe, with VSAT. That is something I'll need to check, and I'll take for the record.

Senator BEN NELSON. Okay.

[The information referred to follows]

We will continue to work with ASD NII on spectrum policies to encourage commercial firms to invest in solutions to meet our growing UHF spectrum warfighter communications requirements. In 1997, OSD did allow Hughes Corporation to use our LEASAT-5 spacecraft to support a contract with the Australian Defence Forces. We are exploring any good ideas that the commercial sector brings forward to fulfill our UHF communications needs. The Department will keep working with OSD to support existing commercial use of UHF government spectrum, as demonstrated in the attached 1997 memorandum (attached).



COMMAND, CONTROL,  
COMMUNICATIONS, AND  
INTELLIGENCE

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE  
6000 DEFENSE PENTAGON  
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October 07, 1997

Mr. Mike Chisholm  
Manager, Contracts  
Hughes Government Services  
SC/S10/S371  
P.O. Box 92919  
Los Angeles, CA 90009

Dear Mr. Chisholm:

This letter is in reply to your letter of June 30, 1997, regarding the Leasat 5 contract. In your letter, you advised CASD/C3I that Hughes/PANAMSAT had signed a contract with the Australian Defense Forces to provide CHF satellite communications services from the Leasat 5 spacecraft (FLTSATCOM-A Indian Ocean (IO) and Leasat F-5). I believe the Department of Defense can support this contract subject to the four conditions identified below. The conditions are based on agreements made at various discussions and meetings (including the August 18, 1997, meeting hosted by NAVEMSCEN and your subsequent meetings with Navy/PNW-146) which we feel are necessary in order for us to support the execution of your contract with the Australian Government.

Condition 1. Re-establish the "status quo" for the TT&C of Leasat 5 which existed during the Navy's use of the spacecraft. This, as I understand it, can be accomplished by the negotiation of a no cost extension/amendment to the existing Navy-Hughes/PANAMSAT Leasat 5 contract. This action will provide the contractual vehicle for the Navy to authorize the continuation of the 8/7 GHz TT&C operations from the Guam control site and will allow the Navy to maintain full control over the spacecraft. In addition, the extension/amendment should contain a provision that will allow the Navy to utilize the remaining transponders in case of a U.S. military necessity. As soon as the extension/amendments have been incorporated, the NAVEMSCEN will begin national and international frequency assignment/notification activity. This will allow the Australians to begin operational testing of four 5 kHz UHF transponders (channels 9-12 of the "W" channel plan) at the spacecraft's present location.

Condition 2. There currently is no agreement on the use of the 2b kHz transponders and channel 13 transponder by anyone, and therefore, no use of these transponders is authorized until interference issues involving U.S. Government operational units are resolved and a coordinated test plan is agreed upon. Hughes/PANAMSAT is requested to continue to study this issue and to coordinate with the Pacific Command (PACOM) Joint Spectrum Management Office. The

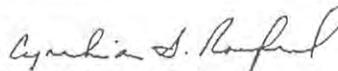
appropriate POCs at PMW-146, Navy Space Command, and NAVEMSCEN must also be kept informed on the progress of the resolution of this issue.

Condition 3. There is currently no agreement on the movement of the spacecraft to a new orbital location, and therefore, no movement is authorized until a viable orbital position is determined by Hughes/PANAMSAT and coordinated through the DoD's permanent working group on space communication matters (the United States Military Communications Electronics Board J-2081 PWG). Once this is done, NAVEMSCEN, in coordination with Hughes/PANAMSAT, will file the appropriate modifications/reinstatements to the pre-existing ELTSATCOM-A national and international filings to reflect the appropriate location and frequency use. If further international coordination is required, NAVEMSCEN will take the lead in this effort.

Condition 4. There is no change in our policy regarding the use of the 8/7 GHz and UHF bands, and therefore, we wish to re-state our concerns about the perception of the intended use of Leasat 5 under these contractual arrangements. As indicated in your letter, your Australian contract has restricted the use of Leasat 5 to defense purposes only. As operation of Leasat 5 begins under these contractual arrangements, it should be made clear that our agreement does not in any way set a precedence for commercial use of the military UHF band (225-400 MHz) or the 8/7 GHz band. Therefore, if any public press announcements are released by Hughes/PANAMSAT about the Australian contract, we request they clearly reflect that the use of ELTSATCOM-A Leasat 5) by the Australian Defense Forces is sponsored by the U.S. Navy and is strictly for military purposes only.

Since this is the first time something like this has been done, I feel there is a need for continued dialog between the stakeholders of this subject. Therefore, until advised otherwise, PMW-146 (in close coordination with NAVEMSCEN) will be the DoD point of contact for this matter. However, if policy issues need further resolution, they are to be forwarded to PMW-146 and NAVEMSCEN. If required, NAVEMSCEN will forward the policy issues and recommendations to me for approval.

Sincerely,



Cynthia S. Raiford  
Deputy Director,  
Communications

cc:  
Wayne A. Ladrach  
Program Manager, Leasat 5  
Hughes Government Services

Dr. FEDERICI. So, that is an issue. It's government spectrum. We'll need to share that, subject to a number of conditions. So, we'll look at that. We'll take that for action.

Senator BEN NELSON. All right. Thank you.

The final question is for each of you. What one thing keeps you awake at night or disturbs you most when you look back over all the things we have to deal with?

Secretary Payton?

Mr. PAYTON. One of the things that's most frustrating to me is the space industrial base. Our costs are going up, because the number of second- and third-tier players are getting out of the space business. They are getting out because they cannot compete effectively with overseas competitors for worldwide market. So, that is increasing our costs.

I worry that eventually it may even lead to reductions in reliability. This goes all the way from the satellite solar arrays to batteries on satellites to propulsion systems on satellites and on launch vehicles.

The thing that worries me routinely, constantly, is the extra costs that we have to put out to redesign our systems for suppliers who are no longer there, to requalify new suppliers. That's a pervasive, difficult problem and our own export controls are hampering our industry.

Senator BEN NELSON. General Kehler?

General KEHLER. Mr. Chairman, there is not a single operational or mission-related item that keeps me awake at night. That's because, in the hands of the young folks that we have operating these systems, they get the mission done. I think once the mission is in their hands and the hardware is in their hands, I don't worry about anything that is going on operationally.

I share Secretary Payton's concern about the space industrial base. I'm not sure that it keeps me awake at night, but I do share his concern about the space industrial base.

What does keep me awake at night is making sure that we can retain these marvelous young people that we have, and especially given that this is an All-Volunteer Force. Being able to retain the quality of people that we need is something that I will occasionally muse about so that I can satisfy myself that we're doing everything we possibly can to retain them. We do largely but they are in high demand in many places.

I would add that one of the ways that we are addressing that is by increasing the use of our Air Guard and our Air Force reservists. Even when people decide to move on, we pat them on the back, tell them, "thanks for your service," and we offer to hand them over to the Guard or the Reserves. We'll have to do that with cyberprofessionals, as well. We're having some success with that. But, I spend a fair amount of time being concerned about retention.

Senator BEN NELSON. General James?

General JAMES. Yes, sir. From an operational perspective, again, as General Kehler said, I don't know if it keeps me up at night, but it's certainly at the top of my list, and that's understanding the expanding capabilities of all the nation states and actors around the globe with respect to space. That gets into the SSA component of not only tracking objects and so on, but truly knowing what is going on in that environment. What are these objects? What is the intent of the owner? What are their capabilities? You have smaller satellites that are difficult to understand what they are doing.

Getting not just tracking information, but situational awareness, so that, ultimately, decisionmakers can make the right decisions, should actions be required to protect our systems or to operate our systems, is really the thing that we need to continue to improve upon. That is not only just sensors, like the Space Fence or the Space-Base Space Surveillance System, but it's also the melding of the intelligence component, because all of those things need to play together in order to give, ultimately, that knowledge to the decisionmakers to allow them to have that situational awareness and make the right decisions at the right time for the Nation.

Senator BEN NELSON. Dr. Federici?

Dr. FEDERICI. Senator, at the beginning of the session, we talked a lot about an executive agent for space and the Commission report, almost 9 years ago. Living in acquisition for the almost 6 years that I have, and looking at a number of different acquisition programs—of course the Navy has—MUOS is, pretty much, a capital program, and a couple of small acquisition programs. I think the organization and management across DOD is a key issue, still. I know it's being worked; it's on the table again. I think clarity and more transparency would be really good things, especially for the Navy. We know all the right offices to go to, but there are several offices you need to work with, and it leads back to that question on architecture that was asked earlier. The Navy really welcomes the opportunities to participate in some of the Air Force space programs, as well as the NRO, to participate in acquisition programs so we can continue to grow our cadre, as well. Because just having one small program office called MUOS is not enough to continue to grow a large cadre. So, we welcome that opportunity, and we would like to keep it.

Admiral DORSETT. Mr. Chairman, I'm concerned about the rising costs of our people and our systems, especially in the current fiscal environment and the projected fiscal environment. In the future, when we no longer receive Oversease Contingency Operations supplemental funds, I am concerned. I do lose sleep over this. I lose sleep over the potential that the Nation will not be able to afford the military that our taxpayers expect from us. These costs are pretty tremendous, and we're already seeing the stress as we're moving towards our POM-12 program development, and I expect to see that pressure increase in the future. It is a big concern of mine.

Ms. CHAPLAIN. At GAO, of course, we're paying—

Senator BEN NELSON. I was so worried you'd say it's these gentlemen that keep you awake at night. [Laughter.]

Ms. CHAPLAIN. Right. [Laughter.]

Yes, they keep me awake. Of course, I'm paid to worry about costs.

Senator BEN NELSON. Watching over us. [Laughter.]

Ms. CHAPLAIN. I'm paid to worry about costs and schedule for space programs, which is more on the boring side of things, but I think these days we're worried about the outcomes of some of these acquisition problems, and all the capability gaps that we face, and canceled programs. Where does that leave us going forward? How do we get from this position of being a little behind in some areas to getting back to being ahead and making sure we can be ahead? Do we have the right strategy and resources to get there? When we have that discussion, I'd personally like to see it cut across government, cut across industry, and be very strategic.

Senator BEN NELSON. Thank you.

Thank you all. I appreciate it.

Once again, thank you for your service, and those that work with you, day in and day out, who wear the uniform or who are civilian, who keep us safe.

Thank you. We appreciate it.

We're adjourned.

[Questions for the record with answers supplied follow:]

## QUESTIONS SUBMITTED BY SENATOR E. BENJAMIN NELSON

## NATIONAL POLAR-ORBITING OPERATIONAL ENVIRONMENTAL SATELLITE SYSTEM

1. Senator BEN NELSON. Mr. Payton and General Kehler, the Office of Science and Technology Policy has determined that the National Polar-orbiting Operational Environmental Satellite System (NPOESS) meteorological satellite program should be dissolved and a new approach to weather and climate satellites adopted. As part of that program dissolution National Oceanic and Atmospheric Association (NOAA) and National Aeronautics and Space Administration (NASA) will take the afternoon orbit and the Air Force will take the early morning orbit. We understand that NOAA and NASA have set up transition teams to begin work on their part of this split program. What is the Air Force doing?

Mr. PAYTON and General KEHLER. The Department of Defense (DOD), to include the Air Force, NASA, and NOAA have formed a transition team to outline the transfer of efforts from the NPOESS contract to DOD, NASA, and NOAA management.

The Air Force will conduct a requirements review, an analysis of alternatives (AoA), and then proceed in accordance with DOD 5200-series guidance and the Weapon System Acquisition Reform Act (WSARA). The results of the requirements review and AoA will inform the acquisition strategy and follow-on program content.

Air Force Space Command will partner with SAF/US(D), OSD, NOAA, and NASA to ensure U.S. Transportation Command (TRANSCOM) requirements are met.

2. Senator BEN NELSON. Mr. Payton, has there been a decision as to how the fiscal year 2010 and the fiscal year 2011 NPOESS funds will be spent?

Mr. PAYTON. The fiscal year 2010 funds are to ensure the continuity in each orbit. Second flight unit copies of the instruments slated to fly on the afternoon orbit platform following the NPOESS Preparatory Project mission are the core focus of the NPOESS program's fiscal year 2010 effort. The current plan is to continue executing the major efforts under the prime contract, carefully pace continued Microwave Imager Sounder and Space Environmental Monitor-NPOESS developments, and actively support the transition of the follow-on efforts supporting the Joint Polar Satellite System program.

The plan for fiscal year 2011 is contingent on the transition activities in fiscal year 2010 as well as the path forward chosen to maintain continuity for the early morning orbit.

3. Senator BEN NELSON. Mr. Payton, when there is such a decision, could you please provide the committee with a detailed breakdown for these funds, including any termination funds?

Mr. PAYTON. Yes, once the agencies finalize their plans, we will be happy to provide a detailed cost breakout.

## SPACE SITUATIONAL AWARENESS

4. Senator BEN NELSON. General Kehler, the Air Force has increased the budget for space situational awareness (SSA) programs. Why is this important and what happens if this request is not fully supported?

General KEHLER. Awareness of space is vital to preserving safety of life for manned missions and safeguarding our national security and commercial interest in space missions. The space domain is becoming increasingly contested, congested, and competitive. Our need to operate and maintain awareness in the space environment is vital to our national security. SSA depends on being able to detect, track, and identify objects in space. Today we track over 21,000 active space systems; but of graver concern is the increasing number of small objects that we are unable to detect, track, assess, and determine intent because of the limitations of our existing capabilities.

If Air Force Space Command (AFSPC) requests for funding of the SSA improvement plans are not supported, we unnecessarily put enormous investments in national security, civil, commercial and international space capabilities and services at risk. Our warfighters, our economy, and our way of life depend on space-based services, and we expect the dependence to grow into the future.

5. Senator BEN NELSON. Admiral Dorsett, from the Navy's perspective as both a space operator and user of space assets, how important in your mind is this increased emphasis on SSA?

Admiral DORSETT. The Navy is critically dependent on space assets for our warfighting and expeditionary missions. SSA is fundamental to conducting space op-

erations and is essential to maintaining the advantage we enjoy in space. In today's contested and congested environment it is paramount that we are able to attribute malicious or hostile acts, to fully understand the space environment and the operational effects of spectrum interference, and to ensure safety of flight for space missions. The Navy relies on the Air Force for these capabilities and supports all the efforts to further enhance SSA to protect the Nation's and international community's space capabilities.

#### ULTRA-HIGH FREQUENCY MITIGATION OPTIONS

6. Senator BEN NELSON. Admiral Dorsett, from an operational perspective, what are your major concerns about not having adequate ultra-high frequency (UHF) capability and the plans to develop mitigation and augmentation capacity?

Admiral DORSETT. The Navy recognizes that tactical narrowband communications are critical to the joint warfighter. We are committed to maintaining the current UHF constellation and delivering Mobile User Objective System (MUOS) as quickly as possible. We are meeting current acquisition requirements, but not demand. Demand for UHF services is growing every year. Acquisition programs are planned and funded to meet requirements, not necessarily demand.

The Navy has prepared a series of mitigation options that can be incrementally implemented to minimize the operational impact of a loss or degradation to the current on-orbit UHF constellation. We have already implemented a payload reconfiguration to UFO satellite Flight 11 which increased the number of available channels. This action was completed at no cost and with very low risk to the spacecraft. Additionally, the Navy continues to lease supplemental UHF resources from two commercial satellites, LEASAT and SKYNET, and is leasing an additional channel on an Italian space-based communications system (SICRAL). We are also pursuing options to make more efficient use of available satellite resources. The Integrated Waveform (IW), a software upgrade to UHF SATCOM tactical terminals and control system, is in development and will optimize UHF satellite channels by doubling the number of accesses that can be supported by a single 25 kHz channel. DOD is also in the process of finalizing a Memorandum of Understanding with the Australian Ministry of Defense to procure/use channels on an Australian-hosted payload in exchange for future use (commencing 2018) of equivalent UHF SATCOM accesses. Finally, we plan to assess the operational feasibility of TACSAT-4, an Office of Naval Research, Naval Research Laboratory, and Operationally Responsive Space Office initiative.

7. Senator BEN NELSON. Dr. Federici and Admiral Dorsett, for many years, the Navy has used the commercial LEASAT satellites to provide the critical UHF satellite services. What are your thoughts on making DOD UHF spectrum available to encourage commercial investment in meeting long-term government communications requirements?

Dr. FEDERICI and Admiral DORSETT. Navy has had success with the LEASAT program by allowing a commercial vendor to provide UHF SATCOM services in DOD spectrum. Due to the delay to MUOS, Navy is investigating options for a UHF hosted payload; this approach would also result in Navy/DOD permitting a commercial vendor to operate a satellite that employs DOD spectrum. We are supportive of allowing commercial investment in systems that use the DOD spectrum if it enables DOD to satisfy military communications requirements.

#### OPERATIONALLY RESPONSIVE SPACE

8. Senator BEN NELSON. General Kehler and General James, the new Operationally Responsive Space (ORS) office is working on responding to an urgent need of the U.S. Central Command (CENTCOM) for additional Intelligence, Surveillance, and Reconnaissance (ISR) capability through the ORS-1 satellite. This is important but the ORS fundamental work on the plug and play bus and sensor development work is also important. I am concerned that the basic work of the ORS office may be taking a back seat to the urgent need. In addition, the out-year budgets for ORS go down substantially. Can you explain how you will support ORS in the future?

General KEHLER. The President's budget includes significant funding to develop the technologies to enable ORS. \$78 million of the fiscal year 2011 funding is dedicated to the basic work of the ORS office to develop enabling capabilities. In fiscal year 2011, the capability development funding includes Studies and Analysis, Systems Engineering and Enabling Technologies, Radio Frequency Modular Missions #1, Rapid Response Space Works, TacSat Planning and Launch Vehicles. The rest

of the fiscal year 2011 funding for ORS, \$15.7 million, is ORS-1 funding in response to the COCOM urgent need.

General JAMES. We do not believe that the basic work of the ORS office is taking a back seat to the CENTCOM urgent need. ORS essential tasks are to: (1) develop end-to-end enabling capabilities, and (2) respond to Joint Force Commander needs validated by TRANSCOM. AFSPC and JFCC SPACE strongly support this parallel approach to capability delivery for the Nation. From our perspective meeting, the CENTCOM need is an operational priority as is balancing enabler development.

JFCC SPACE and AFSPC continue to work with the ORS Office, TRANSCOM, Services and our coalition partners to rapidly operationalize and balance the development of cost-effective, responsive technologies.

9. Senator BEN NELSON. General James, are you involved in the operational military utility study for the sensor on the Tac-Sat 3 satellite, and if so, what are the early conclusions?

General JAMES. Currently JFCC Space and AFSPC are not directly involved in the sensor aspects of the TacSat-3 Joint Military Utility Assessment (JMUA). We continue to maintain a close awareness of the JMUA technical progress. The full JMUA is not complete. Current observations are: (1) JMUA is in the data collection phase. (2) The operations in "routine" modes are progressing. (3) The "tactical" modes allow users to task/retask, process and downlink on Space Ground Link System and Ultra High Frequencies is ongoing. (4) The current data is statistically insufficient for JMUA determination.

10. Senator BEN NELSON. General James, the ORS program gets the bulk of its requirements from the U.S. Strategic Command (STRATCOM). Do you see this as still the correct approach or would you recommend any changes?

General JAMES. The process by which the ORS Office receives requirements from STRATCOM is currently working. Urgent need requirements are submitted by Joint Force Commanders, Combatant Commands and Services. As the UCP assigned lead for DOD space mission and advocacy, STRATCOM validates the need and directs the ORS Office Director to lead an interagency group to develop potential solutions to address the need. These solutions are presented to the Commander of STRATCOM in approximately 90 days and based on the Commander's recommendations are then presented to the Executive Agent for Space in his oversight and Service Acquisition Executive role. So far there have been four needs submitted to the ORS office to investigate.

11. Senator BEN NELSON. Admiral Dorsett, the Navy has also been very involved with the ORS program. The Naval Research Lab built the Tac-Sat 4 satellite, which will launch later this spring, and the Navy has representatives in the ORS program office. In your view, how is this new program doing and what should it keep doing or do differently?

Admiral DORSETT. Navy recognizes the potential of ORS to rapidly augment, reconstitute, or replenish mission critical space capabilities needed by the fleet. Additionally, we see value in the ORS concept to rapidly infuse space technological innovations into operational use—whether to support on-demand surge capabilities or reconstitute critical existing capabilities that are degraded or lost.

I applaud the efforts of the ORS Office and its efforts to develop a multi-tiered approach to providing warfighting capability more rapidly at reduced costs. However, I do not support Service funding to build and store future "enabling capabilities" in advance of validated requirements. Additionally, it is difficult to fully assess and prioritize investment strategies before the prototype "enabling capabilities" are launched and operational. As the Navy's Resource Sponsor for Space, I would desire to see a concrete demonstration of operational value and performance of ORS ventures prior to committing service-specific funding.

Further, while enabling capabilities ready for development and/or rapid launch are key to ORS success, I would recommend that equal focus and priority be placed on evaluating new and innovative approaches to using existing, on-orbit resources to address urgent Joint Force Commander requirements.

#### COMMERCIAL AND FOREIGN ENTITIES

12. Senator BEN NELSON. General James, with the increased challenging of tracking more and more space objects, and to avoid collisions in space, the pilot commercial and foreign entities program has become a permanent program under your

STRATCOM responsibilities. Why is this program important and what, if any, challenges have you seen in transitioning to a permanent program?

General JAMES. This program continues to grow in importance, and, thanks to establishing this as a pilot program years ago, DOD and STRATCOM are now moving the program forward to a more operational posture. The Iridium-Cosmos collision of February 2009 revealed that no one space-faring nation or organization is immune to the risks and dangers of a congested space environment. Within our space surveillance resource capabilities, proactively coordinate with both U.S. Government and non-U.S. Government entities to take appropriate actions to avoid conjunctions since space debris is a danger to all. Fundamentally, SSA data sharing by TRANSCOM helps promote safety in space and confidence building. Our SSA data sharing is an excellent example of responsible and international cooperation. We have established a firm foundation of responsible behavior in space. The program enables TRANSCOM to establish sharing relationships with other owner/operators in order to share information to support safe and responsible space operations by all entities.

Balancing information sharing with our national security responsibilities is a challenge. Keeping pace with, or ahead of the international demand for SSA has proven to be one of the most significant challenges. We have security concerns making sharing difficult, as well as challenges of contacting various satellite owners/operators. Currently, SSA sharing legislation requires formal agreements. Under emergency situations, such as predicted close approaches between satellites, we are authorized to provide notifications and share information without agreements. We are waiting for the delegation of authority to quickly enter into agreement with non-U.S. Governments.

Finally, gathering, analyzing, and disseminating SSA places significant demands on our materiel and human resources. We have managed by updating and expanding some techniques, procedures, and increasing resources. As we provide SSA services to entities, we are finding that many new entities approach us for support, which will increasingly stress our resources and we will have to manage expectations and develop more efficient processes.

13. Senator BEN NELSON. General James, are there any changes needed in the statutory authority for this program?

General JAMES. The language contained in the current legislation adequately addresses to whom the Department may provide SSA data and services, and the restrictions that are attached. This allows the Department to build a SSA sharing program meeting the constraints and limitations of the U.S. Government and the needs of the entity supported.

While a statutory change is not necessary at this time, the requirement for a written agreement to be in place before sharing SSA information has provided significant challenges to our ability to share information. We have an interest in providing SSA services that support safety of flight, yet unless it is an emergency situation, we cannot provide such services without an agreement in place. The lack of an agreement has precluded us from providing some requested services directly to a customer, such as early orbit determination support. Early orbit support provides the launch agency with information to enable insertion of the satellite into its correct orbit, an activity we have an interest in supporting in hopes of preventing conjunctions between the new satellite and other objects, and for improving our own SSA regarding the new object. We are currently reviewing internal procedures to determine whether we can expedite requests for information by modifying internal processes to make this data exchange more timely and efficient. We are optimistic we can address this issue without a need for statutory change at this time.

#### COMMERCIAL COMMUNICATIONS SATELLITES

14. Senator BEN NELSON. Mr. Payton, Dr. Federici, General Kehler, and Admiral Dorsett, over 80 percent of the satellite communications (SATCOM) in Iraq and Afghanistan are handled by commercial satellites. Most of this capacity is purchased on an annual basis and funded through the supplemental or contingency operations funding. In your view, should there be a more strategic approach to buying commercial communications and what is the right mix of commercial and military capability?

Mr. PAYTON and General KEHLER. Assured access to SATCOM under all conditions remains a critical capability for any warfighter. Wideband Global SATCOM (WGS) and Advanced Extremely High Frequency (AEHF) will greatly improve our capabilities, but commercial SATCOM are still needed to satisfy the entire demand.

While supplemental or contingency funding is primarily used today to fund commercial leases on an annual basis, this short-term contractual model does not necessarily deliver the best fees and terms to the DOD. We are assessing many different commercial models, including different contractual models such as long-term leases that would require Services to budget for commercial services instead of relying on yearly supplemental funding. This same study will also deliver a recommendation on the right balance between commercial and military capabilities.

Dr. FEDERICI and Admiral DORSETT. We agree with the Air Force that an integrated, DOD-wide approach to building a communications architecture is needed. A holistic Joint Space Communications Layer (JSCL) architecture, developed and assessed against current and future space capabilities, gaps, and vulnerabilities, will be critical in determining the right mix of commercial and military SATCOM for our warfighters. It will be important to conduct a risk, cost, and feasibility analysis to ensure sustainment of our MILSATCOM capability while exploring future partnerships with industry.

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QUESTIONS SUBMITTED BY SENATOR MARK UDALL

DELTA II

15. Senator UDALL. Secretary Payton, the Delta II rocket has been one of the most successful launch vehicles in history for putting commercial medium class satellites into orbit. However, the last Delta II government launch at Vandenberg Air Force Base (AFB) is scheduled for 2011. The current lease arrangement between the Air Force and NASA has allowed for numerous launches of commercial satellites performing national security missions. I am concerned that commercial space companies may lose access to launch capabilities after the last government Delta II launch at Vandenberg AFB. What assurances can you provide that commercial companies will continue to have access to the necessary infrastructure to put their satellites into orbit so as to avoid being forced to launch on foreign providers?

Mr. PAYTON. The Air Force has responsibility for national assured access to space. Not only is the Air Force in compliance with the Commercial Space Launch Act, it is in the Air Force's interest to accommodate commercial companies with access to the launch infrastructure. As such, SpaceX has exclusive use of Space Launch Complex-40 at Cape Canaveral AFS to support both their government and commercial customers and the Air Force will continue to work with United Launch Alliance to support their commercial Atlas V and Delta IV customers at both the east and west coast launch ranges.

SATELLITE IMAGERY

16. Senator UDALL. General Kehler, leveraging commercial satellite imagery provides unique advantages over traditional sources. Our military can share unclassified commercial imagery with coalition partners, enabling maximum information awareness without compromising security. Can you tell how your command has utilized commercial satellite imagery to accomplish your mission?

General KEHLER. Commercial imagery is ideal for coalition sharing and in a humanitarian assistance/disaster response (HA/DR) context. While AFSPC maintains close contacts with commercial imagery consortia, the joint force commanders are the true end-users of commercial imagery services and gain access through DOD's lead at the National Geospatial Intelligence Agency. As you may be aware, Unified Commanders used commercial imagery for HA/DR following the 2004 tsunami in South Asia, recently in Haiti and Chile with the earthquakes, and domestically during the California wildfires. In short, the burgeoning commercial satellite imagery market can be a significant advantage for our warfighters.

17. Senator UDALL. General Kehler, do you envision mission areas where your command will more heavily rely on space and near-space commercial ISR capabilities?

General KEHLER. AFSPC, while not a direct consumer of commercial ISR, has a responsibility for leveraging any and all resources in an effort to provide integrated space forces and capabilities for STRATCOM missions. Commercial ISR capabilities are considered a viable option to meet many of the joint and coalition imagery needs; especially since the capabilities, timeliness, and accuracy of commercial services have improved over the past decade.

## QUESTIONS SUBMITTED BY SENATOR DAVID VITTER

## SPACE STRATEGY AND ACQUISITION DIFFICULTIES

18. Senator VITTER. Mr. Payton, Dr. Federici, General Kehler, General James, Admiral Dorsett, and Ms. Chaplain, this committee has long been concerned with the troubling space acquisition trend of schedule delays, Nunn-McCurdy breaches, and the increasing risk of capability gaps. What is being done to resolve the poor conditions of space acquisitions?

Mr. PAYTON. Over the past decade and a half the Air Force has attempted to adapt the changing landscape of the industrial base, the force structure, and the increasing requirement needs of the warfighter, resulting in increased complexity and the pursuit, in several cases, of not yet mature technologies. To address these challenges, the Air Force is rigorously pursuing an Acquisition Improvement Plan (May 2009) which serves as the strategic framework for reinstilling excellence in space systems acquisition. The Acquisition Improvement Plan focuses on increasing the workforce; senior level certification of warfighter requirements; using Acquisition Decision Memorandum Cost Estimate Mean for costing; and multifunctional independent review teams for source selections. In addition, the Air Force is increasing accountability by establishing clear lines of authority. This plan postures the Air Force for success in space acquisition.

Dr. FEDERICI and Admiral DORSETT. We agree with the Government Accountability Office's (GAO) assessment that DOD has taken numerous actions to improve the acquisition process, including strengthening the requirements process, cost estimating, testing oversight, and acquisition policy. Additional improvements will result from development of a DOD-wide space architecture and close and continual partnership and communication between related program offices.

General KEHLER. We understand the past problems, have learned valuable lessons, and have a way forward. To address acquisition, we are guided by the Air Force's Acquisition Improvement Plan, which aims to recapture acquisition excellence through improving the requirements generation processes, instilling budget and financial discipline, improving major systems source selections, and establishing clear lines of authority and accountability within organizations. The plan also calls for revitalization of the acquisition workforce, which we are addressing through improved recruiting, training, and mentoring programs for military, civilian, Federally Funded Research and Development Centers, and System Engineering and Technical Assistance workforce. We are also continuing our efforts to retain skilled and experienced acquisition professionals to serve as mentors to transition their vast knowledge and skills to their successors.

General JAMES. I defer this question to Mr. Payton and General Kehler.

Ms. CHAPLAIN. We have not performed a comprehensive review of DOD's reforms but it is clear that DOD has been working to ensure that its space programs are more executable and produce a better return on investment. For example, DOD is working to ensure critical technologies are matured before large-scale acquisition programs begin; requirements are defined early in the process and are stable throughout; and that system design remains stable. DOD also intends to follow incremental or evolutionary acquisition processes versus pursuing significant leaps in capabilities involving technology risk. DOD is also revisiting the use of military standards in its acquisitions and providing more program and contractor oversight. These and other actions identified in our testimony address the root causes of problems, though it will take time to determine whether these actions are successful and they need to be complemented by decisions on how best to lead, organize, and support space activities.

19. Senator VITTER. Mr. Payton, Dr. Federici, General Kehler, General James, Admiral Dorsett, and Ms. Chaplain, do you believe the condition is getting better?

Mr. PAYTON. Yes, the Air Force Acquisition Improvement Plan will certainly improve space acquisition. Despite past problems that have plagued space acquisition, the Air Force is on track to deliver on several highly anticipated programs in the next year: Space Based Infrared System GEO-1, AEHF SV-1, Global Positioning Systems (GPSs) IIF, ORS SV-1, and Space-Based Space Surveillance Block 10.

Dr. FEDERICI and Admiral DORSETT. Yes, I believe space acquisition processes, program milestone reviews, and recurring schedule assessments are adding rigor, visibility, and improved oversight to critical space programs. The MUOS program is an excellent example, where improved oversight allowed Navy to identify the need for a National Review Team assessment to independently evaluate program "health." Our reviews and oversight mechanisms have reinforced the need to incorporate an "end-to-end" focus on program requirements, which directly led to im-

proved efforts at synchronizing programs (i.e. MUOS, JTRS, and Teleport) to better provide comprehensive mission capability. While it will take time to fully realize the effects of changes we have made to date, the Navy is effectively moving forward in improving our space acquisition processes.

General KEHLER. The condition is definitely getting better. While the ultimate test will be in future results, we have taken significant steps toward addressing the acquisition issues, and we believe that our newest efforts in accordance with the Acquisition Improvement Plan and the WSARA will prove effective. In particular, our efforts are providing all stakeholders, from the program manager through the PEO, SAF, and ultimately up through DOD and Congress, with greater visibility into technology challenges. We have also improved our ability to balance performance requirements with the cost and schedule risks inherent in developing and fielding new technologies.

General JAMES. I defer this question to Mr. Payton and General Kehler.

Ms. CHAPLAIN. It will take more time before we will know with greater certainty whether conditions are improving. The GPS IIIA program is DOD's current fore-runner in moving away from past practices and getting "back to basics." The GAO was buoyed by DOD's efforts not to overreach in deciding to evolve the capabilities on GPS IIIA. Further, DOD has continued to work to ensure that requirements remain stable. However, these positive efforts are tempered by our concern that DOD has developed a deployment schedule that is optimistic.

20. Senator VITTER. Mr. Payton, Dr. Federici, General Kehler, General James, Admiral Dorsett, and Ms. Chaplain, what more needs to be done?

Mr. PAYTON. The Air Force will continue to follow through on bolstering the acquisition workforce and ensuring the Acquisition Improvement Plan is a success. Once these initiatives are fully implemented, I believe the Air Force will be on a better path to executing space acquisition programs and will assess what additional actions need to be taken.

Dr. FEDERICI and Admiral DORSETT. I agree with Ms. Chaplain of the GAO that acquisition reform will be difficult to achieve with growing gaps in space industrial base expertise, undisciplined contract management and oversight, insufficient resourcing for testing new technologies, and loss of innovation due to migration of small businesses out of the space industrial base. Our space industrial base must be protected and sustained. Additionally, we must ensure that the development of ground systems and terminals is synchronized with the development and on-orbit availability of our space systems, both to fully optimize end-to-end capability to the CCOMs, and to be good stewards of taxpayer dollars.

General KEHLER. Due to the long timelines for space acquisition, we need to remain committed to the Air Force's Acquisition Improvement Plan principles over many years to reap dividends. Stability of requirements, funding, and personnel are key in delivering programs as planned. We will continue to improve processes so that stakeholders have the necessary information to make the hard trade-offs in planning and executing our investment portfolio to improve our warfighter capabilities.

General JAMES. I defer this question to Mr. Payton and General Kehler.

Ms. CHAPLAIN. The actions that the Air Force and Office of the Secretary of Defense have been taking to address acquisition problems are good steps. However, there are still more significant changes to processes, policies, and support needed to ensure that reforms can take hold. Recent studies and reviews examining the leadership, organization, and management of national security space have all found that there is no single authority responsible below the President and that authorities and responsibilities are spread across the Department. In fact, the national security space enterprise comprises a wide range of government and nongovernment organizations responsible for providing and operating space-based capabilities serving both military and intelligence needs.

Diffuse leadership has a direct impact on the space acquisition process, primarily because it makes it difficult to hold any one person or organization accountable for balancing needs against wants, for resolving conflicts among the many organizations involved with space, and for ensuring that resources are dedicated where they need to be dedicated. Many of the cost and schedule problems we identified for the GPS IIF program, for instance, were tied in part to diffuse leadership and organizational stovepipes, particularly with respect to DOD's ability to coordinate delivery of space, ground, and user assets. In fact, DOD is now facing a situation where satellites with advances in capability will be residing for years in space without users being able to take full advantage of them because investments and planning for ground, user, and space components were not well-coordinated.

Congressional and DOD studies have also called for changes in the national security space organizational structure to remove cultural barriers to coordinating development efforts and to better incorporate analytical and technical support from an organization that is augmented with military and Intelligence Community expertise.

Finally, studies have identified insufficient numbers of experienced space acquisition personnel and inadequate continuity of personnel in project management positions as problems needing to be addressed in the space community. Our own studies have identified gaps in key technical positions, which we believed increased acquisition risks.

21. Senator VITTER. Mr. Payton, Dr. Federici, General Kehler, General James, Admiral Dorsett, and Ms. Chaplain, do you agree with the GAO assertion that we are facing potential capability gaps in critical areas?

Mr. PAYTON. I defer this question to General Kehler and Lieutenant General James.

Dr. FEDERICI and Admiral DORSETT. Yes, I agree with the GAO. The Navy is critically dependent upon space to conduct our wartime mission as well as our core capabilities of forward presence, deterrence, sea control, power projection, maritime security, humanitarian assistance, and disaster response. As one of the largest users of space, we are concerned about capability gaps in communications, remote sensing, ISR, Positioning, Navigation, and Timing (PNT), missile warning, and weather. To address potential capability gaps in the UHF SATCOM mission area, the Navy has developed a multi-layer mitigation strategy that includes commercial space augmentation options and optimization of existing UHF ground and space-based resources.

General KEHLER. The GAO has asserted in recent testimony and reports that we are facing potential capability gaps in areas of missile warning, military communications, and weather monitoring and GPS.

AFSPC is focused on continuing to deliver modernized MILSATCOM capabilities to warfighters. Our third generation MILSATCOM systems, DSCS and Milstar, are exceeding their design life and are continuing to provide substantial capability. We are delivering our fourth generation systems, WGS and AEHF, which will provide an order of magnitude improvement over existing capability. Even with our recent successes, the growing demand for MILSATCOM requires us to rely on commercial satellite capability into the foreseeable future.

The GPS satellite constellation is extremely healthy. It is the largest constellation providing the greatest capability in GPS history. Since 1995, the Air Force has met or exceeded GPS performance requirements while providing worldwide users with 24/7/365 PNT service. In addition, STRATCOM and AFSPC recently initiated the GPS Expanded 24 deployment configuration that will further improve GPS global coverage. While we face challenges in constellation sustainment, we have operational measures and modernization efforts that will allow us to maintain the required availability of 24 satellites with .95 probabilities for the foreseeable future.

General JAMES. [Deleted.]

Ms. CHAPLAIN. Generally, the further a satellite acquisition delivery schedule slips, the more likely DOD is at risk of not sustaining current capabilities. In determining whether a gap could exist, we relied on DOD reports and testimonies, as well as our own understanding of individual satellite constellations, launch manifests, and requirements documents. Delays in both the NPOESS and MUOS programs have resulted in critical potential capability gaps for military and other government users. In addition, according to Air Force officials, they have requested information from the space community on how best to address a potential gap in missile warning capabilities.

22. Senator VITTER. Mr. Payton, Dr. Federici, General Kehler, General James, Admiral Dorsett, and Ms. Chaplain, what capabilities are at the highest of facing a potential capability gap?

Mr. PAYTON. Specific capability gaps and risks of capability gaps in the on-orbit, operational space portfolio are classified. The Air Force is available to provide these details in the appropriate setting upon request.

Dr. FEDERICI and Admiral DORSETT. In our view, the space capabilities facing the highest probability of a gap are with several classified, noncommunication programs. Additional detail can be provided in a classified venue. The UHF constellation has a lower probability of capability gap than those classified programs. Current analysis projects 70 percent predicted availability of the UFO constellation by March 2011. We have developed and funded a mitigation plan, including investigating the feasibility of a commercially hosted payload approach, to minimize any operational impact to the warfighter.

General KEHLER. [Deleted.]

General JAMES. SATCOM - Military SATCOM has the greatest potential for a capability gap. We are currently suffering an 80 percent lack of required capability and rely on commercial SATCOM to fill the shortfall.

[Deleted.]

Ms. CHAPLAIN. See answer to question 21.

23. Senator VITTER. Mr. Payton, Dr. Federici, General Kehler, General James, Admiral Dorsett, and Ms. Chaplain, what are we doing and what more can be done to prevent them?

Mr. PAYTON. Specific capability gaps and risk of capability gaps in the on-orbit, operational space portfolio are classified. The Air Force is available to provide these details in the appropriate setting upon request.

Dr. FEDERICI and Admiral DORSETT. Numerous actions have been taken to improve the acquisition process, including strengthening the requirements process, cost estimating, testing oversight, and acquisition policy. Greater improvement would result from development of a DOD-wide space architecture, a central authority to implement it, and ongoing organizational alignments. Acquisition reform will be challenging with growing gaps in space industrial base expertise and loss of innovation due to migration of small businesses out of the space industrial base. Additionally, development of ground systems and terminals must be synchronized with the development of our space systems in order to fully optimize end-to-end capabilities for the warfighter.

General KEHLER. [Deleted.]

General JAMES. DMSP - A new DOD program will be constructed to address the morning orbit requirement, leveraging existing work by Northrop-Grumman and their subcontractors. To avoid a potential capability gap the program is exploring a plan to optimize service life of the remaining DMSP space vehicles and employ a Northrop-Grumman Aerospace System (NGAS) gapfiller, with a limited sensor suite if needed.

SATCOM - We are analyzing current operations, identifying tactics, techniques, and procedures (TTPs), and implementing improvements to maximize satellite mission life. We are continuing to maximize our commercial SATCOM leases in addition to launching Wideband Global SATCOM satellites to prevent any significant SATCOM gaps.

GPS - Although the GPS constellation can operate with 32 operational satellites, the 14 AF/CC directed satellite operators at 2 SOPS to maintain all satellites on orbit with residual operational value. These residual satellites do not provide operational capability day-to-day but hedge against risk of satellite failures. 2 SOPS operators are also employing tactics, techniques, and procedures that extend the life of our satellites well beyond their design life. A recently disposed GPS satellite was operated for 17 years or 240 percent longer than its 7.5 year design life.

[Deleted.]

Ms. CHAPLAIN. In the short-term, DOD can stretch out legacy system capabilities, develop gap filler satellites, or buy commercial services to prevent capability gaps, or even employ a combination of these solutions. For instance, managing power on-board legacy GPS satellites can alleviate potential gaps in coverage. Regarding NPOESS, the NOAA and NASA are to procure environmental satellites to meet NOAA requirements, and the Air Force is to procure its own satellites to follow the current satellites built under the Defense Meteorological Satellite Program (DMSP). According to an Office of Science and Technology Policy (OSTP) statement, DOD's plan for deploying DMSP satellites ensures continued weather observation capability in the short-term, but DOD would have to start a DMSP follow-on program in the fourth quarter of fiscal year 2011. At this juncture, many questions surround DOD's strategy for moving forward. The MUOS program office is addressing the potential capability gap by activating dual digital receiver unit operations on a legacy satellite, leasing commercial ultra-high-frequency SATCOM services, and examining the feasibility of expanded digital receiver unit operations on the legacy payloads of the MUOS satellites. Regarding early missile warning, DOD is currently assessing proposed solutions from the space community on how best to quickly field a missile launch detection sensor as a gap-filling measure. In the long-term, more realistic estimations of delivery dates and knowledge-based acquisition practices, such as proving critical technologies before initiating large-scale programs, can prevent the kinds of delays that have led to risks of capability gaps. A strategic investment strategy can also ensure that programs needed to sustain critical capabilities begin at the right time and are not cut back or delayed in order to fund other programs.

24. Senator VITTER. Mr. Payton, given the Department is currently undergoing the development of the fiscal year 2012 budget, will the space posture review be completed in time to inform the fiscal year 2012 budget?

Mr. PAYTON. Yes, the final Space Posture Review will be completed summer 2010.

#### EVOLVED EXPENDABLE LAUNCH VEHICLE

25. Senator VITTER. Mr. Payton and General Kehler, the Evolved Expendable Launch Vehicle (EELV) assures our access to space. This heavy launch vehicle has a remarkable success record and is the true workhorse for delivering our systems to space. As we all know, assured access to space is not cheap and the cost is trending up. In addition, I understand that decisions made within NASA to retire the shuttle and cancel the Constellation program will significantly affect future launch costs within DOD. Please elaborate on how NASA's change in mission has affected the cost of EELV. If not yet determined, when will you be able to fully assess the impact? Specifically, please explain the potential for cost increases and the affect on the industrial base.

Mr. PAYTON and General KEHLER. We are still examining the potential effects of NASA's decision on launch costs and the industrial base. Several efforts are underway within Air Force and AFSPC channels to make and internal assessment. We expect to have a sense of the way ahead in the summer.

26. Senator VITTER. Mr. Payton and General Kehler, given assured access to space is a national interest, do you believe NASA should be partially responsible for addressing the cost increases?

Mr. PAYTON and General KEHLER. The Air Force and other government agencies must work together on current and future space programs to ensure this vital national capability. The Air Force, NASA, and NRO are in collaboration in the areas of range revitalization, propulsion strategy, and policy reform. We are also working to foster commercial participation at our launch ranges as part of our overall approach to space launch.

27. Senator VITTER. Mr. Payton and General Kehler, would a change in EELV acquisition strategy, such as a block buy approach, help alleviate some of these cost increases?

Mr. PAYTON and General KEHLER. Predictable demand and stability in our buying process are the keys to implementing an effective acquisition strategy. As part of the launch services acquisition effort, we continue to look for ways to make EELV most cost-effective by working with the NRO and NASA for block buy opportunities.

28. Senator VITTER. Mr. Payton and General Kehler, what are the benefits and costs to DOD in adopting such a block buy strategy?

Mr. PAYTON and General KEHLER. The Air Force anticipates a block buy approach would address industrial base stability issues, improve component/part reliability, enhance cost saving opportunities on recurring hardware through economies of scale, and reduce the significant contract administrative burden on both the government and the contractor. The current practice of procuring each launch service as a discrete and servable contract action forces the prime contractor to order single mission sets of hardware, or buy larger quantities at their own risk. Internal Air Force program office reviews and external reviews of the EELV acquisition approach suggest that it would be beneficial to acquire launch services in a block buy manner that enables the prime contractor to subcontract for economic order quantities.

The Air Force does not anticipate any additional costs to launch services of a block buy approach; however, when the funds would be required may change. The Air Force and the National Reconnaissance Office are currently conducting a joint evaluation of various acquisition models to implement a block buy approach.

#### NATIONAL POLAR-ORBITING OPERATIONAL ENVIRONMENTAL SATELLITE SYSTEM

29. Senator VITTER. Mr. Payton, General Kehler, and General James, as I mentioned in my opening statement, the administration took dramatic steps in restructuring NPOESS. I have some significant concerns with respect to the tri-agency divorce and have yet to hear from the Air Force how they intend to cover their share of the orbits or the overall cost implications for doing so. Does the Air Force fully support the decision to divorce NPOESS?

Mr. PAYTON. I defer this question to General Kehler and Lieutenant General James.

General KEHLER. The Air Force fully supports the Executive Office of the President decision and is working with the NOAA and NASA to implement this decision. The decision to proceed with separately managed acquisitions was made after a full range of ramifications was discussed and risk mitigations identified. The Air Force will be responsible for the early morning orbit and we are assessing options to ensure an effective acquisition strategy.

General JAMES. The current administration did take significant steps in restructuring the NPOESS. However, we will continue to partner with NASA and NOAA in those areas that have been successful in the past as directed by the President. In particular, a shared ground system has been highlighted as an area where our tri-agency relationship allowed for mission success.

We are committed to the process of developing, testing, and launching a DMSP successor as directed by the President in his fiscal year 2011 budget. As you'll recall, the 2011 budget places sole responsibility for DMSP's early morning orbit with DOD.

The Air Force intends to cover our share of orbits by smartly leveraging remaining DMSP satellites (F-19/F-20) and extend the constellation's useful life as long as possible. Vehicles F-19 and F-20 are also a part of the service life extension program (SLEP) and were designed for extended life. Our current degradation rates for on-orbit DMSP satellites (both SLEP and non-SLEP) provide a high confidence that DMSP performance will exceed original design specifications.

There are some significant cost implications for the Air Force due to NPOESS restructuring. These costs will be associated with the development and launch of a new program to replace DMSP.

30. Senator VITTER. Mr. Payton, General Kehler, and General James, what is the current path forward for the Air Force?

Mr. PAYTON. I defer this question to General Kehler and Lieutenant General James.

General KEHLER. The Air Force, working closely with OSD, has been an active participant on the triagency (DOD, NOAA, NASA) transition team activities.

Specifically, the Air Force is currently examining the best way to provide for the early morning orbit. We are taking inputs from the warfighting community via STRATCOM, the requirements community via the Joint Staff, and our acquisition component via Air Force Space Command's Space and Missile Systems Center. Finally, we will take these inputs and synchronize them with the rest of Air Force's capability needs to arrive at a final recommendation to Under Secretary of Defense for Acquisition, Technology, and Logistics.

The Air Force has options to consider for ensuring continuity of the morning orbit. Instrumental to our plan is the existence of two DMSP satellites currently scheduled for launch in 2012 and 2014. The Air Force may decide to rely on DMSP for the near future and start a new program in the fiscal year 2013-fiscal year 2014 timeframe. This would produce a satellite ready for launch in the early 2020s. A second option under Air Force consideration is whether or not to continue the Northrop Grumman Aerospace Systems effort to provide an NPOESS-like satellite in the 2018 timeframe.

General JAMES. We are committed to the process of developing, testing, and launching a DMSP successor as directed by the President in his fiscal year 2011 budget. As you'll recall, the 2011 budget places sole responsibility for DMSP's early morning orbit with DOD and afternoon orbit responsibilities to NOAA and NASA.

We will smartly employ remaining DMSP satellites (F-19/F-20) in an effort to extend the constellation's useful life as long as possible. Placing these remaining vehicles in the appropriate orbit will aid our extension efforts while also avoiding coverage gaps. Vehicles F-19 and F-20 are also part of the SLEP and were designed for extended life. Our current degradation rates for on-orbit DMSP satellites (both SLEP and non-SLEP) provide a high confidence in the likelihood of DMSP performance beyond original design specifications. Ultimately, this will allow the DOD to meet presidentially-mandated responsibilities and avoid coverage gaps as we develop a DMSP-successor in the early morning orbit.

31. Senator VITTER. Mr. Payton, General Kehler, and General James, what steps are being taken to ensure that DOD recoups the technologies it has already funded?

Mr. PAYTON. I defer this question to General Kehler and Lieutenant General James.

General KEHLER. Reuse or harvesting of the NPOESS investments is paramount to DOD and NOAA follow-on programs. There are three categories of major developments on NPOESS; the suite of sensors, the spacecraft system, and the ground system (downlink receipt, transmission, algorithms, and product generation).

Of these major elements, NOAA will use the Visible Infrared Imager/Radiometer Suits, Cross-track Infrared Sounder (CrIS), Ozone Mapping and Profiler Suite, Advanced Technology Microwave Sounder (ATMS), and Microwave Imager/Sounder (MIS). The analyses planned by DOD will drive the extent to which elements DOD applies in its follow-on effort. The solution set is broad, and DOD has not determined its needs for the Northrop-Grumman space system or the appropriate NPOESS sensors. The Air Force's Space and Missile Systems Center is performing a technical evaluation of the currently designed NPOESS system to inform the upcoming AoA to determine the optimum material solution(s) for the validated need.

General JAMES. We are committed to being good stewards of taxpayer funds in developing the DMSP successor as directed in the 2011 presidential budget. The DOD is performing a comprehensive review of meteorological requirements. This review will build on existing requirements and technologies resulting in an AoA.

32. Senator VITTER. Mr. Payton, General Kehler, and General James, what are the potential legal implications for negating the NPOESS contract?

Mr. PAYTON, General KEHLER, and General JAMES. A determination to negate and terminate the contract has not been made. In the event that a decision is made, the Government has well-known and established procedures already included in the contract and previously agreed upon by both parties. We have exercised these provisions in many cases in the past, most recently with TSAT.

If the contract termination will involve a reduction in employment of 100 or more contractor employees, congressional notification will be made in accordance with the DOD Federal Acquisition Regulations (FAR). Obviously, if any claims are filed by the contractor during this period, these also will be dealt with in accordance with the FAR.

The Air Force is committed to ensure that if a determination is made to terminate the contract, the dissolution process is managed as efficiently and effectively as allowed by law; we understand the process and have done it before.

#### BANDWIDTH

33. Senator VITTER. Mr. Payton, Dr. Federici, General Kehler, General James, Admiral Dorsett, and Ms. Chaplain, what is the current status of the comprehensive bandwidth study?

Mr. PAYTON. I defer this question to General Kehler and Lieutenant General James.

Dr. FEDERICI and Admiral DORSETT. The comprehensive bandwidth study has been delivered to Congress.

General KEHLER. Currently, the Assistant Secretary of Defense for Networks and Information Integration is leading the comprehensive bandwidth study. This study is in the final stages and we anticipate its completion and submission in May.

General JAMES. Currently, the Assistant Secretary of Defense for Networks and Information Integration is leading the comprehensive bandwidth study. I understand that the study is nearing completion and in the final stages. I anticipate its completion and submission will be in the late April-May timeframe.

Ms. CHAPLAIN. We do not know the current status of the comprehensive study, as mandated by the National Defense Authorization Act for Fiscal Year 2009. At this time, GAO does not have work underway in the communications bandwidth area.

34. Senator VITTER. Mr. Payton, Dr. Federici, General Kehler, General James, Admiral Dorsett, and Ms. Chaplain, is it safe to assume that our bandwidth needs show no sign of decreasing in the future?

Mr. PAYTON. I defer this question to General Kehler and Lieutenant General James.

Dr. FEDERICI and Admiral DORSETT. The Navy depends on space capabilities now and expects the demand for space capabilities to grow, especially for SATCOM and the bandwidth it provides. The UHF narrowband SATCOM constellation today consists of eight UHF Follow-On satellites, two residual Fleet Satellites (FLTSAT), one Leased Satellite (LEASAT 5), and leased capacity on SKYNET 5C. MUOS will begin to replace these systems in 2011. Based on evolving warfighting concepts, UHF SATCOM requirements are expected to grow, and MUOS, as designed, will be able to support those requirements. Commercially provided systems have the ability to augment, but not replace, national systems. Commercial capabilities continue to bridge the gap between requirements (demands) and capabilities (available resources). The Navy has utilized commercial communication satellites since the early

1970s to augment bandwidth requirements not fully satisfied by military communication satellites.

General KEHLER. The demand for SATCOM bandwidth is continuing to grow. One example of this growth is in the increased utilization of unmanned aircraft systems for ISR. This increase in operational platforms will require significantly more bandwidth to operate than is available today. Furthermore, as the threat continues to grow in the future, possessing enough protected communications capabilities to counter a hostile environment becomes increasingly crucial. The exact demand for SATCOM bandwidth necessary to operate in hostile and non-hostile environments is identified as part of the JSCL effort.

General JAMES. Yes, the demand for SATCOM bandwidth is continuing to grow. For example, the 2010 Quadrennial Defense Review identified the need to expand manned and Unmanned Aircraft Systems (UASs) for ISR. This increase in operational platforms requires significantly more bandwidth to operate than is available today. Furthermore, as the threat continues to grow in the future, possessing enough protected communications capabilities to counter a hostile environment becomes increasingly crucial. The exact demand for SATCOM bandwidth necessary to operate in hostile and non-hostile environments is identified as part of the JSCL effort, which Air Force Space Command is a contributor.

Ms. CHAPLAIN. GAO does not have specific work underway in the communications bandwidth area. However, based on our work in Iraq, upcoming efforts in Afghanistan, as well as new wide area sensors and hyper-spectral imaging coming on line, the demand for bandwidth is on the increase, and not declining. The new technologies do not seem to consider their load on bandwidth capacity.

35. Senator VITTER. Mr. Payton, Dr. Federici, General Kehler, General James, Admiral Dorsett, and Ms. Chaplain, what is the appropriate mix between DOD-provided and commercially-provided bandwidth?

Mr. PAYTON, General KEHLER, and General JAMES. The mix of commercial-provided and DOD-provided bandwidth is a function of the specific capabilities required by the warfighter. Some capabilities, such as nuclear survivability and signal protection, are currently only provided by DOD systems. However, a significant portion of the warfighters' demand for unprotected SATCOM can and is being provided by commercial systems. The proper mix of capabilities versus capacity is currently being looked at as part of the JSCL effort. We are nearing completion with the requirements identification and validation portion of this effort. Once the requirements are clearly defined, an AoA will be completed that will address specific solutions, to include commercial and DOD options, identifying the correct mix to meet the warfighters' missions. It is expected that certain capabilities will continue to require DOD-provided SATCOM, but a significant portion of the overall capacity will be met commercially-provided SATCOM.

Dr. FEDERICI and Admiral DORSETT. An integrated, DOD-wide approach to building a communications architecture will help determine what the right mix of commercial and military SATCOM should be for our warfighters. Bandwidth requirements continue to increase, whether in support of humanitarian assistance/disaster relief operations, regional engagement, or major combat operations. The appropriate mixture between DOD and commercially-provided capacity will also be determined by the nature of the operating environment (benign, congested, contested, or denied).

Ms. CHAPLAIN. The GAO has not been requested to do work in this area and therefore we do not know what the mix of DOD and commercially-provided bandwidth should be.

#### PRECISION TRACKING SPACE SENSOR

36. Senator VITTER. Mr. Payton and General Kehler, as you are aware, this subcommittee is also responsible for oversight of ballistic missile defense. The Missile Defense Agency's (MDA) fiscal year 2011 budget requests funding for a new space program called the Precision Tracking Space Sensor (PTSS). This proposed multi-billion dollar program must be thoughtfully planned across the Department and every effort should be taken to ensure that the appropriate acquisition management assessments take place for program execution. I understand that MDA has proposed a hybrid program office model for developing and acquiring this system and I am interested to hear if you have been briefed on the plan. Do you support this approach?

Mr. PAYTON and General KEHLER. We believe the PTSS hybrid program office is a sound approach whereby MDA and the lead Service could work side-by-side to ad-

dress issues such as doctrine, training, and manning early within the design phase. This office would address PTSS Service-related issues early in the acquisition process, thus minimizing costs. Incorporating Service-related issues early in the acquisition process will also reduce sustainment costs; and once PTSS is fielded this office will facilitate the transition and transfer of PTSS from MDA to the lead Service.

#### OPERATIONALLY RESPONSIVE SPACE

37. Senator VITTER. Mr. Payton, General Kehler, and General James, as you are all well aware, this committee has been a strong proponent of ORS. In addition, General Chilton, the Commander of STRATCOM, has been quite vocal in increasing the responsiveness of our space recapitalization abilities. Yet, I was surprised to see that the fiscal year 2011 budget cuts funding for ORS by almost 25 percent. Is the Air Force committed to the ORS model?

Mr. PAYTON, General KEHLER, and General JAMES. Yes, the Air Force is committed to the ORS concept of responsively launching small satellites.

The budget has been relatively stable for ORS funding. It is approximately \$100 million per fiscal year from fiscal year 2009 to fiscal year 2011 with some exceptions for launch vehicle expenditures, ORS-1 and congressional adds. The fiscal year 2009 funding is \$135 million higher than fiscal year 2011 due to three reasons. The Air Force reprogrammed \$39 million into ORS when ORS-1 was initiated as an urgent need in fiscal year 2009. The fiscal year 2009 funding line contains \$9 million for TacSat launch vehicle expenditures while fiscal year 2011 doesn't require any TacSat launch vehicle funding. Additionally, the original fiscal year 2009 request was increased by \$87 million for congressional adds (Infrared Sensor Payload Development, Micro-Satellite Serial Manufacturing, LEONIDAS, Chip Scale Atomic Clock, and Missile Range Safety Technology).

38. Senator VITTER. Mr. Payton, General Kehler, and General James, does the Air Force believe that the development of an ORS infrastructure that facilitates rapid reconstitution and reduces the fragility of space capabilities would greatly benefit the needs of the warfighter?

Mr. PAYTON. Yes, the Air Force is continuing the development of capabilities and Concept of Operations for rapid assembly, integration, and test of modular spacecraft buses and payloads through the Rapid Response Space Works. This short-notice call-up and launch will greatly benefit the needs of the warfighter. Should on-orbit capabilities require augmentation or replenishment, the ORS infrastructure will deliver "good enough to win" solutions to the warfighter.

General KEHLER. Effects provided today through space-based platforms are no longer "nice to have" but a "must have" for the joint warfighter. The ability to ensure these effects will be available through phases of conflict is imperative. A responsive infrastructure is key to delivering responsive space capabilities. The Air Force is improving the responsiveness of the space infrastructure capability with organic initiatives and through the ORS program. The fiscal year 2011 budget request for ORS includes funds for the development of the Rapid Response Space Works. This facility is expected to provide the opportunity for the Air Force to assemble, integrate, and test small spacecraft. The capability to do so may prove useful in meeting reconstitution and augmentation mission needs.

Outside of ORS, the Air Force is investing in the future Satellite Operation Architecture and in the Launch Enterprise Transformation. Both of these investments show promise of improving the responsiveness of the entire space enterprise. Responsive infrastructure is key to the ability to rapidly provide space capabilities to the warfighter and improving the responsiveness of the space infrastructure will significantly offset the inherent fragility of space systems.

General JAMES. We believe the development of an ORS infrastructure would benefit the needs of the warfighter. Rapid reconstitution requires standardized plug and play technologies, availability of long-lead, high demand/low density parts at the ready, boosters at the ready with trained crews, and a range infrastructure that is responsive to immediate launch demands.

ORS solutions are designed to be complementary to the large, exquisite space systems that meet the bulk of our national military space needs, and to the increasing use of purchased commercial space products and services. ORS has a mix of attributes—responsiveness, flexibility, affordability, and assuredness—that is unique, relative to these other two approaches (U.S. Government systems and commercial space).

To be successful at rapid reconstitution, the ORS infrastructure must continue to exercise innovative acquisition models, concepts, and incentives versus attempting

to condense and adjust those of the mainstream space acquisition establishment. This is essential to ensuring rapid delivery of space capabilities to the warfighter.

39. Senator VITTER. Mr. Payton, General Kehler, and General James, why the reduction?

Mr. PAYTON. I defer this question to General Kehler and Lieutenant General James.

General KEHLER. In fiscal year 2010, \$124.3 million was appropriated for ORS. The President's fiscal year 2011 budget requests \$94 million for ORS. The \$30.3 million difference is not due to a reduction in the level of effort. The fiscal year 2010 appropriation included \$12.3 million in congressionally directed projects and \$18 million for the purchase of launch vehicles. The launch vehicle expense is not required in fiscal year 2011.

General JAMES. The reduction in ORS funding from fiscal year 2010 and fiscal year 2011 of roughly \$30 million is for two primary reasons. The fiscal year 2010 funding line contains approximately \$18 million for launch vehicle expenditures not required in fiscal year 2011. Additionally, the original fiscal year 2010 request was increased by \$12 million for congressional adds (Micro-Satellite Serial Manufacturing, LEONIDAS, Rapid Small Satellite Development Test Facilities, and Space Sensor Data Link Technology).

#### QUALITY CONTROL

40. Senator VITTER. Mr. Payton, Dr. Federici, General Kehler, General James, Admiral Dorsett, and Ms. Chaplain, contractor quality issues have had significant impacts on major defense space programs over the years. In your opinion, what more can be done to address quality control?

Mr. PAYTON. All of our industry partners are improving their attention to assembly procedures, workforce training, and subcontractor management. However, this improvement is after several disconcerting incidents have occurred across the board. The rework and repetitive integration and test cycles required to overcome these errors create reliability risks by undoing work that had already been validated as successful. As a result, I would like to see better adherence to the processes and procedures our industry partners have already developed, published, and trained against. Following published procedures would have prevented a number of quality incidents from occurring.

Dr. FEDERICI and Admiral DORSETT. The UHF Constellation is comprised of systems that typically last well beyond their design lives. The satellites and their subsystems are of very good quality, so the Navy can't comment on negative impacts from major defense space program quality control problems. The Navy Space Systems Program Office along with our contractors is fully engaged in utilizing numerous quality control mechanisms that conform to industry standards. With these efforts the Navy expects high quality systems to be built for its UHF Constellation for years to come.

General KEHLER. There are four key things we can do to address quality control on our major defense space programs. They are: (1) Reinvigorating government expertise in manufacturing, quality, and software, (2) Placing upfront emphasis on quality control, (3) Holding contractors financially accountable for their quality control errors, and (4) Implement specifications and standards judiciously and regain the configuration control of the system by revitalizing the Configuration Management (CM) career field.

Good quality in our major space programs is the result of strong and sustained emphasis and teamwork by both the government and contractors.

General JAMES. From my warfighter perspective, I remain concerned with space program quality control. JFGCC SPACE is tasked to employ space forces and we must have reliable systems to execute the mission. We exercise risk management and use survivability and redundancy as control measures to account for shortfalls. It is important we involve warfighters in establishing requirements to meet specific operational needs.

Ms. CHAPLAIN. Our work has emphasized the benefits of gaining knowledge about technologies, design, requirements, and other resources, e.g. people and suppliers, before embarking on major acquisitions. In my opinion, following a knowledge-based approach can help reduce quality problems that we have seen on DOD space programs because it would entail gaining more knowledge about potential suppliers and their strengths and weaknesses. In addition to more knowledge, DOD needs to obtain and analyze more comprehensive data regarding prime contractors and their key suppliers which could be used to improve quality. Further, DOD space officials

have commented that they recognize that today’s workforce is smaller and less experienced than previous workforces and the parts and the process quality issues are a major detriment.

41. Senator VITTER. Ms. Chaplain, I understand that GAO is conducting a comprehensive quality review on contractor quality. Could you please share some of your preliminary thoughts?

Ms. CHAPLAIN. I can share a few. First, contractor quality issues are not just affecting DOD space programs. Some of the NASA and MDA programs we have reviewed have experienced similar problems. Second, parts quality problems can have devastating effects. The ones experienced by GPS and AEHF satellite program added months to the schedule and increased cost. Quality problems have also contributed to failures in flight tests at MDA. Third, there are mechanisms in place to address these problems and agencies are working together. The question GAO is focused on is whether and how these can be more effective and what additional steps government agencies involved in space and missile defense can take to increase interagency collaboration.

GLOBAL POSITIONING SYSTEM

42. Senator VITTER. Ms. Chaplain, our hearing last year occurred shortly after GAO issued a report about a potential gap in the GPS constellation. During that hearing you explained that that if both the GPS IIF and the GPS IIIA programs are executed on schedule, there is only a 80 to 90 percent probability that the constellation will stay above 24 satellites. You further explained that such a probability should not be a significant cause for alarm because there are measures that can be taken in managing the life of our current satellites. What is the current assessment on the potential gap in GPS?

Ms. CHAPLAIN. As I testified in front of your subcommittee in March 2010, the results of our assessment of the GPS constellation appear to be similar to what we reported last year. Final results of this analysis will be available this summer. Since we last reported, the GPS IIF program has been further delayed, and we remain concerned about the Air Force’s ability to deliver GPS IIIA satellites as promised, given that the Air Force aims to deliver them 3 years faster than the IIF satellites.

43. Senator VITTER. Ms. Chaplain, how is the GPS IIIA program structured in comparison to the IIF program?

Ms. CHAPLAIN. The GPS IIIA program has been structured by the Air Force to prevent the mistakes made on the IIF program. According to the GPS wing, the GPS IIIA program is using an approach that emphasizes requirements stability, upfront systems engineering, adherence to stringent parts/materials standards, active risk management, and full program funding. The intent of this “back to basics” approach is to address the development challenges which have affected numerous recent space acquisition programs. Furthermore, according to Air Force officials, the IIIA contractor retained some of its workforce from the IIR–M program and plans to incorporate a previously developed satellite bus—efforts that reduce program risk. Table 1 identifies the key differences in program framework for IIF and IIIA.

	GPS IIF	GPS III
Requirements	Addition of requirements after contract award .....	Not allowing an adjustment to the program to meet increased or accelerated requirements.
Development	Immature technologies .....	Incremental development, while ensuring technologies are mature.
Oversight .....	Limited oversight of contractor, relaxed specifications and inspections, and limited design reviews.	More contractor oversight with government presence at contractor facility; use of military standards; and multiple levels of preliminary design reviews, with the contractor being held to military standards and deliverables during each review.

Source: GAO analysis based on discussion with the GPS program office and program documentation.

44. Senator VITTER. Ms. Chaplain, if it’s better positioned for success, why do you have a concern about the schedule goals for GPS IIIA?

Ms. CHAPLAIN. We continue to believe the IIIA schedule is optimistic given the program’s late start, past trends in space acquisitions, and challenges facing the new contractor. With respect to satellite development, for example, DOD has taken significant steps to reduce schedule risks and these should better position DOD for

success than in the past. But the delivery date is 3.5 years less than the GPS IIF program and we have not yet seen a major satellite program in the past decade or so that has met its original delivery date, let alone one with an ambitious schedule. Our concerns also extend to the ground and user components for GPS—which have a history of significant schedule delays. To increase confidence in the schedule for delivering the ground control system for IIIA (the next generation operational control segment known as OCX), the GPS wing added 16 months of development time to the effort. This means that OCX is now scheduled to be fielded after the May 2014 launch of the first GPS IIIA satellite.

#### MINOTAUR SPACE LAUNCH VEHICLES

45. Senator VITTER. General Kehler, I want to ask you about the Orbital/Sub-orbital Program (OSP), which allows the Air Force to use decommissioned ballistic missile assets to build Minotaur space launch vehicles. Minotaur has been a low-cost and reliable launch option for the Air Force, with 16 of 16 successful missions to date. In a memo dated October 19, 2009, you expressed a desire to use Minotaur rocket for launching small defense payloads, saying: “The Minotaur family of launch vehicles provides a moderately responsive and more cost effective small launch capability.” Can you elaborate on the utility of the OSP?

General KEHLER. The OSP leverages our inventory of decommissioned ballistic missiles to provide effective and low-cost small launch capability through the Minotaur family of launch vehicles. Sustaining OSP assures some of our emerging small launch needs can be met. OSP does not exclude other launch vehicle providers from competing for small launch opportunities.

46. Senator VITTER. General Kehler, for what types of applications are Minotaurs currently used, and how does the Air Force plan to employ them in the future?

General KEHLER. The Minotaur family of launch vehicles use decommissioned ballistic missile assets to provide an effective, low-cost small launch capability. Minotaur launch vehicles are currently used as targets for missile defense testing and to launch scientific and research payloads. This year, Minotaur will launch the Defense Advanced Research Projects Agency’s Hypersonic Test Vehicle, the Space Based Space Surveillance spacecraft, TacSat-4, a Space Test Program spacecraft, and ORS-1. We expect to continue using Minotaur, as well as other small launch vehicles, to deliver small spacecraft to orbit and perform suborbital research missions in the future.

[Whereupon, at 4:20 p.m., the subcommittee adjourned.]

**DEPARTMENT OF DEFENSE AUTHORIZATION  
FOR APPROPRIATIONS FOR FISCAL YEAR  
2011**

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**WEDNESDAY, MARCH 17, 2010**

U.S. SENATE,  
SUBCOMMITTEE ON STRATEGIC FORCES,  
COMMITTEE ON ARMED SERVICES,  
*Washington, DC.*

**STRATEGIC FORCES PROGRAMS**

The subcommittee met, pursuant to notice, at 2:40 p.m. in room SR-232A, Russell Senate Office Building, Senator E. Benjamin Nelson (chairman) presiding.

Committee members present: Senators E. Benjamin Nelson, Begich, Sessions, and Vitter.

Majority staff members present: Madelyn R. Creedon, counsel; and Richard W. Fieldhouse, professional staff member.

Minority staff member present: Daniel A. Lerner, professional staff member.

Staff assistants present: Kevin A. Cronin and Brian F. Sebold.

Committee members' assistants present: James Tuite, assistant to Senator Byrd; Ann Premer, assistant to Senator Ben Nelson; Lindsay Kavanaugh, assistant to Senator Begich; Rob Soofer, assistant to Senator Inhofe; and Sandra Luff, assistant to Senator Sessions.

**OPENING STATEMENT OF SENATOR E. BENJAMIN NELSON,  
CHAIRMAN**

Senator BEN NELSON. I call this subcommittee hearing to order. The Strategic Forces Subcommittee is meeting today. Good afternoon. Before we begin, I have one administrative announcement. The open portion of this hearing will continue until approximately 3:45 p.m., at which point we will recess and immediately move to SVC 217, the Capitol Visitor Center, where we will reconvene at 4 p.m. for a closed briefing. This briefing will be for members and designated staff only.

We welcome all of our witnesses today to discuss strategic and nuclear forces of the Air Force and the Navy. Appearing before the subcommittee are: Dr. Bradley Roberts, Deputy Assistant Secretary of Defense for Nuclear and Missile Defense Policy; Lieutenant General Frank Klotz, Commander, Air Force Global Strike Command (GSC); Lieutenant General Mark Shackelford, Military Deputy, Office of the Assistant Secretary of the Air Force for Acquisition;

Major General Donald Alston, Assistant Chief of Staff, Strategic Deterrence and Nuclear Integration, U.S. Air Force; Major General David J. Scott, Director, Operational Capability Requirements, and Deputy Chief of Staff for Operations, Plans, and Requirements, U.S. Air Force; and Rear Admiral Stephen Johnson, Director of Strategic Systems Programs, U.S. Navy.

The new Quadrennial Defense Review (QDR) reaffirms that the United States must prevent and deter conflict by maintaining both strong conventional and nuclear forces. Until such time as the administration's goal of a world free of nuclear weapons is achieved, nuclear capabilities will be maintained as a core mission for the Department of Defense (DOD). It will maintain a safe, secure, and effective nuclear arsenal to deter attack on the United States and on our allies and partners.

Today's hearing will discuss issues associated with maintaining the nuclear deterrent and the conventional operations of the long-range bomber force. When we scheduled this hearing, we had assumed that the Nuclear Posture Review (NPR), which was supposed to be submitted with the QDR and budget request, would have been submitted as well. Unfortunately, that's not the case, so some of the policy and nuclear force structure decisions have not yet been announced. Dr. Roberts, I will ask you later in this hearing to provide an update on the NPR and when we might expect to receive it.

General Klotz, this is your first opportunity as the Commander of the new GSC to testify before this committee, so we look forward to hearing your plans for the new command and how this will improve the Air Force nuclear enterprise. While the new command has all of the Air Force nuclear-capable assets assigned to it, I also understand that this is not exclusively a nuclear command or an effort to recreate the old Strategic Air Command. I'd like to understand in more detail how the operational control of bomber aircraft will be managed, the relationship to Air Combat Command, including how the B-1 fits into this picture, and how the new command will influence the requirements process for the next generation long-range strike capability.

Keeping the bomber force flying and fully capable to serve in its demanding conventional role is essential. All of these aircraft are old, the B-52 being the oldest, and all need to be modernized and maintained well into the future. The B-52s will have been flying for 80 years when they retire around 2040 under the current plan. These aircraft have a unique capability to sustain long loiter times to provide a broad variety of ordnance when and where needed.

General Shackelford and General Scott, we look forward to hearing from you how all of the bomber aircraft are performing and the plans and funding needed to meet the mission-capable rate goals.

Over the last 2½ years, the Air Force has taken many actions to correct the problems that were uncovered after Labor Day weekend 2007, when a B-52 bomber unknowingly carried nuclear weapons across the country. General Alston, you've been working on fixing these problems for a while. We'd like to hear from you how you think we're doing, what the successes are, and what you still worry about.

Admiral Johnson, the Navy has embarked on an ambitious replacement program for the *Ohio* class ballistic missile submarines. This will be a costly program that's going forward without the benefit of an NPR. We look forward to hearing from you about this major undertaking, including the plans, the schedule, and the funding that will be needed.

Last week the subcommittee held a hearing on space systems. In that hearing we had a good discussion about solid rocket motors and other aspects of the space launch industrial base. General Klotz and Admiral Johnson, I would like to hear your thoughts on this industrial base, as it is the same one that supports the ballistic missiles, and what each of you are doing to address those concerns.

Again, welcome to all our witnesses. I'd like to note that each of the prepared statements that we've received will be included in the record without objection. Let me say also that I hear there may be another vote coming, so we'll try to work around that schedule.

Senator Vitter, would you like to give an opening statement at this time?

#### **STATEMENT OF SENATOR DAVID VITTER**

Senator VITTER. Thank you very much, Mr. Chairman. I'll submit my written statement for the record and just focus on some highlights of that.

First of all, I certainly also look forward to the administration's NPR as soon as possible. Obviously, this discussion is a little bit partial and incomplete without it, so we await that and await filling in major blanks as we get that. I do believe we're at a particularly critical time and a turning point for the DOD nuclear enterprise and we all need to be focused on making sure that happens properly.

In that vein, I would quote the Congressional Commission on the Strategic Posture of the United States, which said that as the number of warheads decreases, the importance of our triad of strategic delivery systems dramatically increases. They rightly noted that each leg of the triad provides "unique contributions to stability." As "the overall force shrinks, their unique values become more prominent." I think this is very important to keep our eye on.

Lastly, I would simply underscore the chairman's comments about the position of our industrial base, particularly with regard to solid rockets. I am very concerned, as I mentioned here previously, about the dramatic change in course proposed at the National Aeronautics and Space Administration (NASA) and what it would do to our solid rocket industrial base, which would have, in my opinion, a major negative impact on a lot of your capability and the costs of keeping that capability up. I look forward to General Klotz and others' discussion of that.

Thank you, Mr. Chairman.

[The prepared statement of Senator Vitter follows:]

#### **PREPARED STATEMENT BY SENATOR DAVID VITTER**

Thank you very much, Mr. Chairman. I join you in welcoming our witnesses.

Today's hearing focuses on the Department's fiscal year 2011 request for the Department of Defense (DOD)-wide strategic forces programs. The fiscal year 2011 request signifies a critical turning point for the DOD nuclear enterprise.

With the exception of the Ballistic Missile Submarine (SSBN(X)), many of these funding requests are unfortunately designated by the Department as placeholders awaiting the delayed release of the administration's Nuclear Posture Review. Nonetheless, as noted by the bipartisan Congressional Commission on the Strategic Posture of the United States, as the number of warheads decreases, the importance of our triad of strategic delivery systems dramatically increases. The commission rightly notes that each leg of the triad provides "unique contributions to stability" and as the "overall force shrinks, their unique values become more prominent." In this context, I look forward to hearing how DOD views the future of the triad, and in light of possible future reductions in warheads, how the Department views the continued and heightened importance of maintaining and modernizing a capable triad.

One of the most significant and substantial investments in delivery vehicle modernization is the *Ohio* class SSBN replacement. At more than \$6 billion budgeted over the next 5 years for research and development and an estimated 12 ships at \$6–\$7 billion each, the SSBN(X) is an extraordinary yet necessary investment. Nonetheless, development and eventual procurement cost as well as schedule must be a critical consideration before going forward. I look forward to discussing what steps are being taken early to ensure that requirements are established, capabilities are affordable, and that the follow-on is delivered both on time and within budget.

Another vital area of the nuclear enterprise supported by the Quadrennial Defense Review and the budget request is the Next Generation Bomber (NGB). The budget includes \$200 million for the NGB in fiscal year 2011 and a total of \$1.7 billion over the next 5 years. I fully support the administration's efforts in this area.

As for other Air Force related programs, the fiscal year 2011 budget continues funding to conduct an Analysis of Alternatives study for a follow-on Long-Range Standoff capability and dedicates significant resources, more than \$800 million in the out-years to being research, development, test, and evaluation for that effort. I understand that a decision regarding the inclusion of a nuclear capability awaits further direction from the President, and I look forward to hearing more from our witnesses on the contributing benefit of our current Long Range Stand-off nuclear capability, and what the lack of a nuclear air launched cruise missile could mean for the nuclear triad. For the intercontinental ballistic missile (ICBM) force, the fiscal year 2011 budget requests more than \$320 million to continue the commitment of sustaining the Minuteman. This continued reinvigoration is an essential investment to ensure the sustainment of the ICBM force through 2030.

The Strategic Posture Commission expressed significant concern with the dwindling solid rocket motor infrastructure, responsible for supporting the majority of the strategic triad. Simply stated, the commission maintains that the submarine-launched ballistic missiles (SLBMs) and ICBMs are not being sustained: "There are no new missile production programs planned for more than a decade and decisions on follow-on ICBMs and SLBMs have not been made." In the meantime, we have no other missile development programs utilizing solid fuels, all exacerbated by the administration's decision to retire the Shuttle and cancel the Constellation Program. As we learned during our space posture hearing last week, the cancelation of National Aeronautics and Space Administration (NASA) programs has ramifications that go far beyond NASA itself and I look forward to hearing more from our witnesses.

Mr. Chairman, I welcome our witnesses, thank them for their service, and anticipate a fruitful discussion.

Senator BEN NELSON. Thank you, Senator Vitter.

The panel is fairly large today, as we can see, so I would hope that each of you would highlight your comments as best you can, having already taken your written statements into the record. We would begin with you, Dr. Roberts.

**STATEMENT OF BRADLEY H. ROBERTS, PH.D., DEPUTY ASSISTANT SECRETARY OF DEFENSE FOR NUCLEAR AND MISSILE DEFENSE POLICY**

Dr. ROBERTS. Thank you, sir, and thank you for the opportunity to be here today.

Let me address directly your question about the state of the NPR and the report of the review. The review has been under way for 11 months following the legislative mandate and a presidential study directive. It is wrapping up. The report itself is nearing com-

pletion and we expect completion and delivery here to Congress within the next few weeks at the most. We're very much in the end game.

We do recognize the delay. We apologize for the delay, and we regret it. But there was the need to be thorough in the review and the need to ensure that we had official agreement at the highest level on how to approach a balanced strategy for reducing nuclear dangers in the 21st century.

I can report that the report itself will be organized around five key policy objectives. The first of those is to prevent nuclear performance and nuclear terrorism. The second is to reduce the role of nuclear weapons in U.S. military strategy. The third is to maintain effective strategic deterrence at lower force levels. The fourth is to strengthen regional deterrence, and assure U.S. allies and partners. The fifth objective is to sustain a safe, secure, and effective nuclear arsenal.

Let me highlight two of the main themes that bear on the discussion today, two of the main findings of the review. The first is that under the New Strategic Arms Reduction Treaty (START) the United States should retain the triad. This is reflected in the fiscal year 2011 budget submission, which reflects commitments to sustain the intercontinental ballistic missile (ICBM) in the manner directed by Congress, to begin the development of the follow-on class for the Ballistic Missile Submarine (SSBN) force, to sustain the bomber force, and to upgrade the B-2s over the coming 5-year period.

You will also hear discussion today of a study that the Department has underway which will bring forward results in the next budget. It is a study of the requirements of a long-term mix of non-nuclear strike capabilities, nonnuclear ballistic missiles, cruise missiles, and bombers, and how those are integrated in the emerging strategic environment. This is a study that's underway and will be concluded in time to impact the fiscal year 2012 budget.

I said that there are two themes from the NPR bearing on today's discussion. The first is sustaining the triad under New START. The second is to recommend a plan for sustaining the stockpile, a plan that's consistent with the requirements of the National Defense Authorization Act for Fiscal Year 2010, the stockpile management plan described therein. In support of this commitment, we've requested a 13 percent increase in the National Nuclear Security Administration's fiscal year 2011 budget in order to modernize the complex, in order to strengthen surveillance of the stockpile, and in order to strengthen the science, technology, and engineering base in the nuclear complex.

This budget also supports the life extension programs (LEP) for the 76 and 61, and it allows for a follow-on LEP study for the W-78.

I hope that in setting out these two themes from the NPR we're helping to inform today's discussion. I look forward to the opportunity to answer any questions you might have, but also to come back and discuss the NPR in its entirety within a relatively short period of time.

Thank you.

Senator BEN NELSON. Thank you.

General Klotz.

**STATEMENT OF LT. GEN. FRANK G. KLOTZ, USAF,  
COMMANDER, AIR FORCE GLOBAL STRIKE COMMAND**

General KLOTZ. Chairman Nelson and Ranking Member Vitter: It's an honor to appear before you today for the first time as the Commander of Air Force GSC. I thank you for the opportunity to talk a little bit about the Air Force's newest major command.

GSC has now assumed responsibility for both the ICBM and the long-range nuclear-capable bomber force. In 16 months we've gone from a provisional headquarters here at Bolling Air Force Base in Washington, DC, of about 100 people, to a command comprising over 23,000 Air Force professionals at 5 different operational bases across the United States.

The fundamental mission of Air Force GSC is to provide for safe, secure, and effective forces for nuclear deterrence and for global strike, both to deter aggression against the United States and to provide assurance to our allies. We perform this mission with a very elite and highly professional, disciplined team of American airmen who have a special trust and responsibility for the most powerful weapons in our Nation's arsenal.

The Minuteman III ICBM and the nuclear-capable B-52 and B-2 bombers have been and, most importantly, remain very important elements and components of the U.S. Armed Forces. The ICBM with its unmatched responsiveness and the bomber with its tremendous flexibility provide unique and complementary capabilities to the Nation's strategic nuclear triad.

As you rightly pointed out, Mr. Chairman, the bombers of GSC also offer critically important conventional capabilities to the combatant commanders. Even though it's a truism that the creation of GSC resulted largely from concerns about the state of the Air Force nuclear enterprise, this command takes the conventional role of the B-52 and the B-2 very, very seriously. To that end, GSC will continue to work very closely with Air Combat Command and the other major commands that are part of the combat air forces to continuously develop and refine weapons and tactics for employment of the bombers in conventional operations.

I look forward to the opportunity to discuss these and other issues this afternoon.

[The prepared statement of General Klotz follows:]

PREPARED STATEMENT BY LT. GEN. FRANK G. KLOTZ, USAF

INTRODUCTION

Chairman Nelson, Ranking Member Vitter, distinguished members of the subcommittee, it is an honor to appear before the Senate today for the first time as the Commander of Air Force Global Strike Command. Thank you for the opportunity to discuss the Air Force's newest major command.

Today, I would like to provide a brief update the establishment of Global Strike Command; the enduring importance of the intercontinental ballistic missile (ICBM) and long-range, nuclear-capable bomber to our national security; and the steps necessary to sustain and modernize these forces to ensure they remain safe, secure, and effective.

COMMAND UPDATE

Upon assuming office in summer 2008, Secretary of the Air Force Michael Donley and Air Force Chief of Staff General Norton Schwartz launched a comprehensive,

multi-faceted roadmap designed to restore a culture of compliance and rebuild the nuclear enterprise. Air Force Global Strike Command was established as a key part of this roadmap. This command is a visible commitment to the nuclear enterprise, clearly aligning the ICBM and long-range, nuclear-capable bomber forces under a single chain of command, providing focused oversight and advocacy of the Air Force's nuclear forces.

The command was founded on the premise that as important as other defense priorities may be, none are more important than the responsibility for operating, maintaining, securing and supporting nuclear weapons. For if there is one unchanging, immutable truth about this awesome capability, it is that it demands constant and undivided attention. This was true in the past, it is true now, and it will be true in the future, regardless of the size or composition of the Nation's nuclear deterrence and global strike forces.

Last year, in a speech in Prague, Czech Republic, President Obama made this point perfectly clear. "Make no mistake," he said, "as long as these weapons exist, the United States will maintain a safe, secure, and effective arsenal to deter any adversary, and guarantee that defense to our allies." The critical importance of this undertaking was again underscored in the 2010 Quadrennial Defense Review Report, which states, "Until such time as the administration's goal of a world free of nuclear weapons is achieved . . . [w]e will maintain a safe, secure, and effective nuclear arsenal to deter attack on the United States, and on our allies and partners."

This then is the fundamental mission of Air Force Global Strike Command—to develop and provide safe, secure, and effective nuclear deterrence and global strike forces both to deter attacks and assure our allies. It performs this mission with an elite, highly disciplined team of American airmen with special trust and responsibility for the most powerful weapons in our Nation's arsenal.

Global Strike Command is being established in a methodical, step-by-step fashion. The first step was to stand-up a provisional command in January 2009, at Bolling Air Force Base (AFB), in Washington DC, under the leadership of then Brigadier General Jim Kowalski, now a two-star and the Vice Commander of Air Force Global Strike Command.

The next step took place on August 7, when General Schwartz formally activated Air Force Global Strike Command in a ceremony at Barksdale AFB, LA, the site of the command's permanent headquarters.

The first actual transfer of forces occurred on December 1, when Air Force Global Strike Command assumed responsibility for the intercontinental ballistic missile mission from Air Force Space Command.

Under the new command arrangements, 20th Air Force, headquartered at F.E. Warren AFB, WY and its three missile wings—at F.E. Warren AFB, at Malmstrom AFB, MT, and at Minot AFB, ND—now fall under Air Force Global Strike Command. On the same day, the command also took charge of the ICBM test mission of the 576th Flight Test Squadron at Vandenberg AFB, CA and the targeting analysis mission of the 625th Strategic Operations Squadron at Offutt AFB, NE.

Just 6 weeks ago, on February 1, the transfer of forces to Air Force Global Strike Command was completed as responsibility for 8th Air Force and the long-range, nuclear-capable bomber mission was assumed from Air Combat Command. The 8th Air Force is headquartered at Barksdale and exercises command over the two B-52 wings, one at Barksdale, the other at Minot, as well as the B-2 wing at Whiteman AFB, MO.

Since last year, significant changes have also taken place within these organizations as well. In August, 8th Air Force's assets for cyberspace operations moved to the newly-established 24th Air Force, headquartered in San Antonio, TX. Then in October, the remaining "non-bomber" units of 8th Air Force were transferred to 9th and 12th Air Forces. The end-result is a leaner 8th Air Force focused exclusively on the long-range, nuclear capable bomber force.

Additionally, in September, the Air Force reactivated the 69th Bomb Squadron to become the second operational B-52 squadron at Minot, thus mirroring Barksdale, which already had two operational B-52 squadrons. This move will help balance the workload between nuclear deterrence and conventional missions—not only at Minot, but across the entire B-52 force. The new operational squadron will ultimately bring ten additional B-52s and over 800 additional operations, maintenance, and support personnel to Minot. The new people and jets have already begun to arrive in a phased deployment that will be complete by this spring.

Finally, Air Force Global Strike Command will achieve full operational capability in late summer 2010 with about 1,000 personnel on board at the headquarters and approximately 23,000 people in the entire command. Of special note, the command will be a fully integrated, "Total Force" team—composed of Active Duty, Guard, Reserve, Government civilians, and contractors.

## AIR FORCE GLOBAL STRIKE COMMAND FORCES

The Minuteman III ICBMs as well as the nuclear-capable B-52 and B-2 bombers have been, and most importantly remain, essential components of the U.S. Armed Forces. Each makes important and unique contributions to the security of the Nation, as well as the security of the Nation's allies and friends.

Of the three legs of the strategic nuclear triad, the ICBMs are the most responsive to national leadership. Continuously on alert and deployed in 450 widely dispersed locations, the size and characteristics of the overall Minuteman III force presents any potential adversary with an almost insurmountable challenge should they contemplate attacking the United States. Because an adversary cannot disarm the ICBM force without nearly exhausting their own forces in the process, and at the same time, leaving themselves vulnerable to sea-launched ballistic missiles and bombers, they have no incentive to strike in the first place. In this case, numbers do matter. The ICBM contributes immeasurably to both deterrence and stability in a crisis.

While the ICBM possesses unmatched responsiveness, both in terms of time-to-launch and time-to-target, the B-52 and B-2 bombers likewise possess significant and complementary capabilities and remain critically important components of the strategic nuclear triad. Their readiness levels can be visibly ratcheted up or down to demonstrate national intent. They can be dispersed to enhance their survivability. If ever launched toward their targets, they can be recalled should fast-breaking developments so dictate. They can also carry a comparatively large number of weapons with different capabilities. Bombers can avoid flying over sensitive areas in ways ballistic missiles may not be able to do. Just as the various components of the triad provide mutually reinforcing, complementary capabilities, so too do the two different bombers, with the B-52 providing unique, unmatched stand-off capabilities and the B-2 providing the capability to attack heavily defended targets.

Finally, both of these bombers possess vitally important conventional, or non-nuclear, capabilities, as they convincingly demonstrated in the opening phases of both Operations Enduring Freedom and Iraqi Freedom. With ever-increasing capabilities to deliver highly precise and more effective munitions from bases in the United States or at forward deployed locations, the bomber offers important and unique capabilities to the combatant commander. While the creation of Global Strike Command clearly resulted from concerns related to the overall strength of the Air Force nuclear enterprise, the command nevertheless takes the conventional role of the B-52 and the B-2 very seriously. To that end, Global Strike Command will continue to work very closely with Air Combat Command and the other members of the Combat Air Forces to continuously develop and refine weapons and tactics for employing the bombers in conventional operations.

## SUSTAINMENT AND MODERNIZATION

As important as the ICBM and long-range, nuclear-capable bomber are to national security, they are aging weapon systems. The Minuteman III, first deployed in the 1970s, is now nearly 40 years old. Moreover, much of the infrastructure—for example, missile silos, launch control centers, missile alert facilities, underground cables—were fielded even earlier with previous generations of the Minuteman. The last B-52H left the factory in 1962. The newest B-52 is older than the pilots who fly it, and in some cases twice their age. The B-2, the Nation's most advanced bomber, is considerably newer; but, even it is now over 20 years old.

Nevertheless, the Minuteman III and both bombers still have significant life left in them and will be a part of the Air Force inventory for many years to come. But, as with any aging system, each weapon system faces chronic problems ranging from vanishing vendors for spare parts to worn-out handling and test equipment. Additionally, original design specifications in some cases limit the integration of modern communications and data processing capabilities. Accordingly, the Air Force fiscal year 2011 budget request calls for increased funding to address sustainment and modernization, for both the missile and the bomber force.

With respect to the Minuteman III ICBM, the Air Force is currently in a multi-year program to refurbish or modernize practically every inch of the Minuteman III—from the top of the nose cone to the bottom of the first stage nozzles. All three rocket motors have been overhauled with new propellant, the guidance system has been updated with new electronics, the propulsion system rocket engine (or post boost vehicle) is undergoing life extension, and the newer Peacekeeper ICBM re-entry vehicles are being deployed on a portion of the Minuteman fleet. Meanwhile, other aspects of the weapon system have benefitted from substantial investment. To ensure connectivity with national command authorities, very low frequency communications equipment has been updated and new equipment has been added to re-

ceive MILSTAR transmissions. Communications capabilities will be further expanded to take advantage of the Advanced Extremely High Frequency satellite upgrades. To enhance the survivability of the weapon system, the missile alert and launch facilities are being equipped with new environmental control systems, new diesel generators, new electrical panels, and new batteries. These measures will not only extend the service life of the missile system, but will also enhance its maintainability and reduce the cost of ownership.

Equally important, significant steps are being taken to enhance security in every facet of the ICBM system. Work was recently completed on reinforcing the concrete headworks at every launch facility, and progress continues on deploying a modified personnel access hatch designed to "button-up" a missile silo faster in case of emergency. Programs are underway to install security surveillance cameras at all the remote launch facility sites as well as all of the alert facilities.

However, significant work remains, particularly in the realm of nuclear support equipment. For example, every weapon deployed to the missile field requires a thorough checkout from the Reentry System Test Set, which is overdue for replacement. Without it, not a single missile can be placed on alert. Associated cabling, junction boxes, and replacement parts are equally critical to keeping missiles on alert. As such, it is a reminder that sustainment of test equipment, handling equipment, and transportation equipment are very important to the effectiveness of a weapon system. Hard work is being done to improve in this area, and through a concerted effort with the system program office, the Air Force Nuclear Weapons Center, and the ICBM contractor team, this challenge will be overcome just as many others have been overcome over the years.

All these measures are designed to sustain the Minuteman III force through 2020. In response to congressional direction, the Air Force is currently exploring the steps necessary to sustain the Minuteman III until 2030. Projections can and have been made about the potential service life of the motors and other hardware after undergoing the current upgrade programs; but, it's still too early to say with confidence just how long the Minuteman weapon system will be serviceable. The Air Force will continue to conduct a comprehensive program to inspect missile and reentry system components for signs of aging, and to perform periodic operational tests—both in the missile field as well as unarmed test flights from Vandenberg AFB, CA.

The B-52 is also undergoing several programs in order to maintain its viability through 2040. Current initiatives include incorporating the 1760 data bus into the bomb bay to provide the capability to carry precision weapons internally. This upgrade will provide greater flexibility to the warfighter by practically doubling the smart weapon carriage onboard the B-52. The Combat Network Communications Technology acquisition program will support both nuclear and conventional operations by upgrading the B-52 fleet with tactical data link and voice communications capabilities. Efforts are also underway to enhance the aircraft's capability to communicate in a secure, protected mode as the Air Force's Advanced Extremely High Frequency Satellite comes on line. The Office of the Secretary of Defense has allocated \$3.3 million to conduct an Analysis of Alternative to replace the air-launched cruise missile (ALCM). This effort began last summer when the Air Force identified initial requirements to ensure the B-52 standoff weapons are viable beyond 2020. This is not the entire list, but it illustrates the range of B-52 programs underway.

As for the B-2, a new active electronically scanned array (AESA) radar is currently being fielded, and the B-2 is also beginning a modernization effort to improve the Defensive Management System on the aircraft. This will allow the B-2 to continue operations around the world in more advanced threat environments while decreasing the maintenance required to operate the system. Funding will also be increased for the Weapon System Support Center Software Integration Laboratory, which enables testing of current as well as developmental aircraft systems. New terminals will need to be installed on the aircraft to enable it to communicate in secure, protected modes via the Air Force's new Advanced Extremely High Frequency satellites—a task made more challenging by its unique low observable (LO) requirements. Efforts are also underway to address the sustainability of aft decks and to improve the process for maintaining the aircraft's LO capability.

It is also worth noting that Air Force Global Strike Command has lead command responsibilities for the venerable UH-1N Huey helicopter that currently supports field operations and security at all three missile bases. While this helicopter remains a serviceable aircraft, and has been an undeniably reliable workhorse for the Air Force, thanks to the expertise and efforts of the Air Force's helicopter squadron leaders and contractor logistics support, the UH-1N fleet is aging and its ability to meet post-September 11 security requirements is constrained by cargo capacity, range and speed. It also lacks the necessary all-weather capability to support nuclear security response and convoy missions today.

The Air Force has initiated the acquisition process for replacement of aging UH-1N aircraft. On February 16, General Cartwright, Vice Chairman of the Joint Chiefs of Staff, approved the Common Vertical Lift Support Platform (CVLSP) capabilities document stating the Joint Requirement Oversight Committee's priority is the rapid fielding of the CVLSP to meet immediate warfighter needs. The next major milestone is for the Secretary of the Air Force for Acquisition, Global Strike Command, and the Air Force Materiel Command's Aeronautical Systems Center to present the acquisition strategy to senior Defense Department leadership for review as part of the Material Development Decision. This effort is driving toward a projected initial operation capability of six aircraft to missile wings in fiscal year 2015. With this acquisition, the Air Force will be increasing both crew force and the number of aircraft that can successfully execute the mission anytime they are called upon.

#### CONCLUSION

The nuclear deterrence and global strike forces of the Air Force remain vitally important to the Nation, as well as to the United States' friends and allies around the world. For the men and women of Air Force Global Strike Command that means we have an extraordinarily important mission; noble and worthy work to perform; work that demands the utmost in professionalism, discipline, excellence, pride and esprit.

Everyone across America—and the world—should know and never doubt that the senior leadership of the Air Force is extremely proud of the airmen who currently serve in Eighth and Twentieth Air Forces, and what they do every day. Indeed, our airmen are doing truly magnificent work—flying sorties and performing alert duties; keeping our bombers flying and our missiles ready; defending our flight lines and launch facilities; deploying to Southwest Asia and Guam; supporting our airmen, their families and retirees; and caring for our wounded warriors. With every sortie, every alert tour, every shift, every post and every support activity—they demonstrate over and over that they rank among the best and brightest airmen who have ever served in the U.S. Air Force.

As Secretary of Defense Gates noted in his remarks to the bomber and missile personnel at Minot AFB 15 months ago, "Handling nuclear weapons—the most powerful and destructive instruments in the arsenal of freedom—is a tremendous responsibility. We owe you the attention, the people, and the resources you need to do the job right . . . Yours is the most sensitive mission in the entire U.S. military."

This new command reflects the Air Force's firm and unshakable conviction that strategic nuclear deterrence and global strike operations require a special trust and responsibility—one that we take very seriously. Air Force Global Strike Command will serve as a single voice to maintain the high standards necessary in the stewardship of our Air Force's strategic deterrent forces.

Thank you.

Senator BEN NELSON. Thank you.  
General Shackelford.

#### **STATEMENT OF LT. GEN. MARK D. SHACKELFORD, USAF, MILITARY DEPUTY, OFFICE OF THE ASSISTANT SECRETARY OF THE AIR FORCE FOR ACQUISITION**

General SHACKELFORD. Mr. Chairman and Senator Vitter: Thank you very much for offering me the opportunity to speak with your committee today.

Air Force Acquisition has a number of modernization programs applicable to each of the three bombers to support our commitment to long-term support for those bombers out into the future. At the same time, we're doing the appropriate risk reduction and requirements refinement for a future bomber or long-range strike capability.

I look forward to your questions.

[The prepared statement of General Shackelford follows:]

PREPARED STATEMENT BY LT. GEN. MARK D. SHACKELFORD, USAF

The Air Force continues to modernize and support its bomber fleet with over \$5.5 billion planned over the Future Years Defense Program (FYDP) in modernization

and sustainment investments. The B-2, B-52 and B-1 bombers each have programs to ensure their viability into the future.

## B-1

The B-1B Lancer has maintained an unflagging deployed presence since September 11, 2001 in support of Operations Enduring Freedom and Iraqi Freedom. During that time, the B-1 fleet and its crews have flown more than 6,900 missions and amassed more than 70,000 combat hours. In Operation Enduring Freedom alone, the B-1 has employed nearly 40 percent of all munitions while flying only 5 percent of all sorties.

Given the B-1's critical contributions to today's fight and its corresponding high operations tempo, the Air Force places great emphasis on sustaining the B-1 fleet. B-1 sustainment efforts currently address several issues which, if left unchecked, could critically limit aircraft availability and leave a gap in our power projection capability. Although these modifications represent a significant investment, they are critical to supporting our deployed combat forces by ensuring continued B-1 availability.

The Air Force's primary B-1 modernization effort is the Fully Integrated Data Link (FIDL). FIDL gives aircrew enhanced situational awareness and combat effectiveness by incorporating Link-16 data link and Joint Range Extension Beyond Line-of-Sight capabilities. FIDL also provides the backbone infrastructure for a substantial upgrade to the existing cockpit including modern multi-function color displays that provide aircrew with a new level of fused data.

The Air Force continues to develop the highly successful Laptop Controlled Targeting Pod (LCTP) modification for the B-1. Begun in 2007 as a response to a U.S. Air Forces, U.S. Central Command Urgent Need Request and operational since 2008, LCTP provides the B-1 with targeting pod capabilities via the Sniper Advanced Targeting Pod (ATP). The B-1 combined with the Sniper ATP delivers an unprecedented level of payload precision to the fight. Efforts continue to outfit the entire B-1 fleet for Sniper operations and provide a Moving Target Kill capability via employment of laser-guided weapons.

## B-2

The B-2 Spirit Advanced Technology Bomber provides a lethal combination of range, payload, and stealth, and remains the world's sole long-range, low observable bomber. It is the only platform capable of delivering 80 independently targeted 500-lb Joint Direct Attack Munitions (GBU-38). While B-2 availability has steadily increased over the past 5 years, in part due to enhancements in low observable maintenance such as the highly successful Alternate High Frequency Material program, it faces increasing pressures to upgrade avionics originally designed over 20 years ago. The three increment Extremely High Frequency Satellite Communications and Computer Upgrade program (EHF SATCOM and Computer Upgrade) seeks first, in Increment 1, to upgrade the Spirit's flight management computers as an enabler for future avionics efforts. Increment 2 integrates the Family of Beyond-line-of-sight Terminals (FAB-T) along with a low observable antenna to provide secure, survivable strategic communication, while Increment 3 will connect the B-2 into the Global Information Grid. Increment 1 of EHF SATCOM and Computer Upgrade is currently in Engineering and Manufacturing Development (EMD) and on track to begin procurement in fiscal year 2011 for fleet installations beginning at the end of fiscal year 13. The Department is also investing in the B-2's Defensive Management System to ensure continued survivability. This will allow the B-2 to continue operations in more advanced threat environments while decreasing the maintenance required to operate the system.

We will also replace the B-2's original radar antenna, upgrade selected radar avionics and change the radar operating frequency as part of the Radar Modernization Program (RMP). The Low Rate Initial Production (LRIP) contract for the first six production radar kits was awarded in December 2008, with the second and final full-rate buy for the remaining seven ship sets awarded in November 2009. Seven radar ship sets were previously procured during development and are currently being installed in fleet aircraft. Upon delivery and installation of the radar ship sets, the twenty aircraft

B-2 fleet will have completed its radar modernization efforts. The developmental units will be retrofitted to the final production configuration. Thanks in large part to congressional support, the RMP acquisition strategy was modified to include life-of-type component buys to avoid diminishing manufacturing source issues during the production run.

The B-52 Stratofortress is our Nation's oldest frontline long-range strategic bomber with the last airframe entering service in 1962. The Air Force has invested in modernization programs to keep the platform viable and operationally relevant. Major B-52 modernizations include the Combat Network Communications Technology (CONNECT), EHF SATCOM, Strategic Radar Replacement (SR2), and 1760 Internal Weapons Bay Upgrade programs. CONNECT provides an integrated communication and mission management system with machine to machine datalink interfaces for weapons delivery. The digital infrastructure provided in CONNECT is the backbone for EHF SATCOM and SR2. The EHF SATCOM program integrates the FAB-T providing assured, survivable two-way strategic command and control communications. The SR2 program, starting in fiscal year 2010, integrates a modern non-developmental radar to address systemic sustainment issues, replacing the legacy APN-166 radar. Finally, 1760 Internal Weapons Bay Upgrade provides internal J-series weapons capability through modification of Common Strategic Rotary Launchers and an upgrade of stores management and offensive avionics software. Updated with modern technology the B-52 will be capable of delivering the full complement of jointly developed weapons and will continue into the 21st century as an important element of our Nation's defenses.

The fiscal year 2011 PB began funding for technology industrial base sustainment in anticipation of a future long range strike (LRS) platform program. This effort develops and demonstrates LRS technologies and concepts in support of Air Force Global Strike and Global Persistent Attack Concepts of Operations. This effort will provide capability improvements in the areas of strike responsiveness, survivability, lethality, connectivity, and affordability. The Quadrennial Defense Review-directed LRS study will help inform and shape the requirements for LRS.

The sustainment and modernization efforts briefly outlined above will ensure our bomber fleet's continued ability to project global power through enhanced combat capability and lethality, survivability, and supportability. I wish to thank the committee for its continued support of the Air Force's global strike mission.

Senator BEN NELSON. General Alston.

**STATEMENT OF MAJ. GEN. C. DONALD ALSTON, USAF, ASSISTANT CHIEF OF STAFF, STRATEGIC DETERRENCE AND NUCLEAR INTEGRATION, U.S. AIR FORCE**

General ALSTON. Mr. Chairman, Ranking Member Vitter: Thank you very much for the privilege to testify before you this afternoon.

I have been in my position as the Assistant Chief of Staff of Strategic Deterrence and Nuclear Integration for just the last 15 months that the organization stood up. We stood it up in November 2008. But actually I arrived in the position to be working the challenges the Air Force has just a couple of days after our event that you mentioned in your opening remarks. So I look forward to discussing and answering your questions with regard to the variety of initiatives that we've undertaken with regard to process, structure, and culture in order to have the positive impacts that are required for us to perform at the level demanded by nuclear weapons.

I look forward to your additional questions on this.

[The prepared statement of General Alston follows:]

PREPARED STATEMENT BY MAJ. GEN. C. DONALD ALSTON, USAF

INTRODUCTION

Chairman Nelson, Ranking Member Vitter, distinguished members of the subcommittee, thank you for the opportunity to discuss Air Force strategic programs.

Twenty months ago, the Air Force began taking comprehensive action to strengthen performance in the nuclear mission area and to determine the long-term actions necessary to build a culture of excellence within the Air Force nuclear enterprise. Credible and reliable nuclear deterrence is essential for our security and that our allies and friends, and the Air Force have a pivotal role in this vital mission area. Air Force senior leadership continually emphasizes that there is no mission more

sensitive than safeguarding nuclear capabilities and maintaining nuclear deterrence, and that the Air Force has a sacred trust with the American people to safely operate, maintain and secure nuclear weapons. The strategic plan we developed nearly a year and a half ago provided the initial direction and framework to begin addressing the findings and recommendations from a variety of internal and external reports. I intend to use the six strategic objective of our roadmap to update the committee on the initiatives underway to support the Secretary of the Air Force and Chief of Staff's number 1 priority, which is to continue to strengthen the Air Force nuclear enterprise.

REBUILD A CULTURE OF ACCOUNTABILITY AND RIGOROUS SELF-ASSESSMENT DEDICATED TO HIGH STANDARDS OF EXCELLENCE IN THE AIR FORCE NUCLEAR ENTERPRISE

Regardless of the size or structure of our nuclear force, every action by every Airman must be executed with precision and reliability. Perfection is the standard each and every time and a robust self-assessment and inspection process to effectively uncover, analyze, and address systemic nuclear weaknesses is an important tool in our effort to rebuild a nuclear-aware and focused culture.

The Air Force Inspector General (IG) has implemented centralized, independent oversight of Air Force nuclear inspections and assessments, while preserving major command (MAJCOM) authorities and responsibilities for training and readiness of their assigned forces.

To robust our inspection process, we have developed standardized/centralized training for all IG team members with nuclear inspection duties, and a MAJCOM certification program for nuclear inspection teams. We also formed a core team of inspectors that accompany major command inspection teams to ensure consistent application of standards. We have also mandated an increase in no-notice inspections.

Inspection policy changes include increasing the frequency and intensity of inspections while limiting or eliminating advanced notice. Other changes include:

- Ensuring 100 percent oversight by the Air Force Inspection Agency of all nuclear inspections
- Re-emphasizing no- and limited-notice inspections
  - Mandating a no-notice Limited Nuclear Survey Inspection be executed between each full-scale Nuclear Surety Inspection (NSI)

Increased depth and rigor of nuclear inspection activities have enhanced our ability to identify and document discrepancies as a means to improve processes and procedures.

In the exacting world of nuclear weapons, a perfect pass rate would not be realistic or desirable. A unit must have 750 items in 100 percent compliance with established standards in order to receive a "satisfactory" rating, therefore an "unsatisfactory" rating does not directly translate to an inability of a unit to accomplish its mission nor does it indicate a compromise of the safety, security and reliability of nuclear-responsible forces. Instead, it indicates a deviation from the extremely high standards we demand and expect in this mission area and we are committed to finding those deviations, determining what caused them, and correcting the deviations as a means of enhancing our stewardship of the nuclear deterrence mission.

REBUILD NUCLEAR ENTERPRISE AND CODIFY CAREER PATHS

Credible deterrence requires capable systems and competent people. To overcome the erosion of nuclear expertise, the Air Force set forth a path to examine education and training across the enterprise, improve identification and tracking of nuclear experience and expertise, and establish a force development governance construct to ensure continual, formalized senior leadership involvement in the development of future nuclear leaders.

Senator BEN NELSON. Thank you.  
General Scott.

**STATEMENT OF MAJ. GEN. DAVID J. SCOTT, USAF, DIRECTOR, OPERATIONAL CAPABILITY REQUIREMENTS, AND DEPUTY CHIEF OF STAFF FOR OPERATIONS, PLANS, AND REQUIREMENTS, U.S. AIR FORCE**

General SCOTT. Mr. Chairman, Mr. Ranking Member: As the Director of Requirements for the Air Force, I work hand-in-hand with

the major commands on the requirements throughout, whether it's from a bomber force or the fighter force, but all those requirements. I will work directly with General Klotz on the requirements that he has, or hand-in-hand with General Shackelford to hand off the requirements for the acquisition.

Many of the things that you see in the beginning of the phase of the Joint Capabilities Integration and Development System (JCIDS) and the Air Force Requirements Oversight Council are the things that we'll be working, and work the conventional side of that. Sir, I'm looking forward to your questions also.

[The prepared statement of General Scott follows:]

PREPARED STATEMENT BY MAJ. GEN. DAVID SCOTT, USAF

Good morning Chairman Levin, Ranking Member McCain, and distinguished members of the subcommittee. Thank you for the opportunity to address this committee regarding Air Force Strategic Forces and the current conventional operations for B-52, B-1, and B-2. All three of our long range strike platforms remain engaged in today's fight while retaining an ability to meet future challenges. Air Force bombers have been on rotating deployment to SWA since September 11.

The B-52 amplifies the consistent message of long range U.S. airpower in a theater such as U.S. Pacific Command (PACOM) where distance drives decisions. Equipped with advanced targeting pods, the B-52s can also provide real-time ISR with full motion video, enhanced situational awareness, a demonstrable over watch presence, and precision joint fires in support of Commander, U.S. Pacific Command objectives. While our B-52 fleet remains heavily tasked and is currently supporting the deployed operations on a 1-to-3 dwell, it continues to meet a constant nuclear commitment with the nondeployed forces.

The B-52 brings some unique maritime support capabilities to the Pacific theater, a theater defined by the immensity of the Pacific Ocean. In a broad ocean area surveillance or in an anti-shipping role, the B-52 provides an important force multiplier to the fleet and Joint Forces Air Component Commander. B-52s equipped with advanced targeting pods and armed with joint direct attack munitions (JDAM) provide persistence over the battle field or the fleet which significantly contributes to the effectiveness of the joint force's ability to respond to critical land, sea, or air threats.

The B-1 is in the ongoing fight in Afghanistan and provides long range persistent airpower in direct support of the North Atlantic Treaty Organization, U.S., and Afghan troops. The B-1 provides real-time ISR with full motion video, enhanced situational awareness, a demonstrable over watch presence, and precision joint fires in support of coalition objectives. B-1s added SNIPER Advanced Targeting Pod capability in summer 2009, to provide air crew with positive ID capability and the ability to share video with forces on the ground. The Air Force developed this capability—in response to a Central Command tasking—on an accelerated 18 month timeline. This allows the ability to combine precision targeting, precision weapons, and persistence to the joint commander.

Demonstrating a worldwide deterrence capability with our nuclear forces is vital to protecting both the United States and our allies. The B-2 and B-52 are tasked to provide dedicated support to U.S. Strategic Command (STRATCOM). This is done via the Global Deterrence Force; our recent reorganization of the B-52 fleet to add a fourth active duty squadron, the 69th bomb squadron, at Minot which is designed to optimize support for the STRATCOM mission. While deployed, the units meet Air Tasking Order mission requirements for both ground alert and scheduled sorties to support STRATCOM's objectives.

Air Force bombers are also currently supporting U.S. PACOM's Continuous Bomber Presence to assure allies and support U.S. interests in the Pacific region. Air Force bombers have been deployed to U.S. PACOM (Andersen Air Force Base) since 2003—currently, the B-2 and B-52 cover this tasking. Each B-52 deployment brings aviators, maintainers and support forces for what is growing from a 120-day to a 179-day period. B-2s rotate in behind every two B-52 rotations.

U.S. PACOM deployed bombers support a variety of exercises, often in conjunction with other Combat Air Force assets. Training missions include local sorties, exercises, and 24-hour global power missions to ranges in Hawaii, Alaska, and Australia. Significant exercises include Northern Edge in the Alaskan ranges and Valiant Shield in the vicinity of Guam. Northern Edge is an annual Air Force exercise

where bombers integrate with F-22, F-15, and F-16 fighters as well as E-3 Airborne Warning and Control System to conduct simulated composite force integrated strikes against ground and air defenses. Valiant Shield was a joint exercise with the U.S. Navy where B-2s and F-15Es exercised with naval aviation assets from two Carrier Strike Groups simultaneously, marking the largest mass of U.S. naval forces since the Vietnam War.

The Air Force continues our commitment to future long-range strike capabilities, as part of a comprehensive, phased plan to modernize and sustain our bomber force. We will continue planned legacy bomber sustainment and modernization to increase the conventional capabilities of the bomber fleet.

Thank you for the opportunity to address this subcommittee. I look forward to your questions.

Senator BEN NELSON. Thank you.  
Admiral Johnson.

**STATEMENT OF RADM STEPHEN E. JOHNSON, USN, DIRECTOR,  
STRATEGIC SYSTEMS PROGRAMS, U.S. NAVY**

Admiral JOHNSON. Thank you, Mr. Chairman. The Strategic Systems are impeccably supported by the Secretary of the Navy, the Chief of Naval Operations, and by your committee in all aspects of our program.

We have returned three SSBNs to strategic patrol in the past 12 months. USS *Alabama*, Her Majesty's Ship *Victorious*, and USS *Alaska* have all completed their demonstration and shakedown operations and all are ready or already on strategic patrol.

Last December, it was the USS *Alaska*, the third of those three SSBNs to return to strategic operations, that conducted the 130th consecutive successful flight of the Trident II D5 missile. This record of successful flight tests is unmatched by any other missile system in the world.

I would also like to thank the committee for its strong support of the *Ohio* Replacement Program and I look forward to our discussion today in that area.

The men and women of the Strategic Systems Program are committed to the highest standards of safety, surety, and reliability for our systems. We sincerely appreciate the committee's support.

[The prepared statement of Admiral Johnson follows:]

PREPARED STATEMENT BY RADM STEPHEN JOHNSON, USN

Chairman Nelson, Senator Vitter, distinguished members of the Strategic Forces Subcommittee. Thank you for this opportunity to appear before you to discuss our Navy's nuclear enterprise, today's force and the efforts to ensure the continued reliability of our submarine strategic forces, and the *Ohio* Class Replacement to maintain continuous strategic deterrence.

NAVY NUCLEAR ENTERPRISE

Strategic Systems Programs is impeccably supported by the Secretary of the Navy, the Chief of Naval Operations and by your committee in all aspects of our program. We appreciate this strong support and remain vigilant in executing our strategic deterrent mission. Strategic Systems Programs continues to maintain a safe, reliable, and secure environment for our strategic assets. We continue to focus on the custody and accountability of the nuclear assets you have entrusted to the Navy.

Earlier this year, the Navy took a significant step to better define the roles and responsibilities associated with the safety and security of our strategic weapons. The Secretary of the Navy signed an instruction strengthening Strategic Systems Programs' role as the program manager and technical authority for technical operations, safety, security, and maintenance of the Navy's nuclear weapons and nuclear weapons systems.

Strategic Systems Programs (SSP) will continue to sustain our high standards and focus on two major areas which include; (1) fully meeting operational and fleet support requirements and (2) recruiting and retaining the highest quality personnel to execute our strategic mission. I established senior executive level management for field operations and am implementing continuous on-site evaluation. These actions have improved the rigor applied to daily operations, increased the level of accountability, created an environment of self-assessment, and placed priority on implementing corrective actions. SSP has also placed a high priority on the recruitment, development and retention of a highly-skilled workforce. These two focus areas shape the way in which we manage our day-to-day operations and set the culture to sustain our strategic deterrent for the long-term. The men and women of Strategic Systems Programs and our industry partners remain dedicated to supporting the mission of our Sailors on strategic deterrent patrol and our marines and sailors who are standing the watch to ensure the security of the weapons we are entrusted with by this Nation. I would like to take a moment to address a few of the major initiatives underway within the Navy that address the sustainment of our sea-based deterrent and ensure its future viability.

#### TODAY'S FORCE

We have returned three SSBNs to strategic patrol in the past 12 months. USS *Alabama* (SSBN 731), HMS *Victorious* and USS *Alaska* (SSBN 732) have all completed Demonstration and Shakedown Operations and are ready for or already on strategic patrol. Our 14 U.S. Navy SSBNs, 8 of which are homeported in the Pacific and 6 in the Atlantic Fleet, continue to provide a credible, survivable, and reliable sea-based strategic deterrent for our national leadership.

In December, the USS *Alaska* (SSBN 732), the third of the three SSBNs to return to strategic operations, conducted the 130th consecutive successful flight test of the Trident II (D5) missile as part of her Demonstration and Shakedown Operation. This record of successful flight tests is unmatched by any other missile launch system. Therefore, I am pleased to report to you that the Trident Strategic Weapons System continues to demonstrate itself as a credible deterrent and meet the operational requirements established for the system almost 30 years ago.

USS *Nevada* (SSBN 733) will soon complete her Engineering Refueling Overhaul, enter post availability testing, prepare for her Demonstration and Shakedown Operation and return to the operational cycle in spring 2011. Two more of our submarines, USS *Tennessee* (SSBN 734) and USS *Pennsylvania* (SSBN 735) are undergoing Engineering Refueling Overhauls which will maintain the viability of these platforms through the service life of the *Ohio* class.

The Trident II (D5) weapons system is nearing its 20th year of deployment. We must continue to be vigilant of age-related issues to ensure the high reliability needed for a strategic weapons system. With the Trident II (D5) missile planned for operational deployment through 2042 to match the *Ohio* class hull life extension, D5 hardware will age beyond our previous experience base and will be operational almost twice as long as any previous sea-based strategic deterrent. Therefore SSP has adjusted our testing to focus on older missiles in order to best predict aging characteristics. For example, the missile successfully fired by the USS *Alaska* (SSBN 732) was approximately 17 years old.

#### D5 LIFE EXTENSION PROGRAM

The Trident II (D5) missile service life is being extended to 2042 to match the *Ohio* class submarine service life. This is being accomplished through an update to missile electronics and guidance packages to address obsolescence and continuous production of critical components such as rocket motors.

SSP has restructured our D5 life extension program to ensure sufficient time for additional missile electronics design evolutions. The flight test schedule has been realigned by a few months to allow for data analysis and to incorporate any test changes. The initial introduction of the D5 life extended missiles to the Fleet has shifted from fiscal year 2013 to fiscal year 2017. This shift, which is cost neutral until fiscal year 2013, will provide more time to ensure the successful deployment of the life extension program, while allowing us to continue to meet our ship-fill requirements. This modest schedule shift will also allow SSP to better accommodate the any potential outcomes of the Nuclear Posture Review and the New Strategic Arms Reduction Treaty. Ninety percent of the Trident II (D5) life extension component procurement remains on track to support missile production.

One area of concern for the Trident II (D5) life extension program is the decline in the Solid Rocket Motor Industrial Base. The Navy is maintaining a continuous production of solid rocket motors and should be in production through 2023. How-

ever, we have faced significant cost challenges as both the National Aeronautics and Space Administration and Air Force demand have declined and will continue to experience those cost increases as demand continues to shrink further in future years.

Another key to the success of the Trident II, D5 life extension program is the life extension of the W76, Mk4 warhead refurbishment known as the W76-1, which we are executing in partnership with the Department of Energy. The W76-1 refurbishment maintains the military capability of the original W76 for approximately an additional 30 years. This program will provide the Navy with the weapons we need to meet operational requirements throughout the *Ohio* service life and the planned follow-on platform.

#### OHIO REPLACEMENT

Congress approved the first significant funding request for the *Ohio* Replacement program in the fiscal year 2010 budget. Thank you for your strong support. The *Ohio* Replacement will be a strategic, national asset whose endurance and stealth will enable the Navy to provide continuous, uninterrupted survivable strategic deterrence into the 2080s.

The *Ohio* Replacement Analysis of Alternatives study was completed and is being reviewed within the Navy. It will support the Milestone A review, which is planned for the spring 2010. The Navy's fiscal year 2011 budget provides the required research, development, test, and evaluation investment to support the lead ship construction beginning in fiscal year 2019.

The United States and the United Kingdom (U.K.) have maintained a shared commitment to nuclear deterrence through the Polaris Sales Agreement since April 1963. The U.S. will continue to maintain its strong strategic relationship with the U.K. for our respective follow-on platforms, based upon the Polaris Sales Agreement. The *Ohio* Replacement program includes the development of a common missile compartment that will support both the *Ohio* Class Replacement and the successor to the U.K. Vanguard Class.

#### NUCLEAR WEAPONS SECURITY

Our Marines and Navy Masters-at-Arms are providing an effective and integrated elite security force at both of our Strategic Weapons Facilities. The U.S. Coast Guard, Maritime Protection Force Units have been commissioned at Kings Bay, GA and Bangor, WA. These coastguardsmen and the Navy vessels they man provide a security umbrella for our *Ohio* class submarines as they deploy and return from their deterrent patrols. They form the basis of our Trident Transit Protection System.

Mr. Chairman and distinguished members of this subcommittee, I sincerely appreciate your continued support of the Navy's nuclear enterprise. Your efforts will ensure the continued credibility, reliability, and safety of our Trident II (D5) Weapons System and its remarkable Trident II (D5) Missile, maintaining a record of success unmatched by any missile system. The men and women of Strategic Systems Programs are committed to the highest standards of safety, surety, and reliability of this remarkable system. I thank you again for the opportunity to appear before you today and am prepared to answer any questions you may have.

Senator BEN NELSON. Thank you.

Senator Begich has joined us. Do you have any opening comments you might like to make?

Senator BEGICH. No, I will pass, Mr. Chairman.

Senator BEN NELSON. You'll pass? We just mentioned the SSBN *Alaska*.

Senator BEGICH. We like that. [Laughter.]

Senator BEN NELSON. Dr. Roberts, is there any particular reason that this report is late? Is it just taking too much time to develop it? Because the questions that come about then are, is everything in the report in the budget or are there things that are going to be outside the budget that will come about as a result of this report?

Dr. ROBERTS. The budget that was submitted reflects the results of the NPR and we don't expect subsequent changes. The following years' budgets may reflect some additional initiatives.

The delay is essentially a reflection of the fact that this third NPR since the Cold War is more comprehensive and complex than the prior two. The first, the 1994 NPR, was a strictly internal DOD planning activity and set out the key theme, lead but hedge: lead to reduce nuclear risks, but hedge against the possibility of a Russian turn to the worse by maintaining current force structure capability.

There was an unclassified summary of that report made available in Powerpoint form a year or 2 after the fact, but it was very much an internal DOD force planning exercise.

The 2001 NPR received slightly broader interagency review, but was still essentially an internal planning DOD activity. This NPR reflects the fact of the legislation that required a comprehensive review of arms control strategy and an integrated look at non-proliferation and other emerging 21st century threats, to include nuclear terrorism. This, of course, dovetailed with the instinct of the administration to take a very broad look.

The legislation also mandated that this would be a DOD-led, but interagency, review of policy, strategy, and capabilities. So as we have moved through our work we have found a very complex landscape. Additionally, we were given the framework of the Prague speech and the desire to both take concrete steps to reduce nuclear roles while at the same time maintaining not just deterrence, but strategic stability and assurance of our allies. Accomplishing this very broad set of objectives in a balanced and comprehensive way has required a lot of analytical work and a lot of debate at every level in the executive branch.

We've learned, moreover, that our leadership wishes to be very deliberative in moving through these discussions. We had set two deadlines, the original deadline and a fallback deadline, and we learned that we simply need to allow the leadership to work its way through the issues to the point where it's satisfied with the result. We think we're just about at that point right now.

Senator BEN NELSON. General Klotz, you recently assumed this command, as you indicated. How has the transition of bombers and ICBMs gone so far and what's left to be accomplished in that regard?

General KLOTZ. Thank you very much, Mr. Chairman. My sense is it has gone very well and the feedback I get from the airmen at each of our bases reinforces that opinion. We have started this whole process in a very systematic, methodical way, beginning with a program plan that was developed by General Alston and others in the Air Force headquarters that had literally hundreds of action items to be completed as part of the transfer of forces to GSC.

As soon as we stood up our headquarters on the 7th of August, we set about as a command working through each and every one of those steps. We established working groups with both Air Force Space Command, from which we assumed the ICBM mission, and with Air Combat Command, from whom we assumed the B-52 and B-2 missions. We had working groups. We had weekly video-conferences. We had periodic meetings at the two-star level, then ultimately a meeting between myself and the commanders of both those organizations to ensure that we had crossed every t and dotted every i in terms of assuming those forces.

So we did, in fact, assume the ICBMs on the 1st of December of last year and the long-range bomber force on the 1st of February this year. We continue to have a relationship with both Space Command and Air Combat Command. I anticipate that those relationships will be very intense through the end of this fiscal year as they continue to discharge some of the responsibilities they have from a financial point of view, and also well into the future, particularly with Air Combat Command, since they have the responsibility as the lead major command for developing conventional weapons and tactics which will apply to not only the aircraft which they have responsibility for, but for both the B-52 and the B-2.

Senator BEN NELSON. The Nuclear Weapons Center at Kirtland Air Force Base, of course, is responsible for maintaining nuclear weapons and systems, but it's not under GSC. Is this a good decision for it not to be under GSC?

General KLOTZ. I think it's a good decision, but I will caveat that by saying we need to constantly check how we're doing and assess the strong points of that change as well as ways we can improve it.

Let me tell you why I think it's a good decision. To some extent—and Admiral Johnson can talk to this in greater detail—we've taken a page from the Navy's playbook in the sense that they have, as I understand it, a single entity which has responsibility for what happens inside a weapons storage area. The technical operations that take place there are all managed by a single group.

In many respects, it was fragmented in the Air Force enterprise by having each wing commander or each base responsible for the actions and activities that took place inside the weapons storage area. We thought, given the critical self-assessment we went through after the Minot incident, which you mentioned, that we ought to adopt a process by which we had a single organization responsible for activities that went on in the weapons storage area regardless of where they were, whether they were on a bomber base or whether they were on a missile base, and whether they were in a missile base in North Dakota or a missile base in Montana or Wyoming.

So, having said that, I have gone out and I visited weapons storage areas at all of our bases. I've been very impressed with the enthusiasm, the energy, and the sense of purpose and seriousness on the part of the Air Force Nuclear Weapons Center personnel that are operating inside the weapons storage areas. I'm very optimistic about that, but I will caveat that by saying we need to constantly go back and make sure that we have it right.

Senator BEN NELSON. A final question in that area. There was a concern that getting personnel to transfer to the new command might be a challenge for recruiting and retention. How has that gone thus far?

General KLOTZ. Quite the opposite, Mr. Chairman. I have been very pleased that people have been signing up in large numbers to come to Air Force GSC, both Active Duty military as well as government civilians and contractors. I think there are a couple of reasons for that. Many of the people who come are those who served in Strategic Air Command or in the nuclear enterprise for a number of years. They understand the seriousness which the Secretary

of Defense, the Secretary of the Air Force, and the Chief of Staff of the Air Force have placed on continuing to strengthen the nuclear enterprise. They think that it is important, worthy, and noble work to do, and they want to participate. So it's an opportunity for them to come back and do that.

The other reason I think is probably a little more esoteric, in the sense that people are motivated by the fact that they're coming and standing up a brand new organization. So rather than going into an organization which already exists and fitting in and perhaps maybe improving it, they have an opportunity to create an organization essentially from whole cloth. A lot of people find that a very exciting prospect and they want to be in on the ground floor and, as I said, we've had no lack of people signing up to come and work in the headquarters and in our units.

Senator BEN NELSON. Let's hope that continues. Thank you.

Senator VITTER.

Senator VITTER. Thank you.

Thank you, General Klotz. You didn't even mention the two other key factors. The food and the Saints' Superbowl win helps, too. [Laughter.]

Dr. Roberts, I was happy to hear your comments about the nuclear triad. Given that, when will the Department make a decision with respect to the design of the next generation bomber and its nuclear capabilities?

Dr. ROBERTS. I believe that will be a consequence of the study that's under way on this future look at conventional strike, the future role of the bomber, and the follow-on cruise missile. These are meant to be part and parcel of an integrated look at strike.

Senator VITTER. How would you lay that out in terms of a timetable with regard to the bomber after the NPR?

Dr. ROBERTS. For the study and the budget result? We would expect to put forward the results of this study in the fiscal year 2012 budget.

Senator VITTER. Okay.

General SCOTT. Sir, I don't want to jump in, but I'm part of the Under Secretary of Defense study team and I can give you timelines. We've just kicked off that particular study team. The family of systems that they're looking at are what they call long-range strike. Within that family of systems will be the long-range persistent strike aircraft, the conventional prompt global strike, and then the standoff weapons and the standoff platforms.

In about the May timeframe, we'll start talking about it, but it's a 1-year study that we're working with RAND on.

Senator VITTER. Okay, thank you.

General SCOTT. Yes, sir.

Senator VITTER. General Klotz, how important do you believe the ICBM force is in the triad, and specifically how critical do you think a 450-single warhead ICBM force is?

General KLOTZ. The ICBM, in my view, is extraordinarily important to the triad and to our overall defense posture. Without saying a specific number, I think the numbers really do matter. By presenting a potential adversary with a fairly large, complex target set that he would have to deal with should he contemplate attacking the United States, having a large number of ICBMs literally forces

any adversary to exhaust his entire force in an attempt to defeat it or to disarm it. In the process, if he does that, then he's still faced with the other two elements or components of the triad, the manned bomber and the submarine-launched ballistic missile (SLBM), which will provide for continuing deterrence after that attempt. So I think that's extraordinarily important.

The other point is that the ICBM is perhaps the most responsive of all elements of the triad because it is land-based. It's located in the continental United States, and there are multiple and redundant communication paths to the launch control centers, so a very responsive system.

By touting the strengths of the ICBM, I continue to be a champion for the manned bomber, as you would expect the Commander of Air Force GSC to be, but also for the SLBM because of its tremendous survivability and power that it also brings to the deterrent and assurance equation.

Senator VITTER. General, going back to your comments about the ICBM, I assume you think whatever the number is, there's a big difference between that number in a single-warhead force versus multiple warheads, the same number of warheads. Can you comment on the difference and what that means strategically?

General KLOTZ. Again, I think the key and critical point from not only a deterrence point of view, but also from the stability point of view, is the number of silos or delivery systems you have, not so much the warheads. Indeed, as we were going through the negotiations for the START II Treaty, a treaty which, by the way, was never ratified, the assumption, which I think continues to hold true, is that as both sides go to lower numbers of warheads on delivery vehicles, it creates an inherently more stable situation in a crisis.

So again, I think keeping the numbers of ICBMs at a robust number gives you the option to reduce the number of warheads and still provide for the stability in a crisis that we seek through the ICBM leg of the triad.

Senator VITTER. Okay, thank you.

Admiral Johnson, last week the Air Force confirmed during our space posture hearings that the cost of some components of the Evolved Expendable Launch Vehicle are likely to rise significantly, maybe as much as 100 percent, as a result of the administration's decision to retire the Shuttle and cancel Constellation. How will this proposed NASA change in mission affect the cost of Trident D5 life extension rocket motors and what sort of gap in the industrial base does this raise the prospect of?

Admiral JOHNSON. Senator, we are in low rate initial production (LRIP) and intend to remain in LRIP for at least the next 10 years. The change in the industrial base and the national orders for large-diameter rocket motors cause more of the fixed costs to fall upon the Navy's production cost. We expect to see a rise, not of the order that you referred to in your question, but we do expect to see a rise of 10 to 20 percent. We are working with DOD and with the two companies involved to control those costs. But they will increase. We have seen increases and they will continue.

On the other side of that equation, because we intend to remain in production for the next 10 years or so, that provides a warm in-

dustrial base for the work that comes. So I would describe the industry as fragile. The government plays an important role in managing that industrial base and I think that it is manageable. The costs will go up.

Senator VITTER. For that solid rocket industrial base, right now doesn't NASA business represent the majority for them and DOD business represent the minority? So I guess my question is, if in fact—and this isn't decided by Congress, that 70 percent majority business, whatever it is from NASA, just goes away, it strikes me as a layperson that that is going to probably cause you more than a 10 or 20 percent cost problem. What am I missing?

Admiral JOHNSON. At the surface level, were we to not take action that would exactly be the result. The difference in the manufacturing requirement for the NASA is so much larger—even as big as the Trident missile is, it is so much larger than ours, I think we can control those costs by closing down portions of the facilities and removing those costs from the Trident program. But we cannot completely eliminate that. We don't know exactly what those costs are going to be.

So I think there's a very valid concern. There's no doubt our costs are going to go up. I don't think they'll double, but there's absolutely no doubt it's going to be significant and it's going to be a difficult cost for the Navy to absorb.

Senator VITTER. Thank you, Mr. Chairman.

Senator BEN NELSON. Senator Begich.

Senator BEGICH. Mr. Chairman, thank you very much.

I'm going to actually follow up on what Senator Vitter just talked about. I want to, if I can, just probe a little bit on the costing factor, and I'm not sure who would be the best, but I'll look to you, Rear Admiral Johnson. The estimate you give is 10 to 20 percent. Give me an assurance in how you come to that number? I'm new to all this, about a year and a half in now, but I have come to the conclusion estimates aren't the most accurate any more. No disrespect to any of the military folks, but it seems like every meeting I go to there is an estimate, and then I go to another meeting and the estimate's just a little off. A little off in the military is millions and billions.

So help me understand why you think it's only 10 to 20 percent when those fixed costs are going to be spread no matter what? Help me understand that.

Admiral JOHNSON. Yes, sir. They've already gone up once.

Senator BEGICH. How much did it go up last time?

Admiral JOHNSON. On an individual rocket motor set price, it went up about \$1.8 million per set, so that's about an 18 percent change already. I'll take that for the record and give you an exact number so you can have it.

Senator BEGICH. That would be great.

[The information referred to follows:]

The cost of an individual rocket motor set has increased \$1.667 million from fiscal year 2008 to fiscal year 2010, a change of 20.48 percent. This increase was formulated using the expected negotiated unit cost of the fiscal year 2010 Rocket Motor contract.

Admiral JOHNSON. So it's already gone up as I testify before you today. Then of course, I said "at least," as a minimum, not less

than 10 or 20 percent. We don't really know the full extent at this moment. We're working on that. I don't expect it will double yet again, but it's going to be a sizable cost for the Navy.

Senator BEGICH. When you say you're working on it, is that an internal process with the contractors to come to an understanding or is it just an internal process that you're coming to with your team to guesstimate what it might be?

Admiral JOHNSON. Strategic Systems Programs is part of an interagency task force headed by the Office of the Secretary of Defense (OSD) Industrial Policy, that has members from all the parties involved, and are examining that together. Congress has requested a plan, not a study but a plan, by June. It's that team, that interagency team that I referred to, that will bring, I think, a credible solution forward to the committee on time in June. That's my expectation.

My position was based on an increase already seen.

Senator BEGICH. That's fair.

Admiral JOHNSON. So I don't think I'm too far off from you when the dust settles.

Senator BEGICH. To make sure I understand—and I apologize, I wasn't here for all your folks' opening; I was still down on the floor—are the industry folks part of that discussion or not?

Admiral JOHNSON. Yes.

Senator BEGICH. Yes. For this June plan that's coming forward, that's been requested?

Admiral JOHNSON. Yes. There's an industry role. This team was at one of the manufacturers, ATK, in February with a group of 16. So this is very credible work, this interagency task force, and that lies behind some of the unwavering position, even though I wiggled a little bit.

Senator BEGICH. I want to echo what I know the chair and the ranking member talked about with the industrial base when it comes to the rockets, that it is a concern to me also in how we manage it. It sounds like, obviously, you see it as not only a short-term, but a long-term concern, and how to maintain that. The cost component is becoming a bigger issue.

You anticipate the June plan will be on time?

Admiral JOHNSON. Yes, sir.

Senator BEGICH. Do you think the plan will be detailed enough for us to understand the next stages, short-term and long-term, to ensure that we have the industrial base there, and also the resources to meet those needs?

Admiral JOHNSON. That level of question is really an OSD question. Of course, it's their study and their responsibility. But I have great confidence in this group and I don't think they will let you down, sir.

Senator BEGICH. Great. Thank you very much. Again, I just want to echo the chair. I appreciate your comments.

Let me, if I can, just ask a couple more quick questions. I'm not sure who the right person will be to answer it, so whoever jumps in first will be the right person. Actually, this one's easy. This one's for, I'll specify it to General Shackelford, if I could. That is, you talk about the Future Years Defense Program and modernization and sustainment for the bomber fleet, I think it's about \$5 billion

and some. Can you just give me a little bit on how that investment will work to maintain the bombers? How will that be used, if you can help me there a little bit?

General SHACKELFORD. Thank you, Senator.

Senator BEGICH. Did I pick the right person to ask?

General SHACKELFORD. Yes, sir.

Senator BEGICH. Okay, good.

General SHACKELFORD. We have investments going to all three bombers with the intent on not just sustaining the capability, but modernizing where it's appropriate. For instance, in the B-1 we have computer issues that we need to deal with, so we're putting in a fully integrated data link that includes a backbone with communications technology for a Link 16 data link as well as the beyond-line-of-sight (BLOS) capability.

This has as part of it new displays, which provide additional information to both cockpits of the B-1, the internal diagnostic computer that provides status of health information to the crew, some modernization of components within the radar, as well as in terms of a major capability improvement the laptop-controlled targeting pod, which has been very well received in Southwest Asia in the war, which allows us to collect nontraditional intelligence, reconnaissance, and surveillance data, as well as target our Joint Direct Attack Munition, and our Global Positioning System (GPS)-guided weapons from the bomber itself.

Moving over to the B-2, we have the combat network communications technology which now also provides a digital backbone to what was a very dated infrastructure within the aircraft itself, and allows us to do things like BLOS retasking of the aircraft.

Similarly, as we look to the future, for now what is a strategic nuclear-capable bomber, the extremely high frequency (EHF) radio communication and computer mod starts out with a new computer, because all of our bombers are common in being maxed out on computer capacity. It starts out with that computer mod, then moves into the integration of terminals to talk to the newer satellite systems as they come on line over the next several years.

We're looking at a strategic radar replacement to upgrade what is also a fairly dated radar with the B-52. At the same time, we're bringing on capability to use the GPS weapons out of the internal bomb bay. We can carry them externally, but putting them on internally and then integrating that into the aircraft is a very, very important upgrade.

Then in the case of the B-2, the same EHF radio mod. This one brings on a computer, it brings on a new antenna to give us capability to talk to those satellites as they get on orbit and we get the receivers into the bomber itself. We're also updating the radar with a modernization program that just 2 days ago reached required assets available for four aircraft in terms of its ability to be used by the warfighter in a contemporary sense.

Senator BEGICH. Let me ask you another, to tee off of that. I appreciate that. It gives me a little sense of what the upgrades are. Do you think, for either one of you, the 2011 budget requests are sufficient, not only for what you're planning here, but other needs within the bomber fleet?

General SHACKELFORD. With respect to the modernization program?

Senator BEGICH. Yes, and sustainment.

General SHACKELFORD. I believe we're in good shape there. There is a shortfall we're working on the B-1 side, on the vertical situation display unit. That is fallout of previous execution issues which have now been corrected.

Senator BEGICH. What's the size of that shortfall? I've run out of time here.

General SHACKELFORD. I'll have to get you that dollar figure.

Senator BEGICH. Could you do that for the record, just so I understand what that gap is there?

[The information referred to follows:]

The current B-1 shortfall in fiscal year 2011 3600 is \$33.2 million. If not fixed before the end of April, B-1 will be at risk to complete VSDU and FIDL flight test in fiscal year 2011.

Senator BEGICH. Generally you feel good, but you're examining now to figure out how to resolve; is that a fair statement?

General SHACKELFORD. As we were working to keep the fully integrated data link in that diagnostic computer on track, the piece that we had to tap to give the funds to those was the vertical situation display unit.

Senator BEGICH. It came from one to the other.

General SHACKELFORD. Right. We didn't have sufficient funds in the program line to cover that over the last year. We're working on reprogramming and asking for more there.

Senator BEGICH. If you could show me what that is at some point, that would be great, and just get it to us.

Thank you very much.

Thank you, Mr. Chairman.

Senator BEN NELSON. Thank you.

Senator SESSIONS. We do have a vote that's being called at 3:30 p.m.

I'll be brief, Mr. Chairman. I will submit some questions for the record.

Last year, I think, General Alston and Admiral Johnson, you testified about Air Force test flights and that the Air Force conducts three flight tests each year of the Minuteman III ICBM and the Navy conducts four test flights of the Trident to determine weapon reliability as required to meet your estimation of the strategic command requirements. Would you explain why that testing is necessary?

General ALSTON. Let me take it from the Air Force side since that's a responsibility that now falls under Air Force GSC. We do a lot of different tests, Senator Sessions, with the ICBM, not just flight testing. It's part of a broad family of testing that takes place every month at a missile wing, which goes through annual tests of the electronic launch capabilities associated with it.

But at the end of the day we feel we need to fly at least three actual flights from Vandenberg and launch them out into the Pacific Range to Kwajalein to see if it all comes together—the command and control, the equipment, and the missile silo, as well as the booster itself and elements of the reentry system—to make sure that this whole system of systems comes together.

We derive important data from the process of actually configuring these missiles for launch, as well as data from telemetry as the missile flies through the boost phase and through the trajectory phase, all the way down to the reentry phase.

We'd like to do more. I know the Department of Energy (DOE) would clearly like us to do more tests. We talked earlier in a response to a question from the chairman or the ranking member that as we drive toward lower numbers of warheads that means every time we test an ICBM we test less reentry systems. So there is less data available for DOE.

But I don't see any substitute for actually doing a very robust flight test program. We do not have the great advantage of our flying Air Force in the sense that every time an airplane takes off and goes for a flight and lands to a certain extent you're doing an operational test of that aircraft, not a formal test, but you're making sure all the systems work. So for the ICBM there's no other way we can do it.

Senator SESSIONS. I think that makes sense to me as a layperson looking at it, because there are so many complexities, so many thousands of components and computer capabilities, systems, and other things that go into this system.

Mr. Chairman, I just wanted to highlight these facts with respect to the annual ICBM flight testing because I want to bring our attention to the fact that similar flight testing for the ground-based interceptor (GBI), which is a long-range interceptor that will be part of the National Missile Defense system. According to the Missile Defense Agency (MDA), it plans to acquire only 22 GBIs for the purpose of flight testing. This will be the 30 in Alaska plus the ones in California. According to their test plans to date, 19 of the 22 are expected to be consumed through 2019, which isn't a robust testing system, but it's a couple of years maybe or maybe a little less.

That leaves only three GBIs in the inventory then over the 12 years from 2020 through 2032. It means I guess one flight test every 4 years as the system has aged some. General Klotz, while we have an assembly line up and running, might it not be smarter to go on and add to our inventory more GBIs so that we could maintain at least a minimum level of testing through the next decade?

General KLOTZ. Senator, with respect, that's a question really for the MDA to answer. I can tell you how the Air Force would approach it and how the Air Force GSC approaches it. We need sufficient assets in our Minuteman III inventory, as well as the equipment that goes with it, to conduct a minimum of three tests per year.

We face a particular challenge that perhaps the MDA does not, and that is our Minuteman IIIs were first deployed in the 1970s, so one of the things that's important for us in the testing program is not just to make sure things work, but to see how the system ages and whether it ages gracefully or whether there are other defects in the system, either at the design or as a result of longevity, that we're not aware of through ground testing.

Senator SESSIONS. Dr. Roberts, I guess you have the responsible oversight of this. Do I have your assurance and can we be assured

that you will examine what appears to me to be a gap in our capability for the kind of minimal testing that looks to be required?

Dr. ROBERTS. Certainly.

Senator SESSIONS. We've reduced the number of GBIs being produced dramatically, more than I think we should. But we've done that. I guess that's a firm decision that is not likely to be reversed. But that does suggest to me that, with fewer systems in the ground ready to launch, we ought to be sure that they're safe and reliable, and I hope that you will look at that. It would be cheaper to me to complete that inventory now than having to reconstitute an entire assembly line a decade away.

Thank you.

Senator BEN NELSON. Thank you.

The vote has been called. I have a question, then we'll reconvene at the Capitol Visitor Center.

General Alston, in the Air Force nuclear roadmap, which is the strategy document for fixing the Air Force nuclear enterprise, 10 key actions were identified. We've talked about some of these, but I have a question about two more. The first is to create strategic plans that address long-term nuclear requirements—cruise missile, bomber, dual capable aircraft, ICBM. Has that plan been developed, and would it be available to be provided to Congress?

The second is to charge the Under Secretary of the Air Force with ongoing broad policy and oversight responsibility for nuclear matters. Now, we've just confirmed a new Under Secretary here. The statutory requirement for the Under Secretary of the Air Force and for all Service Under Secretaries is that they shall be the chief business management officer for their respective Services. With this change, will the roadmap action designate the Under Secretary with oversight and policy for nuclear matters? Will it be implemented or not, and if it isn't, what kind of implementation might be required?

It's a long question. I'm going to have to run in a minute.

General ALSTON. Yes, sir. Mr. Chairman, I think I can be brief with these. I may have to turn and depend on Lieutenant General Shackelford a bit. But we have, particularly over the last year, examined through our stewardship responsibilities what actions are appropriate with the air-launched cruise missile, how do we get the Minuteman III to 2030, which Congress has directed us to do, our partnership with DOE for the LEP for the B61. We don't have responsibility for that weapon end to end, but we do have great equities in that particular process.

We looked at all of our platforms and our capabilities and we found that we did not have the kind of content that good stewardship would require. So we have begun a process that will put a follow-on standup capability. It's now entering the JCIDS process, the DOD requirements process, this spring, with analysis of alternatives to commence in the fall.

We have a roadmap to get the Minuteman to 2030, which continues to be refined. The acquisition community actually has structured plans across the systems in order for us to understand and more thoroughly add content as the resourcing requirements mature.

So I would say that right now we have taken the appropriate action that we set out to do and we've set ourselves on a course for more improved stewardship of our strategic delivery capabilities than where we were a year ago. I believe that's on course.

With regard to the Under Secretary, the Under Secretary has authority to stand in for the Secretary for all the responsibilities that the Secretary of the Air Force has. But we felt that for a point of emphasis in our roadmap, without any compelling authoritative power behind it other than it being the Air Force strategic vision for our nuclear enterprise, and it being an expression of the Chief of Staff and the Secretary on the courses of action and the course they set for our Air Force with regard to the nuclear enterprise, it was important to us to designate the Under Secretary to emphasize the value that was seen in that position having a specifically articulated responsibility to support the development and stewardship of the nuclear enterprise.

That was the motivation by the Chief of Staff and the Secretary to put that content in the roadmap, and we are delighted that our Under Secretary is on board and able to help us do the heavy lifting that's still required.

Senator BEN NELSON. That was short. Thank you.

We'll reconvene downstairs at the Office of Senate Security after the vote. We are adjourned.

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR DAVID VITTER

SSBN(X)

1. Senator VITTER. Admiral Johnson, during the recent full committee Navy posture hearing, both Admiral Roughead and Secretary Mabus stressed the importance of getting the design of the *Ohio* class follow-on done properly, thoroughly, and thoughtfully. Please explain the design process going forward, how you will prevent requirements creep once a production decision is made, and ultimately what is being done to ensure that the program is affordable, delivered on time, and delivered within budget.

Admiral JOHNSON. The *Ohio* Replacement Program plans to employ a design process similar to the successful design/build process employed on the *Virginia* class SSN. This process combines the expertise of designers, system experts, component developers, production personnel, and operators to develop a producible design meeting system requirements. Properly phased design efforts are essential to limit changes during construction and to support a planned 84-month construction period.

Detailed requirements will be refined during development and review of the Capability Development Document. The single mission of the *Ohio* replacement platform is strategic deterrence. Once the requirements for the platform are established, any potential changes will be vetted through the Configuration Steering Board (CSB) process. CSB reviews of proposed requirements changes will be conducted annually, consistent with the guidance in Department of Defense (DOD) Instruction 5000.2 and Section 814 of the Duncan Hunter National Defense Authorization Act (NDAA) for Fiscal Year 2009. During construction, changes will be implemented only if funds are identified and schedule impacts are mitigated.

Affordability will be an integral part of the design process. Use of parts common with the *Virginia*, *Seawolf*, and *Ohio* submarines will reduce component development costs. Where practical, the *Ohio* Replacement Program will leverage known successful systems, components, and construction processes from the *Virginia* submarine program as well as incorporating the SONAR Acoustic Rapid Commercial Off-The-Shelf Insertion and the Common Submarine Radio Room philosophy currently used fleet wide in the submarine force.

In addition, the *Ohio* Replacement Program benefits from investment by the United Kingdom (U.K.) in the Common Missile Compartment (CMC). The United States and the U.K. have agreed to share the Nonrecurring Engineering (NRE) costs of designing a CMC. The U.K. will pay 12.5 percent of the total design NRE for the

common compartment. To date, the U.K. has invested over \$280 million. Each nation will fund 100 percent of any design costs associated with country-unique requirements.

2. Senator VITTER. Admiral Johnson, given the missile compartment of the SSBN(X) is a co-development effort between the United States and the U.K., to what extent would a British decision to only construct three instead of four submarines have on the United States in terms of overall cost?

Admiral JOHNSON. The U.S.-U.K. have agreed to share the costs associated with NRE to design a CMC for both nations' replacement SSBN programs. This cost share arrangement for NRE is unaffected by any future procurement decision by the U.K. with respect to the number of successor SSBNs they produce.

The United States has the opportunity to explore cooperative arrangements for production in order to reduce costs for both nations. Larger numbers of submarines, or in this case, missile compartments, will lower costs on a per item basis. This effect is most significant in the first few units produced. While there is a cost advantage to the United States if the U.K. were to build four missile compartments, savings to the United States are dominated by the first three U.K. missile compartments built. Therefore the impact is minimal.

#### NEXT GENERATION AIR-LAUNCHED CRUISE MISSILE

3. Senator VITTER. General Shackelford, a key component to the flexibility and credibility of the bomber force is the mix of effective penetrating and stand-off missiles. In the past, the Air Force has asserted that this mix is essential to the viability of this leg of the triad and the fiscal year 2011 budget includes funding to continue the study of the next generation air launched cruise missile (ALCOM). Nonetheless, I understand that the decision on whether this next generation missile will be convention or nuclear has yet to be made and is pending the Nuclear Posture Review (NPR). Does the Air Force still maintain that the bomber leg of the triad can be maintained without a new or modernized long-range stand-off capability?

General SHACKELFORD. I defer to my colleague, Major General Alston, to address the question in that he is more familiar with the details of this matter.

General ALSTON. The Air Force recognizes that a robust long-range strike capability is essential to strategic deterrence and that modernizing the legacy bomber fleet, while pursuing new long-range strike technologies, ensures a viable airborne strategic deterrent over the long-term. Per the NPR, an Analysis of Alternatives (AoA) for a follow-on ALCM will begin in the fall of 2010. The AoA results, expected by mid-2012, will better inform the Air Force and DOD on the best options for the long-range stand-off capability as part of the airborne leg of the traditional nuclear triad.

#### NEXT GENERATION BOMBER

4. Senator VITTER. General Klotz, General Shackelford, General Alston, and General Scott, the 2006 Quadrennial Defense Review (QDR) made the decision to develop a follow-on bomber, and you have made it clear that you support the development of a new bomber. However, last April, Secretary of Defense Gates opted not to pursue a development program for a follow-on Air Force bomber until there was a better understanding of the need, the requirement, and the technology. As part of this effort to better understand the requirements for a new bomber, Secretary Gates stood up a Tiger Team to do an in-depth study of long-range strike in the new QDR. However, on reading the new QDR, on page 33, it looks like there still has not been a decision to move forward with a new bomber program, but instead, the Department has commissioned yet another study. What conclusions were drawn by the Tiger Team regarding the development of a new bomber?

General KLOTZ. I defer to my colleague, Major General Scott, to address the question in that he is more familiar with the details of this matter.

General SHACKELFORD. I defer to my colleague, Major General Scott, to address the question in that he is more familiar with the details of this matter.

General ALSTON. The Tiger Team identified a mix of capabilities that would be required of a family of systems to create the desired deterrent effects, or successfully strike, if required. The ongoing study is examining what mix of legacy and future platforms will be required to present the needed capabilities.

General SCOTT. The Department has determined that additional analysis is needed to fully understand how all potential long-range strike options could contribute to the country's National Defense and National Military Strategies and Objectives

before large amounts of funding are committed to an acquisition program. During the 2010 QDR, a Secretary of Defense-directed Tiger Team was established to complete an in-depth study of long-range strike—including the Long-Range Strike Platform (LRSP) need, requirement, and technology. The team's conclusions were supportive of pursuing a new LRSP but identified the need for additional analysis to explore options for reducing costs and accelerating fielding timelines. Based upon the need for additional analysis, the Secretary of Defense chartered a subsequent study to examine a broader array of long-range strike issues and options including the appropriate mix of long-range strike capabilities; upgrades to legacy bombers; manned and unmanned force structure numbers; stand-off and penetrating platform ratios; stand-off cruise missile requirements; intelligence, surveillance, and reconnaissance (ISR) demands; airborne electronic attack requirements; and conventional Prompt Global Strike needs. The study results will be available in the fall of 2010.

5. Senator VITTER. General Klotz, General Shackelford, General Alston, and General Scott, what progress has been made in conducting the new long-range strike study required by the 2010 QDR?

General KLOTZ. I defer to my colleague, Major General Scott, to address the question in that he is more familiar with the details of this matter.

General SHACKELFORD. I defer to my colleague, Major General Scott, to address the question in that he is more familiar with the details of this matter.

General ALSTON. The RAND project for the Long-Range Strike study identified a series of tasks to be examined in order to inform decisions on the future size, character, and composition of U.S. forces for detecting, locating, identifying, tracking, engaging, disrupting, destroying, and assessing targets in adversary countries. The Air Force is scheduled to receive a series of midterm briefs on these tasks throughout the summer and a final brief in early fall. The study is on track to be completed by February of next year.

General SCOTT. A summary of the RAND, IDA, and APL project description for the Long-Range Strike (LRS) study directed by 2010 QDR is listed below:

#### *Objectives*

- Inform decisions bearing on future size, character, and composition of U.S. forces for detecting, locating, identifying, tracking, engaging, disrupting, destroying, and assessing targets in adversary countries
- Consider future adversaries with both modest and sophisticated anti-access capabilities
- Evaluate alternative future capabilities and architectures including supporting infrastructure
- Use a range of scenarios depicting theater-level conflict in the 2020–2030 timeframe

#### *Approach*

- Task 1: ID scenarios and operational objectives using at least two MCOs in 2020–2030 with Joint Country Force Assessment (JCOFA) threat projections and Multi-Service Force Deployment (MSFD) scenarios
- Task 2: Assess LRS system capabilities and limitations including survivability and weapon effectiveness and considering off-board ISR, EA, C3, MILDEC, cyber, forward basing, AR, and PED support
- Task 3: Develop at least three affordable LRS portfolios characterized by the absence of a new bomber, procurement of a new stand-off bomber, and the fielding of a penetrating bomber (manned or unmanned)
- Task 4: Assess the effectiveness of each LRS portfolio with 1v1, mission, and campaign level analyses
- Task 5: Examine robustness of each alternative force structure in the face of potential threat counters to include cost imposition of low observable (LO) versus counter LO competition
- Task 6: Examine the flexibility of each LRS portfolio to adapt to multiple conflicts and operations across the threat spectrum with qualitative implications of each force on future U.S. nuclear posture

#### *Schedule*

- Analytical Approach Briefing: March 2010
- Midterm Brief on Tasks 1–2: May 2010
- Midterm Brief on Task 3: June 2010
- Midterm Brief on Task 4: July 2010
- Final Briefing: September 2010
- Final Report Delivered: February 2011

### *Conclusion*

The study is on pace as described above. The scenarios, threats, and target sets have been approved. The LRS Working Group is in the process of defining the LRS portfolios described in Task 3.

6. Senator VITTER. General Klotz, General Shackelford, General Alston, and General Scott, what will the three contractors (RAND, IDA, and Johns Hopkins University's Applied Physics Laboratory) reportedly hired to do analysis for this study be expected to produce?

General KLOTZ. I defer to my colleague, Major General Scott, to address the question in that he is more familiar with the details of this matter.

General SHACKELFORD. I defer to my colleague, Major General Scott, to address the question in that he is more familiar with the details of this matter.

General ALSTON. OSD has established the scope and parameters of this study and is using interim progress checks to ensure the study remains relevant, focused, and provides analysis necessary for answering how to best meet the Nation's future Long-Range Strike requirements through the optimum mix of platforms and capabilities.

General SCOTT. A summary of the RAND, IDA, and APL project description for the LRS study directed by 2010 QDR is listed below:

### *Objectives*

- Inform decisions bearing on future size, character, and composition of U.S. forces for detecting, locating, identifying, tracking, engaging, disrupting, destroying, and assessing targets in adversary countries
- Consider future adversaries with both modest and sophisticated anti-access capabilities
- Evaluate alternative future capabilities and architectures including supporting infrastructure
- Use a range of scenarios depicting theater-level conflict in the 2020–2030 timeframe

### *Approach*

- Task 1: ID scenarios and operational objectives using at least two MCOs in 2020–2030 with JCOFA threat projections and MSFD scenarios
- Task 2: Assess LRS system capabilities and limitations including survivability and weapon effectiveness and considering off-board ISR, EA, C3, MILDEC, cyber, forward basing, AR, and PED support
- Task 3: Develop at least three affordable LRS portfolios characterized by the absence of a new bomber, procurement of a new stand-off bomber, and the fielding of a penetrating bomber (manned or unmanned)
- Task 4: Assess the effectiveness of each LRS portfolio with 1v1, mission, and campaign level analyses
- Task 5: Examine robustness of each alternative force structure in the face of potential threat counters to include cost imposition of LO versus counter LO competition
- Task 6: Examine the flexibility of each LRS portfolio to adapt to multiple conflicts and operations across the threat spectrum with qualitative implications of each force on future U.S. nuclear posture

### *Excursions*

IDA with the support of the Johns Hopkins APL are on task to provide analysis for excursions which RAND is not equipped to handle. For example, IDA will address the LO/counter LO capabilities with respect to a penetrating bomber versus advanced air defenses.

### *Schedule*

- Analytical Approach Briefing: March 2010
- Midterm Brief on Tasks 1–2: May 2010
- Midterm Brief on Task 3: June 2010
- Midterm Brief on Task 4: July 2010
- Final Briefing: September 2010
- Final Report Delivered: February 2011

7. Senator VITTER. General Klotz, General Shackelford, General Alston, and General Scott, can you certify that all the participants will not have a potential conflict of interest with regards to their work?

General KLOTZ. I defer to my colleague, Major General Scott, to address the question in that he is more familiar with the details of this matter.

General SHACKELFORD. I defer to my colleague, Major General Scott, to address the question in that he is more familiar with the details of this matter.

General ALSTON. Yes. Evaluation of the initial investigation of conventional long-range strike options, prepared for the Under Secretary of Defense for Policy (USDP) dated February 2010, has determined RAND to be uniquely positioned to conduct this study in a short time. The study will be conducted in an unbiased manner that will achieve transparent results that are accessible to policymakers making resource allocation decisions. RAND has a long history of providing objective, independent analysis of complex problems for OSD, the Joint Staff, the combatant commands, and all of the Services and has recently published work detailing the development of the anti-access threat.

General SCOTT. All participants bring an unquestioned desire to ensure we deliver to the Nation the best possible Long-Range Strike solution in order to defend our country's strategic interests. The agencies involved in this work are primarily "think tanks", and were selected precisely for their work on previous studies covering all aspects of our national defense.

8. Senator VITTER. General Klotz, General Shackelford, General Alston, and General Scott, when do you expect this study to draw to a close?

General KLOTZ. I defer to my colleague, Major General Scott, to address the question in that he is more familiar with the details of this matter.

General SHACKELFORD. I defer to my colleague, Major General Scott, to address the question in that he is more familiar with the details of this matter.

General ALSTON. The Secretary of Defense has tasked his study directors to report results in September 2010.

General SCOTT. The Secretary of Defense has tasked his study directors to report their results by September 2010. The entire LRS study schedule is shown below:

*Schedule*

- Analytical Approach Briefing: March 2010
- Midterm Brief on Tasks 1–2: May 2010
- Midterm Brief on Task 3: June 2010
- Midterm Brief on Task 4: July 2010
- Final Briefing: September 2010
- Final Report Delivered: February 2011

NUMBER OF BOMBERS IN FISCAL YEARS 2011–2015 FORCE STRUCTURE

9. Senator VITTER. General Klotz, General Shackelford, General Alston, and General Scott, with regard to the Future Years Defense Program force structure set out in the new QDR for the Air Force, the QDR proposes five long-range strike wings with up to 96 primary mission aircraft. According to the latest Air Force Almanac, the Air Force has 153 bomber aircraft. I understand some of these aircraft are dedicated to testing, but over 50 aircraft for testing seems like a lot. Do you plan on retiring any bomber aircraft in the near future?

General KLOTZ. Air Force Global Strike Command (AFGSC) has responsibility for two types of long-range, nuclear-capable bombers: the B–2 Spirit and the B–52H Stratofortress.

Total Aircraft Inventory (TAI) for the B–2 is 20, of which all 20 are combat-coded. All B–2 training and test activities employ combat-coded aircraft.

TAI for the B–52H is 76, of which 54 are combat-coded, 18 are training, and 4 are test.

As stated in the unclassified Fact Sheet on the 1251 Report released by the White House Press Office on 13 April 2010, some of the Air Force's deployable nuclear-capable bombers will be converted to conventional-only bombers (not accountable under the treaty), and up to 60 nuclear-capable bombers will be retained. AFGSC has not recommended retiring any B–2 or B–52 aircraft.

General SHACKELFORD. I defer to my colleague, Major General Scott, to address the question in that he is more familiar with the details of this matter.

General ALSTON. The Air Force has no plans to retire any bomber aircraft, currently retaining 96 combat-coded aircraft in its Primary Mission Aircraft Inventory (PMAI): 36 B–1s (nonnuclear), 16 B–2s and 44 B–52s. Overall, the Air Force fields 162 TAI bombers with the additional jets required to meet fleet training, maintenance, attrition reserve, and testing needs. These are vital support functions for keeping our operational edge (96 PMAI) in the highest state of readiness.

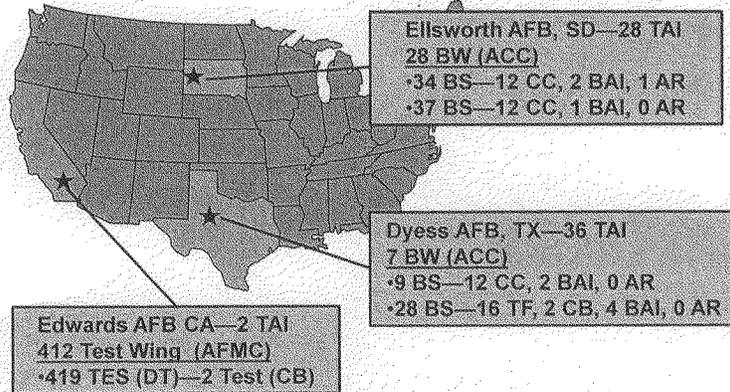
	TAI	PMAI
B-1 .....	66	36
B-2 .....	20	16
B-52 .....	76	44
	162	96

General SCOTT. The total number of bombers in the Air Force inventory is 162 (66 B-1, 20 B-2, and 76 B-52 aircraft). 96 represents the total number of combat coded aircraft with the difference being made up from training, backup, attrition reserve, and test airframes. The table below shows the breakdown by aircraft type and coding. The attached slides show the geographic location, coding, and correct number for each bomber in the Air Force inventory. At this time, the Air Force has no plans to retire any of the 162 bombers currently in the inventory.

Airframe	Total	Combat Coded (CC)	Training (TF)	Backup (BAI)	Attrition Reserve (AR)	Test (CB)
B-1 .....	66	36	16	9	1	4
B-2 .....	20	16	0	4	0	0
B-52 .....	76	44	16	11	2	3



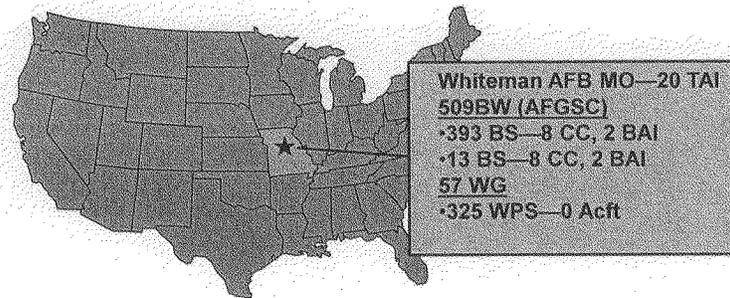
## B-1 FLEET FY10



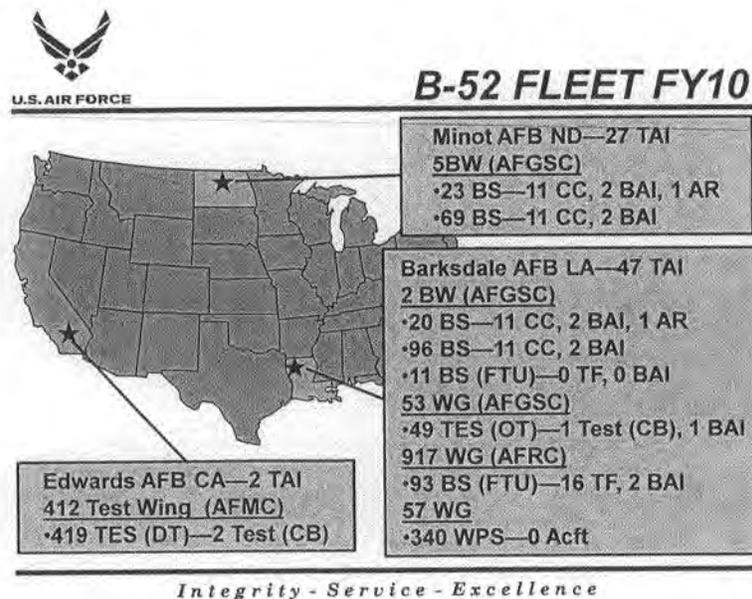
*Integrity - Service - Excellence*



## B-2 FLEET FY10



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10. Senator VITTER. General Klotz, General Shackelford, General Alston, and General Scott, what are the assumptions underlying what appears to be a substantial reduction in the number of bombers?

General KLOTZ. See answer to question #9.

General SHACKELFORD. See answer to question #9.

General ALSTON. The Air Force has no plans to reduce the number of bombers. The life of the airframe, combined with operational relevancy, is continually balanced against current and future Long-Range Strike requirements to determine the proper force size. Additionally, we continually evaluate the legacy and future fleet size to meet national security priorities in a resource constrained environment.

General SCOTT. See answer to question #9.

#### QDR RED TEAM

11. Senator VITTER. General Klotz, General Shackelford, General Alston, and General Scott, I understand Secretary Gates appointed a so-called Red Team of retired senior officers and outside defense experts to provide an outside assessment of the QDR. I also understand that the Red Team reviewed the QDR's assessments and conclusions through the summer of 2009, and submitted a memo to Secretary Gates in the fall of 2009. What did the QDR Red Team have to say about long-range strike and the development of a next generation bomber aircraft?

General KLOTZ. I defer to my colleague, Major General Scott, to address the question in that he is more familiar with the details of this matter.

General SHACKELFORD. I defer to my colleague, Major General Scott, to address the question in that he is more familiar with the details of this matter.

General ALSTON. A10 was not involved with the QDR's Red Team assessment and was not briefed on the results of the study.

General SCOTT. The QDR Red Team, led by General Mattis, Commander, U.S. Joint Forces Command (JFCOM), and Dr. Marshall, Director, Net Assessment, was established at the request of the Secretary of Defense to provide alternative viewpoints on recommendations generated during the QDR. These included such areas as risk assumptions related to future security environment challenges, force mix options, and the force planning construct. When the Secretary of Defense appointed the QDR Red Team, we understand he assured the panel members that their insights would help inform his decision-making and would not be subject to outside review, with a final memorandum going directly to him. The Air Force was not privy

to the QDR Red Team memorandum or any of the specific recommendations put forward by the panel.

12. Senator VITTER. General Klotz, General Shackelford, General Alston, and General Scott, what was the Red Team's assessment of the QDR's long-range strike pronouncements?

General KLOTZ. AFGSC is a field command focused on the day-to-day operations, maintenance, security, and support of its subordinate bomber and missile units. It does not directly participate in the OSD-led LRS Working Group for the 2010 QDR LRS Study.

General SHACKELFORD. See answer to question #11.

General ALSTON. See answer to question #10.

General SCOTT. See answer to question #10.

#### NUCLEAR WEAPONS IN EUROPE

13. Senator VITTER. Dr. Roberts, forward deployed nuclear weapons in Europe represent a longstanding military and political commitment to the defense of Europe and our North Atlantic Treaty Organization (NATO) allies. However, counter to the interests of all NATO allies, a small coalition of European nations has called for the removal of U.S. weapons from Europe. Will the NPR address the important role the extended U.S. nuclear umbrella plays on nonproliferation?

Dr. ROBERTS. Yes. The NPR report articulates five objectives, of which one is strengthening regional deterrence and reassuring U.S. allies and partners. In that context, the NPR report outlines the elements of a credible U.S. nuclear umbrella comprised of the strategic forces of the U.S. triad, non-strategic nuclear weapons deployed forward in key regions, and U.S.-based nuclear weapons that could be deployed forward quickly to meet regional contingencies. It also states that the United States will continue to assure allies and partners of the U.S. commitment to their security and to demonstrate this commitment through various initiatives designed to enhance regional security architectures.

The NPR report acknowledges that U.S. security relationships are important not only in deterring potential threats, but also to serve our non-proliferation goals. These relationships demonstrate to neighboring states that their pursuit of nuclear weapons will only undermine military or political advantages. They also reassure nonnuclear U.S. allies and partners that their security interests can be protected without their own nuclear deterrent capabilities.

#### NUCLEAR SURETY INSPECTIONS

14. Senator VITTER. General Alston, over the past year, we have been informed of a number of nuclear surety inspection (NSI) failures at a variety of units across the country. These no-notice investigations are a critical component of the Air Force's renewed emphasis on nuclear oversight and assess all aspects associated with security of our nuclear forces. Noting the rigor of the standards have increased since the incident in 2007, how do you assess the effectiveness of the new testing regime in identifying problems?

General ALSTON. The extensively overhauled NSI process is resulting in consistent and vigorous application of appropriately high standards. The increased inspection proficiency of individual inspectors, the volume of inspectors involved, and the increased number of no-notice or limited notice inspection is providing for higher quality refined assessments of performance. The level of detail derived from the NSI is enabling better trend analysis and better targeted improvements by our units. Major commands use discrepancies found during inspections, combined with other assessment tools, to continually improve processes and procedures.

15. Senator VITTER. General Alston, as you are aware, the Strategic Posture Commission asserted that leadership was an essential element in inspiring people to "feel they are doing important work and are valued for it." Without a dramatic change in culture, such leadership and organizational changes are bound to fail. Is the culture changing?

General ALSTON. Yes, culture change is vital. We have been taking deliberate steps to achieve the shift we're seeking.

By concentrating all our operational strategic forces under a single commander responsible for establishing and enforcing standards and holding leadership at all levels accountable, we set conditions for culture change. We took equivalent action with regard to all nuclear sustainment.

In addition to increased focus on inspections and the inspection process, we have also taken action across the Air Force to change the way every airman perceives the nuclear mission. We baselined every professional military education course—officer and enlisted—and modified or added nuclear elements to curricula as appropriate.

We updated Air Force doctrine to include a greater focus on deterrence.

Culture change is difficult and takes time. Consistent application of exacting standards, setting common expectations, performing every day with precision and reliability—and validating that performance with engaged leadership—are some of the conditions we have set to achieve the sustained excellent results we are after.

#### WEAPONS STORAGE AREA

16. Senator VITTER. General Alston and General Klotz, I was extremely pleased to learn that the Air Force made a budget request in fiscal year 2010 to recertify the Barksdale weapons storage area (WSA), and Congress ultimately appropriated \$77 million for the project. What are your thoughts regarding the WSA at Barksdale Air Force Base which was decertified for nuclear storage a number of years ago?

General ALSTON. The Air Force is reviewing the implications of the NPR, the New START, and the 2010 NDAA mandated 1251 Report which suggests a range of Air Force nuclear force structure associated with New START limits. The Air Force will continue to ensure it has sufficient infrastructure to meet all current and future nuclear mission requirements, to include a Barksdale WSA.

General KLOTZ. The WSA at Barksdale stood down in December 2007. This action was taken as a result of planned reductions in the number of deployed Advanced Cruise Missiles (ACMs) and ALCMs and, at the same time as a means of avoiding the costs associated with bringing the Barksdale WSA up to revised DOD security standards.

In an ideal world, reestablishing the WSA at Barksdale would benefit the nuclear enterprise by eliminating the risks inherent in relying upon a single WSA at Minot to support B-52H ALCM operations. Additionally, having two WSAs would aid in maintaining a knowledgeable and experienced WSA workforce within the larger Air Force nuclear enterprise.

We've taken initial steps to identify needed upgrades to security and control systems and current storage facilities to meet DOD requirements for weapon storage. Our current estimate for a full and complete recertification totals \$108.5 million. To the best of our knowledge, the proposal in Congress for \$77 million to be appropriated for the Barksdale WSA in fiscal year 2010 never made it into the final bill.

Reestablishing a WSA at Barksdale must of course compete at the Air Staff against other Air Force priorities for limited resources and manpower.

17. Senator VITTER. General Alston, can you give me some insight as to what scenarios and outcomes might preclude the Air Force from moving forward with the recertification of the Barksdale WSA?

General ALSTON. Overall required force levels, combatant commander requirements, and operational considerations are a few of the considerations that will help inform a decision on taking further action to recertify the Barksdale WSA.

18. Senator VITTER. General Klotz, how important is the recertification of the Barksdale WSA for your mission?

General KLOTZ. See answer to question #16.

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#### QUESTIONS SUBMITTED BY SENATOR JEFF SESSIONS

##### NUCLEAR ARMS LIFE EXTENSION PROGRAMS

19. Senator SESSIONS. Dr. Roberts, with respect to the W78 Life Extension Program (LEP), can you tell me if the NPR will take any option—i.e., refurbishment, reuse, replacement, or a combination of these—off the table?

Dr. ROBERTS. The NPR report outlines a strategy for sustaining a safe, secure, and effective nuclear deterrent for as long as nuclear weapons exist. Although the NPR report expresses a policy preference for refurbishment and reuse in decisions to proceed from study to engineering development, the laboratory directors will provide findings associated with the full range of LEP approaches and to make a set of recommendations based solely on their best technical assessments of the ability of each LEP approach to meet critical stockpile management goals.

20. Senator SESSIONS. Dr. Roberts, what are the factors to consider when establishing these guidelines for future LEP work?

Dr. ROBERTS. Several key principles will guide future U.S. decisions on stockpile management. The United States:

- Will not conduct nuclear tests, and will seek ratification and entry into force of the Comprehensive Nuclear Test Ban Treaty.
- Will not develop new nuclear warheads. LEPs will use only nuclear components based on previously tested designs, and will not support new military missions or provide for new military capabilities.
- Will study options for ensuring the safety, security, and reliability of nuclear warheads on a case-by-case basis, consistent with the congressionally mandated Stockpile Management Program.

The full range of LEP approaches will be considered: refurbishment of existing warheads, reuse of nuclear components from different warheads, and replacement of nuclear components.

In any decision to proceed to engineering development for warhead LEPs, the United States will give strong preference to options for refurbishment or reuse. Replacement of nuclear components would be undertaken only if critical Stockpile Management Program goals could not otherwise be met, and if specifically authorized by the President and approved by Congress.

21. Senator SESSIONS. Dr. Roberts, under what conditions would you not consider reuse or replacement options?

Dr. ROBERTS. The full range of LEP approaches will be considered: refurbishment of existing warheads, reuse of nuclear components from different warheads, and replacement of nuclear components.

22. Senator SESSIONS. Dr. Roberts, last fall, with respect to LEPs, Secretary Gates said at an Air Force Association meeting that we needed “in one or two cases probably new designs that will be safer and more reliable.” Will the NPR support the Secretary’s view that in one or two cases, new designs may be necessary?

Dr. ROBERTS. Secretary Gates’ concern has been that the deterrent remains safe, secure, and effective. He explicitly said that his focus was “not about new capabilities, it is about safety, security, and reliability.” The NPR concludes that the United States can meet its requirements without developing new nuclear weapons. As Secretary Gates states in the preface to the NPR, “The NPR calls for making much-needed investments to rebuild America’s aging nuclear infrastructure. These investments, and the NPR’s strategy for warhead life extension, represent a credible modernization plan necessary to sustain the nuclear infrastructure and support our Nation’s deterrent.”

23. Senator SESSIONS. Dr. Roberts, will this include a new design that will make current warheads, such as the W78 safer and more reliable—and which will exercise the skills of our nuclear scientists?

Dr. ROBERTS. The NPR report outlines the following principles to guide future U.S. stockpile management decisions:

- The United States will not conduct nuclear testing, and will pursue ratification and entry into force of the Comprehensive Nuclear Test Ban Treaty.
- The United States will not develop new nuclear warheads. LEPs will use only nuclear components based on previously tested designs, and will not support new military missions or provide for new military capabilities.
- The United States will study options for ensuring the safety, security, and reliability of nuclear warheads on a case-by-case basis, consistent with the congressionally-mandated Stockpile Management Program. The full range of LEP approaches will be considered: refurbishment of existing warheads, reuse of nuclear components from different warheads, and replacement of nuclear components.

Changes made to the stockpile would be in line with these principles and would remain consistent with basic design parameters by including components that are well understood and certifiable without underground nuclear testing.

This approach to stockpile management will enable us to protect the human capital base—including the expertise to design, develop, engineer, and manufacture nuclear warheads—by fostering a stockpile management program that fully exercises these capabilities.

These principles and the stockpile sustainment strategy articulated in the NPR support the goals of the NDAA on stockpile management related to increasing the safety, security, and reliability of U.S. nuclear warheads.

The nuclear weapons laboratories have been directed to explore the full spectrum of options and in doing so will exercise the skills of our nuclear scientists. This position is strongly supported by National Nuclear Security Administration (NNSA) leadership.

## B61 LEP

24. Senator SESSIONS. Dr. Roberts, the Fiscal Year 2010 Energy and Water Conference Report did not provide the full request for the nonnuclear study of the proposed B61-12. How important is it that the NNSA be able to expeditiously proceed with a nuclear and nonnuclear LEP on the B61?

Dr. ROBERTS. The B61 bomb is the cornerstone of the U.S. extended deterrence commitment to NATO and a key component of air-delivered strategic deterrence. It is also one of the oldest warheads in the stockpile and has components dating from the 1960s. DOD is committed to a full (nuclear/nonnuclear) life extension of the B61 bomb and to the provision of a nuclear capability for the Joint Strike Fighter (JSF).

The B61 LEP study will address options to enhance surety, sustain effectiveness, optimize the use of limited NNSA production capacity, and reduce costs over the long-term. Life-extended B61 bombs must be introduced into the stockpile by 2017 to avoid gaps in capability for both B-2-delivered strategic and Dual-Capable Aircraft (DCA)-delivered non-strategic nuclear missions.

The 2017 timeline is driven by two factors:

- Critical components in the B61 will reach end-of-life starting in 2017; if not updated, aging weapons will need to be removed from service.
- U.S. F-16 DCA begin to reach end-of-life starting in 2016; a nuclear-capable JSF will replace these aircraft beginning in 2017.

Although JSF initial operating capability has experienced a 13-month slip, we still plan to implement JSF nuclear capability by 2017.

25. Senator SESSIONS. Dr. Roberts, in an unclassified response, what are some of the considerations that are involved with the urgency of the LEP of the B61?

Dr. ROBERTS. Life-extended B61 bombs must be introduced into the stockpile by 2017 to avoid gaps in capability for both B-2-delivered strategic and dual-capable aircraft (DCA)-delivered non-strategic nuclear missions.

The 2017 timeline is driven by two factors:

- Critical components in the B61 will reach end-of-life starting in 2017; if not updated, aging weapons will need to be removed from service.
- U.S. F-16 DCA begin to reach end-of-life starting in 2016; a nuclear-capable JSF will replace these aircraft beginning in 2017.

## B61 JASON REVIEW

26. Senator SESSIONS. Dr. Roberts, the conferees last year required a JASON review of the “national security and extended deterrence value of the B61 for both strategic and tactical purposes in light of nuclear terrorism risks and military threats.” Are you concerned that the mandate for this JASON study is beyond the technical capacity of JASON?

Dr. ROBERTS. The committee’s mandate for the proposed JASON study delves into matters of policy and strategy which are beyond the scope of traditional JASON studies. Past JASON studies have customarily focused on technical, not policy, issues. The JASON advisory group, however, has the capacity for drawing in various subject matter experts including technical and policy experts.

27. Senator SESSIONS. Dr. Roberts, won’t the NPR speak to these issues and isn’t that the more appropriate venue for a review of the value of the B61?

Dr. ROBERTS. The B61 bomb is the cornerstone of our extended deterrence commitment to NATO and a key component of air-delivered strategic deterrence. It is also one of the oldest warheads in the stockpile and has components dating from the 1960s.

To provide options to continue the U.S. nuclear presence in Europe, the Department is committed to a full (nuclear/nonnuclear) life extension of the B61 bomb and to the provision of a nuclear capability for the JSF. The B61 LEP study will address options to enhance surety, sustain effectiveness, optimize the use of limited NNSA production capacity, and reduce costs over the long-term.

[Whereupon, at 3:28 p.m., the subcommittee adjourned.]



**DEPARTMENT OF DEFENSE AUTHORIZATION  
FOR APPROPRIATIONS FOR FISCAL YEAR  
2011**

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**WEDNESDAY, APRIL 14, 2010**

U.S. SENATE,  
SUBCOMMITTEE ON STRATEGIC FORCES,  
COMMITTEE ON ARMED SERVICES,  
*Washington, DC.*

**STRATEGIC FORCES PROGRAMS OF THE NATIONAL  
NUCLEAR SECURITY ADMINISTRATION**

The subcommittee met, pursuant to notice, at 2:32 p.m. in room SR-222, Russell Senate Office Building, Senator E. Benjamin Nelson (chairman of the subcommittee) presiding.

Committee members present: Senators Ben Nelson, Reed, Bingaman, Sessions, and Vitter.

Majority staff members present: Madelyn R. Creedon, counsel; and Roy F. Phillips, professional staff member.

Minority staff member present: Daniel A. Lerner, professional staff member.

Staff assistants present: Kevin A. Cronin and Paul J. Hubbard.

Committee members' assistants present: Carolyn A. Chuhta, assistant to Senator Reed; Ann Premer, assistant to Senator Ben Nelson; Jonathan Epstein, assistant to Senator Bingaman; Rob Soofer, assistant to Senator Inhofe; and Lenwood Landrum and Sandra Luff, assistants to Senator Sessions.

**OPENING STATEMENT OF SENATOR E. BENJAMIN NELSON,  
CHAIRMAN**

Senator BEN NELSON. The hearing will come to order.

Good afternoon and welcome. Our witness this afternoon, flying solo, is Tom D'Agostino, the Administrator of the National Nuclear Security Administration (NNSA).

Today, the Strategic Forces Subcommittee will discuss the defense programs at NNSA, which is responsible for maintaining the safety, security, and reliability of the Nation's stockpile of nuclear weapons. The NNSA and the Department of Defense (DOD) work closely together to ensure that the delivery systems and the nuclear warheads present a reliable deterrent for the United States. Previously, this subcommittee heard testimony from the Military Services on the delivery systems that carry nuclear warheads and weapons. Today, the subcommittee will focus on the NNSA activi-

ties to maintain those nuclear warheads and weapons without testing.

Maintaining nuclear warheads and weapons that are more than 20 years old without testing is a challenging task. Over the years, however, NNSA has made significant investments in people and experimental facilities, including the world's most advanced computational capability, to maintain and sustain the nuclear stockpile.

Today, I think many would be surprised to know that NNSA and its scientists would tell you that they know more about the technical physics of these weapons than their predecessors did during the heyday of underground nuclear testing.

The challenge, however, is to use, maintain, and to pass on to future generations the skills necessary to maintain the nuclear weapons into the future and for as long as they're needed. After years of surveillance work, NNSA has discovered and repaired previously unknown manufacturing defects, and is now focused on issues that will continue to occur with aging warheads.

For the most part, the signs of aging are understood. High explosives crack, wires become brittle, rubber and plastics degrade, metals corrode, and obsolete parts must be replaced with newer parts. Since 1992 and the development of the Stockpile Stewardship Program (SSP), the NNSA has discovered and repaired problems that previously would have required a nuclear test to resolve. This expanded knowledge of the stockpile has allowed the NNSA to discover problems and develop, implement, and verify a fix, all without testing.

All of the experimental facilities planned in the early days of SSP are now in place. As a result, the attention is turned to the plants and facilities that do the work to maintain the stockpile. These facilities and plants are where the people who make the parts, and assemble and disassemble, work. NNSA and Congress have an obligation to make certain that these people have a safe working environment and the tools to efficiently carryout their mission.

New tritium facilities are in place at Savannah River Site (SRS), and the new Uranium Storage Facility just opened at the Y-12 site at Oak Ridge. The Kansas City plant is on track to move to its new facility in the near future. But, there is more work to be done. The last major facilities that are needed are the Uranium Processing Facility (UPF) at Oak Ridge, and the Chemical and Metallurgical Research Replacement (CMRR) Facility at Los Alamos National Laboratory (LANL).

With these multibillion-dollar facilities in place, and the new high-explosive facility at Pantex, the NNSA will be fully capable of maintaining the nuclear weapons for as long as they're needed. President Obama is committed to making sure, while reducing the number of nuclear weapons, that there is a long-term effort to build new facilities and continue the SSP so that the deterrent remains safe, secure, and effective.

Next week, the full committee will hold a hearing on the new Nuclear Posture Review (NPR). Mr. D'Agostino, you will be a witness, as we just discussed, at that hearing. But, today we'll focus on the work and the budget of the NNSA as it fulfills its ongoing mission and the new missions outlined for it in the NPR.

Your prepared statement, sir, will be included in the record.

Senator Vitter, the ranking member, would you have some opening remarks you'd like to make?

**STATEMENT OF SENATOR DAVID VITTER**

Senator VITTER. Yes. Thank you, Mr. Chairman.

I'll submit my full opening statement for the record, but I just want to highlight four points.

First of all, welcome, Mr. Administrator. Thank you for your very important ongoing work.

This request clearly is just the first payment on what has to be a sustained period of investment. I'm very glad that we're finally on this course of increased investment. I think the key is that we start it immediately, that we make sure we start with a significant enough investment, and, most importantly, that we make sure we stay the course, because 1 or 2 years of this investment clearly isn't going to get the job done.

This investment is important for the safety and security of nuclear weapons, what we have now. It's even more important if we want to reduce the numbers of our nuclear weapons, as is proposed in the New Strategic Arms Reduction Treaty (START). We absolutely have to have this sustained period of investment for that to be even under consideration, and I look forward to this starting.

Mr. Administrator, I'd love for you to address if this START is good enough? The national lab directors had argued for much more, to begin with, about a billion dollars a year; and so, I'm very curious about what is lost between that billion and this \$624 million, and how we'll deal with that over a full 10-year plan, or longer.

Mr. Chairman, I also want to use the opportunity to state that I think the new NPR inappropriately limits the ability of our complex to ensure the highest level of safety, security, and reliability. That will be a part of the ongoing discussion, as well. In constraining the ability to design new weapons and exercise our full new scientific capabilities, I think we're limiting safety. I think that limits intellectual growth; limits new concepts, design work; and limits our ability, therefore, to achieve maximum safety.

Finally, I want to underscore that, clearly, the B61 Life Extension Program (LEP) is among the most significant and time-critical funding elements of this fiscal year 2011 request. Technology maturation for many components should have begun, really, at least 2 years ago. The longer we wait, the tougher that is, as a 2017 deadline continues to mount.

I look forward to hearing if any additional policy roadblocks remain to prevent that work from moving forward on that critical B61 LEP.

Thank you very much, Mr. Chairman.

[The prepared statement by Senator Vitter follows:]

PREPARED STATEMENT BY SENATOR DAVID VITTER

Today's hearing focuses on the fiscal year 2011 request for the National Nuclear Security Administration (NNSA). The administration's request takes a concerted and long overdue step forward in starting to address the long-term needs of the nuclear weapons complex. This request, the first payment on what must be a sustained period of investment, should be assessed carefully to determine over the course of this investment if enough of the near-term needs are being adequately funded. Prior to having this request trimmed down by almost half by the White House, the National Lab Directors originally argued for almost a billion dollar increase and I look

forward to hearing from our witness why this budget, an increase of \$624 million, more adequately address our complex needs than the higher level of funding requested by the laboratories.

With the recent release of the delayed Nuclear Posture Review (NPR) we now have a blueprint to assess this administrations path forward for the nuclear weapons complex. Unfortunately the NPR constrains our the ability to design new weapons and exercise the scientific capabilities necessary for the development of even safer and more secure weapons, the NPR dangerously limits intellectual growth by prohibiting new concept design work and establishing a restrictively high bar for the replacement of antiquated and in many cases 60-plus year old technology existing in current weapons systems.

The physical and intellectual infrastructure, as highlighted a year ago by the Strategic Posture Commission, is in dire shape. The fiscal year 2011 budget dedicates significant resources to continue the design and construction of the Chemistry and Metallurgy Research Replacement Facility (CMRR) at Los Alamos and the Uranium Processing Facility at Y-12. Both projects are critical pillars of the future weapons complex, but CMRR is undoubtedly a priority and I question why the budget intends to fund both on parallel paths rather than expedite the infrastructure necessary to the pit manufacturing mission. As for the intellectual infrastructure, the budget allocates funding to help stabilize the lab workforce at 2010 levels; however, given the large downward trend of scientists over the past decade, I question if stabilization is enough, especially given the imminent workload increases of the B-61 Life Extension program.

The B-61 Life Extension program is arguably among the most significant and time critical funding elements of the fiscal year 2011 request. However, I understand that the full scope of B-61 work won't be fully defined until the completion of the 6.2A study in 2011. At the same time, technology maturation for many components should have began more than 2 years ago and the longer we wait to define the scope, pressure on meeting the 2017 deadline will continue to mount. With the release of the NPR and the affirmation by the President on the need for a B-61 in the future, I look forward to hearing if any additional policy roadblocks remain preventing work from moving forward on this critical life extension program.

Section 1251 of the National Defense Authorization Act for Fiscal Year 2010 requires a report on the plan for the nuclear weapons stockpile, nuclear weapons complex, and delivery platforms. The report requires a plan and estimated budgetary requirements over a 10-year period for enhancing the safety, security, and reliability of the stockpile; modernizing the nuclear weapons complex; and maintaining the delivery platforms for nuclear weapons. This bipartisan requirement is eagerly anticipated by Congress and I look forward to hearing more from our witness on NNSA's long-term requirements as well as when we should receive this congressionally-mandated report.

The fiscal year 2011 budget represents a welcome and long overdue recapitalization of the nuclear weapons complex. It is the first installment and must be sustained at increased levels far past the 5 years outlined in the request. I thank you Mr. D'Agostino for your leadership and your service and I look forward to a fruitful discussion.

Thank you, Mr. Chairman.

Senator BEN NELSON. Thank you.

Do you have some opening remarks that you'd like to make, Mr. D'Agostino?

**STATEMENT OF HON. THOMAS P. D'AGOSTINO, ADMINISTRATOR, NATIONAL NUCLEAR SECURITY ADMINISTRATION, DEPARTMENT OF ENERGY**

Mr. D'AGOSTINO. Yes, Mr. Chairman. If I could, I also have a written statement to submit for the record.

Thank you, Mr. Chairman and members of the subcommittee. I'm pleased to appear before you today to discuss the Department of Energy's (DOE) fiscal year 2011 budget request for the NNSA.

When I last appeared before the subcommittee, the focus of my testimony was the continued transformation of an outdated Cold War nuclear weapons complex, and moving it towards a 21st-cen-

tury nuclear security enterprise, and our initial efforts in implementing the President's nuclear security agenda.

Since that time, we've defined a portfolio of programs to carry out the President's nuclear security agenda. Our fiscal year 2011 request for these programs is \$11.2 billion, an increase of over 13 percent from last year. In developing this portfolio, Secretary Chu and I worked very closely with Secretary Gates to ensure that we remain focused on meeting DOD requirements. This request fully supports, and is entirely consistent with, the new nuclear strategy outlined last week in the administration's NPR.

The NPR lays out the nuclear deterrence policies for the next decade. For the NNSA, the impacts are significant. The NPR documents the President's commitment to provide the NNSA the resources required to support his nuclear security agenda and maintain the safety, security, and effectiveness of the nuclear deterrent without underground testing.

I understand there'll be a separate full committee hearing later this month to discuss the details of the NPR. I look forward to that hearing next week.

To summarize, the NPR provides the direction for the NNSA to maintain the stockpile through enhanced surveillance with an appropriate LEP for the weapons remaining in the stockpile. It renews our commitment in human capital, the critical cadre of scientific, technical, and engineering experts who underpin our stockpile management work; our support for nuclear nonproliferation and counterterrorism missions; and recapitalizes the aging infrastructure used to support the stockpile and conduct a full range of nuclear security missions. Our budget request for the NNSA supports this direction completely.

Within our overall request, weapons activities increases nearly 10 percent, to a level of \$7 billion; defense nonproliferation increases nearly 26 percent, to a level of \$2.7 billion; and naval reactors increases more than 13 percent, to a level of \$1.1 billion.

Our request can be summarized in four components that, collectively, ensure that we implement the President's direction: First, our request describes the NNSA's crucial role in implementing the President's nuclear security agenda, including his call to secure all vulnerable nuclear materials worldwide within 4 years. The \$2.7 billion request for nuclear nonproliferation programs includes several efforts that are directly linked to the President's agenda, including nearly \$560 million for Global Threat Reduction Initiative to secure vulnerable materials; over \$1 billion for our Fissile Material Disposition Program to permanently eliminate 68 metric tons of surplus weapons-grade plutonium and more than 200 metric tons of surplus highly-enriched uranium; and over \$350 million for nuclear nonproliferation verification research and development programs to provide technical support for arms control and nonproliferation.

The second component of our investment is in the tools and capabilities required to effectively manage our nuclear weapons stockpile. Because the NNSA, DOD, and the White House were all intimately involved in the formulation of the NPR from the start, much of the early analysis enabled NNSA to formulate a budget request that already responds to many of the recommendations in the

recently released NPR. We concluded very early on that maintaining the safety, security, and effectiveness of the enduring deterrent would require increased investments to strengthen an aging physical infrastructure and to help sustain a depleting technical human capital base. Our request includes more than \$7 billion to ensure the capabilities required to complete ongoing life extension work; to strengthen the science, technology, engineering base; and to reinvest in the scientists, technicians, and engineers who carry out the entire NNSA mission.

These activities are consistent with the new Stockpile Management Program (SMP) responsibilities, outlined in the 2010 National Defense Authorization Act (NDAA), and are consistent with the path forward, outlined in the NPR. As Vice President Biden highlighted in a recent speech, “We need to continue to invest in a modern, sustainable infrastructure that supports the full range of NNSA’s mission, not just stockpile stewardship.” He stated, “This investment is not only consistent with our nonproliferation agenda, but essential to it.” There is a bipartisan consensus that now is the time to make these investments to provide the foundation for future U.S. security, as noted by Senator Sam Nunn and Secretaries George Shultz, Henry Kissinger, and William Perry last January.

This leads me to the third component: our investment in recapitalizing our infrastructure and deterrent capability into a 21st-century nuclear security enterprise. As the Vice President also said last month, “Some of the facilities we use to handle uranium and plutonium date back to the days when the world’s great powers were led by Truman, Churchill, and Stalin. The signs of age and decay are becoming more apparent every day.”

So, our request includes specific funds to continue the design of the UPF at the Y-12 facility, and the construction of the Chemistry and Metallurgy Research Replacement (CMRR) Facility at Los Alamos. The naval reactors request includes funds to address the *Ohio*-class replacement, including a new reactor plant, and our need to refuel one of our land-based prototypes to provide a platform to demonstrate the manufacturability of the *Ohio* replacement core, and to realistically test systems and components.

Mr. Chairman, investing now in a modern, sustainable nuclear security enterprise is the right thing to do. The investment will support the full range of nuclear security missions, including stockpile stewardship, nuclear nonproliferation, arms control, treaty verification, counterterrorism, nuclear forensics, and emergency management, along with naval nuclear propulsion.

Finally, the fourth component, and one that ties all our missions together, is our commitment to aggressive management reform across the NNSA. With increased resources provided by Congress comes increased responsibility on our part to be effective stewards of the taxpayers’ money and to ensure that the NNSA is an efficient and cost-effective enterprise. We take this responsibility very seriously. We initiated a zero-based security review to implement greater security efficiencies and drive down costs, while sustaining and even improving our security capabilities. Our supply-chain management center has already saved taxpayers more than \$130

million, largely through eSourcing and combining purchasing across our enterprise.

Last month, I announced the new contracting and acquisition strategy that includes, among other items, an initiative to consolidate site operations at Y-12 National Security Complex and the Pantex Plant into a single contract, with the option for the phase-in of the SRS tritium operations. The proposed single-contract award will further strengthen our ability to achieve the ambitious goals set by the President in his budget request, and is consistent with my vision to move forward to a fully integrated and interdependent enterprise that will enhance mission performance, reduce cost, and strengthen private-sector partnerships. While many of the details still need to be worked out, we believe these efforts can save the taxpayers more than \$895 million over the next decade.

Finally, NNSA's leadership team stresses performance and financial accountability at all levels of our organization. In 2009, our program met or exceeded 95 percent of the performance objectives. We continue to reduce the percentage of carryover, uncosted, uncommitted balances in several of our nonproliferation programs.

Mr. Chairman, these investments made to date in the nuclear security enterprise provide the tools to address a broad array of nuclear security challenges. However, we must continue to cultivate the talents of our people to use these tools effectively, because our dedicated workforce is ultimately, in the end, the key to our success.

Thank you, Mr. Chairman. I'll look forward to your questions.  
[The prepared statement of Mr. D'Agostino follows:]

PREPARED STATEMENT BY HON. THOMAS P. D'AGOSTINO

Thank you for the opportunity to present the fiscal year 2011 President's budget request for the National Nuclear Security Administration (NNSA). This budget request will allow the NNSA to meet its commitments to the American people to provide for nuclear deterrence, to reduce nuclear dangers around the world, and to provide the capabilities to address the broader national security challenges of the 21st century.

At this time last year, the focus of NNSA efforts was the continuing transformation of the Cold War-era weapons complex to a 21st century Nuclear Security Enterprise, and transformation of the composition and size of the U.S. nuclear weapons stockpile. Simultaneously, we were in the very early stages of defining the efforts necessary to address the President's policy statements on securing the most vulnerable nuclear materials worldwide.

During the first 15 months of the Obama administration, we have been fully engaged with the Department of Defense (DOD) and the Interagency on the Nuclear Posture Review, and with the Department of State on a New Strategic Arms Reduction Treaty (START) Agreement and a broad menu of nonproliferation agreements with our international partners.

NNSA efforts this past year defined a portfolio of programs to meet the President's nuclear security agenda for the future. The fiscal year 2011 President's budget request for this portfolio is \$11.2 billion, an increase of more than 13 percent from last year. In the development of this portfolio, Secretary of Energy Chu and NNSA Administrator D'Agostino worked closely with Secretary of Defense Gates and other DOD officials to ensure that we remain focused on meeting the DOD's requirements. As a result, the budget request for Weapons Activities increases nearly 10 percent to a level of \$7 billion; Defense Nuclear Nonproliferation increases nearly 26 percent to a level of \$2.7 billion; Naval Reactors increases more than 13 percent to a level of \$1.1 billion; and, the request for Federal oversight and staff included in the Office of the Administrator account increases by 6.5 percent to a level of nearly \$450 million. NNSA's budget request also includes associated outyear projections in a Future Years Nuclear Security Program (FYNSP) that identifies re-

sources needed to meet the continuing requirements for significant long term investments in the Nuclear Security Enterprise deliverables, capabilities, and infrastructure.

The fiscal year 2011 President's budget request for the NNSA can be summarized in four core components that, collectively, ensure that the NNSA implements the President's overall nuclear security agenda, introduced in his April 2009 Prague speech, re-enforced during the State of the Union Address on January 27, 2010, and embodied in the Nuclear Posture Review.

#### IMPLEMENTING THE PRESIDENT'S NUCLEAR SECURITY VISION

The budget request highlights NNSA's crucial role in implementing President Obama's nuclear security vision, including his call for an international effort to secure all vulnerable nuclear material around the world within 4 years. The request for these efforts is \$2.7 billion (an increase of 25.8 percent over the current year). Key nonproliferation programs reflect significant increases from last year, including;

- Nearly \$560 million for the Global Threat Reduction Initiative (an increase of 68 percent over the current year) to secure vulnerable nuclear materials around the world within 4 years, and to provide a comprehensive approach to deny terrorist access to nuclear and radiological materials at civilian sites worldwide;
- Over \$1 billion for our Fissile Materials Disposition program (an increase of 47 percent over the current year) for construction of the Mixed Oxide (MOX) Fuel Fabrication Facility and the Waste Solidification Building, design of the Pit Disassembly and Conversion Facility, and meeting our commitment to support Russian plutonium disposition activities;
- More than \$590 million for Material Protection, Control, and Accounting and Second Line of Defense activities to accelerate securing nuclear materials in the Former Soviet Union and other Asian states, as well as worldwide efforts to deter, detect, and respond to nuclear smuggling events; and,
- Over \$350 million for the Nonproliferation and Verification Research and Development programs (an increase of 10 percent over the current year) to provide the key technical support for the President's arms control and non-proliferation agenda.

#### MANAGING THE NUCLEAR WEAPONS STOCKPILE

Based on a preliminary analysis of the draft Nuclear Posture Review, the Department concluded that maintaining the safety, security, and effectiveness of the nuclear deterrent without nuclear testing—especially at lower stockpile numbers—requires increased investments to strengthen an aging physical infrastructure and to sustain a depleting technical human capital base across the Nuclear Security Enterprise. As such, we are requesting more than \$7 billion (an increase of 9.8 percent over the current year) in the Weapons Activities appropriation to:

- Ensure the capabilities required for stockpile management and for the completion of ongoing Life Extension Programs are available;
- Strengthen the Science, Technology, and Engineering base capabilities that underpin stockpile stewardship, without nuclear testing, as well as all other NNSA nuclear security activities; and,
- Reinvest in the scientists, technicians, and engineers who perform the mission across the Nuclear Security Enterprise.

The President's budget request is consistent with the principles of the Stockpile Management Program outlined by Congress in the National Defense Authorization Act for Fiscal Year 2010.

#### RECAPITALIZING OUR NUCLEAR INFRASTRUCTURE AND DETERRENT CAPABILITY

These increases represent an investment in transforming our outdated nuclear weapons complex into a 21st century Nuclear Security Enterprise. This request includes funds to continue the design of the Uranium Processing Facility at the Y-12 facility; the design and construction of the replacement for the Chemistry and Metallurgy Research facility at the Los Alamos National Laboratory; and, conceptual design for the recapitalization of Naval Reactor's Expended Core Facility at the Idaho National Laboratory. Investing in a modern, sustainable nuclear security infrastructure supports the full range of NNSA's nuclear security missions, including:

- Stockpile stewardship;
- Nuclear nonproliferation and disarmament;
- Arms control treaty monitoring;

- Nuclear forensics;
- Counterterrorism and emergency response; and,
- the nuclear Navy.

Additionally, the request supports the recent Department of Defense decision to recapitalize the sea-based strategic deterrent. The *Ohio*-class ballistic submarines, the most survivable leg of the Nation's strategic deterrent, are reaching the end of their operational life. The request will enable Naval Reactors to continue reactor plant design and development efforts begun in 2010 for procurement of long-lead reactor plant components in 2017, in support of Navy procurement of the first *Ohio*-class submarine replacement in 2019. Providing the *Ohio*-class replacement a life-of-the-ship reactor core will require substantial advances in manufacturing technology to provide a new cladding and a new fuel system. The request also supports the refueling of a land based prototype reactor, providing a cost effective test platform for these new technologies.

Continuing NNSA Management Reforms. With the increased resources provided by Congress comes an increased responsibility to be effective stewards of the taxpayer's money. NNSA will continue to promote proactive, sound management reforms that save money, improve the way we do business, and increase efficiency. Following are a few of the efforts already underway:

- A Zero-Based Security Review initiative has led to efficiencies in our site security programs, helping drive down those costs while sustaining core physical security capabilities.
- An Enterprise Re-engineering Team is implementing ideas for improving the way NNSA does business, such as:
- A Supply Chain Management Center has already saved the taxpayers more than \$130 million since its inception in 2007 and is expanding its focus. Two key elements of the Center are:
  - eSourcing—an electronic sealed-bidding and reverse auction function; and,
  - Strategic Sourcing—where our Management and Operating contractors use their combined purchasing power to negotiate multi-site commodity contracts with vendors.
- A moratorium on new, NNSA-initiated Reviews and re-direction of those resources to improve Contractor Management Systems and operations and oversight across the Nuclear Security Enterprise.
- Issuing new NNSA Operating Principles to guide the priorities and decision processes of entities that perform NNSA work consistently across the Nuclear Security Enterprise.
- Applying a new performance-based model, best business practices, and lessons-learned across the Nuclear Security Enterprise. The model, pioneered at our Kansas City Plant, provides greater contractor flexibility and accountability; better focused, risk-based oversight; eliminates redundant and non-value-added reviews; and, improves efficiencies and availability of Federal and contractor resources to support the full scope of NNSA missions.
  - Reducing contractor expenses through renegotiation of health and dental plans, using common contracts for administration and supplies, and converting plant shifts for five 8-hour days to four 10-hour day shifts.
- Retaining the critical Federal workforce
  - Piloting for the Department a 5-year Office of Personnel Management Demonstration Project on Pay-for-Performance and Pay Banding to test new Human Resource concepts to recruit and retain a high caliber staff by providing faster pay progression for high-performing employees, and to build on the workforce planning system to better identify competency needs and gaps.
  - Conducting a Future Leaders Program and sponsoring Historically Black Colleges and Universities, Hispanic Serving Institutions, Native American Serving Institutions, and other intern and fellowship programs to bring into government the best and brightest talent in science, engineering, business, and other technical positions to ensure that when our aging workforce retires, it is replaced with competent, well-trained, and experienced professionals to carry on the mission work of the NNSA.

Finally, NNSA continues to emphasize performance and financial accountability at all levels of our operations. NNSA needs to assure the committee and the taxpayers that we are an excellent steward of the programs and funds Congress entrusts to us to carry out the President's nuclear security vision. In 2009, NNSA met 95 percent of its stated program performance objectives, and, over the past 2

years, NNSA successfully executed consecutive, large annual funding increases in several of our nonproliferation programs while reducing uncosted, uncommitted balances. We are ready to meet the challenge of executing the additional program increases supported by the fiscal year 2011 President's budget request. Our Federal and contractor staff and our contracting processes are in place to initiate immediately the increased mission work both in the U.S. and abroad. The NNSA will be a leader in successful program and financial execution for the Department of Energy and for the U.S. Government.

The NNSA is not operating on a "business-as-usual" basis. The budget request represents a comprehensive approach to ensuring the nuclear security of our Nation. NNSA will ensure that our strategic posture, our nuclear weapons stockpile, and our infrastructure, along with our nonproliferation, arms control, emergency response, counterterrorism, and naval propulsion programs, are melded into one comprehensive, forward-looking strategy that protects America and its allies.

Maintaining the nuclear weapons stockpile is the core work in the NNSA. However, the science, technology, and engineering capabilities, which enable the core work, must also continue to focus on providing a sound foundation for ongoing nonproliferation and other threat reduction programs. The investment in nuclear security is providing the tools that can tackle a broad array of national security and energy challenges and in other realms. NNSA now has the tools, but must continue to cultivate the talents of the people to use them effectively.

The NNSA is developing the next generation of scientists, engineers, and technicians required to meet our enduring deterrence requirements as well as the critical work in nonproliferation, nuclear counterterrorism, and forensics. People are ultimately our most important resource. We are working closely with our national laboratories to develop and retain the necessary cadre of the best and the brightest to successfully carry out all of our technically challenging programs into the foreseeable future.

Following are more detailed descriptions of each of the four specific NNSA appropriations.

**National Nuclear Security Administration  
Budget Overview**

The President's Budget Request for the NNSA contains budget information for five years as required by Section 3253 of P.L. 106-065, entitled Future-Years Nuclear Security Program (FYNSP). The FYNSP projects \$57.9 billion for NNSA programs through FY 2015. While the funding necessary to support the President's commitment to lead an international effort to secure vulnerable nuclear materials throughout the world is focused in the near term, major longer term funding commitments are needed in other NNSA programs. The Secretaries of the Department of Defense (DoD) and the Department of Energy (DOE) agree that it is necessary to modernize the nuclear security infrastructure of the U.S., and this will require the investments over the long-term reflected in the FYNSP. Modernization of the infrastructure, including major capital projects, is needed to ensure safe, secure, sustainable and cost-effective operations in support of scientific and manufacturing activities. It is also necessary to bolster key scientific, technical and manufacturing capabilities needed to ensure that the U.S. nuclear weapons stockpile remains safe, secure and effective while avoiding the requirement for new nuclear tests. Increased outyear resources are also included for major new deliverables in support of the nuclear navy, including reactor plant development for the OHIO-class replacement submarine, core manufacturing for and refueling of the technology demonstration land-based prototype, and initial planning for the recapitalization of spent nuclear fuel infrastructure.

**NNSA Program Summaries**

The FY 2011 President's Budget Request for the NNSA is \$11.2 billion, a 13.4 percent increase over the FY 2010 appropriated level. Outyear projections meet the requirements for significant long-term investments in the nuclear security enterprise deliverables, capabilities and infrastructure.

**Weapons Activities Appropriation**

The request for this appropriation is \$7.0 billion; an increase of 9.8 percent over the FY 2010 appropriated level. This level is sustained and increased in the later outyears.

Although no change to the existing program budget structure within this appropriation is proposed in this budget, we will address the current programs within the Weapons Activities appropriation in four related components:

- Stockpile Support (Directed Stockpile Work, Readiness Campaign);
- Science, Technology and Engineering (Science Campaign, Engineering Campaign, Inertial Confinement Fusion and High Yield Campaign, Advanced Simulation and Computing Campaign, Science, Technology and Engineering Capability);
- Infrastructure (Readiness in Technical Base and Facilities, Secure Transportation Asset, Facilities and Infrastructure Recapitalization Program, Site Stewardship); and,
- Security and Nuclear Counterterrorism (Defense Nuclear Security, Cyber Security, Nuclear Counterterrorism Incident Response).

Increased funding is requested for programs in Stockpile Support, for Scientific, Technology and Engineering activities related to maintenance assessment and certification capabilities for the stockpile, and for critical infrastructure improvements. The Security and Nuclear Counterterrorism component decreases about 3 percent from the FY 2010 appropriated levels, attributable to continuing efficiencies in the Defense Nuclear Security programs budget.

This multi-year increase reflects the President's commitment to maintain the safety, security and effectiveness of the nuclear deterrent without underground nuclear testing, consistent with the principles of the Stockpile Management Program outlined in Section 3113 (a)(2) of the National Defense Authorization Act of Fiscal Year 2010 (50 U.S.C. 2524). The nuclear security requirements driving this budget request include improvements to the safety and security of the enduring stockpile; a strengthened science, technology, and engineering base; and a recapitalized physical infrastructure. The enterprise must also be responsive to an arguably more complex future national defense environment than the singular Cold-War context within which the legacy deterrent was built.

The President's Budget Request provides funding necessary to protect and advance the scientific capabilities at the U.S. national security laboratories – including the ability to maintain the nuclear deterrent as well as development and engineering expertise and capabilities—through a stockpile stewardship program that fully exercises these capabilities.

This budget request is responsive to FY 2010 Congressional direction to carry out a Stockpile Management Program in support of stockpile stewardship that provides for effective management of the weapons in the nuclear weapons stockpile. This program will strengthen the stockpile activities, including life extension programs and surveillance; strengthen science, technology and engineering, including the workforce; and modernize the aging infrastructure, particularly special nuclear materials capabilities. The key objectives of the Stockpile Management Program include:

- Increase the reliability, safety, and security of the stockpile;
- Further reduce the likelihood of the need to resume underground nuclear testing;
- Achieve further reductions in the future size of the stockpile;
- Reduce the risk of an accidental detonation; and,
- Reduce the risk of an element of the stockpile being used by a person or entity hostile to the United States, its vital interests, or its allies.

The Stockpile Support component of this appropriation includes Directed Stockpile Work and the supporting Readiness Campaign. The President's Budget Request is \$2.0 billion, an increase of 25.2 percent over the FY 2010 appropriation. This provides for the Stockpile Management Program, including surveillance, maintenance, assembly, disassembly and dismantlement activities, and will fully support the ongoing Life Extension Programs for the W76 warhead and

the refurbishment of the B61 bomb. The budget request will enhance surveillance efforts, and ensure that capabilities and capacity are available so that future warhead life extension programs will allow for increased margin and enhanced warhead safety, security and control. The request will initiate a study in FY 2011 to evaluate future options and approaches to maintaining the W78, consistent with the principles of the Stockpile Management Program defined in Section 3113 (a)(2) of the National Defense Authorization Act of Fiscal Year 2010 (50 U.S.C. 2524).

The Science, Technology and Engineering (STE) component of this appropriation includes the Science Campaign, Engineering Campaign, Inertial Confinement Fusion and High Yield Campaign, Advanced Simulation and Computing Campaign, and Science, Technology and Engineering Capability. The President's Budget Request of \$1.6 billion is an increase of 10.4 percent over the FY 2010 appropriation and will restore sufficient funds for the science and technology base that supports stockpile assessment and certification in the absence of nuclear testing. Within this request, the Inertial Confinement Fusion and High Yield Campaign is requested at \$481.5 million. Construction of the National Ignition Facility (NIF) was completed in FY 2009, and the first in a series of ignition experiments beginning in the summer of 2010 will attempt to compress, implode, and ignite a layered deuterium-tritium capsule with a ~1.3 megajoule energy pulse from the NIF. Regardless of the specific status of ignition, FY 2011 will present a very demanding agenda of work in the ignition effort. Results from the first ignition experiments in 2010 will be analyzed in detail, and the intensive process of tuning laser and target parameters for optimum performance will continue toward development of a robust ignition platform by the end of 2012. The NIF is designed to provide critical scientific data to support the stockpile without underground nuclear testing.

Computation and simulation underpin all of our science, technology and engineering, and are pervasive throughout the activities in the nuclear security enterprise. The FY 2011 President's Budget Request of \$616 million for the Advanced Simulation and Computing Campaign will enable a stronger simulation program and inject a renewed scientific rigor back into the program. Developing robust peer review among the national security laboratories as we move away from the test base experience is essential to being able to maintain a stockpile without underground testing. Comprehensive uncertainty quantification calculations in 3D will provide the confidence necessary to make reliable progress toward the predictive capability necessary to address stockpile aging issues. In the next decade, predictive capability and specific warhead simulation deliverables will demand ever more powerful and sophisticated simulation environments. This request will position the national security laboratories to take advantage of future platform architectures to more efficiently steward the stockpile.

Also within the STE component, the new subprogram to provide collaborative efforts in intelligence analysis, which was created in response to congressional funding in the Supplemental Appropriations Act, 2009, continues in FY 2011. This subprogram provides a focal point for science, technology and engineering in NNSA, and will facilitate a point of entry for the wider national security community into NNSA's programs and facilities. The FY 2009 supplemental funding provided for laboratory efforts in intelligence analysis. The FY 2011 request will support NNSA's commitment to a 5-year Memorandum of Understanding with the Defense Threat Reduction Agency for national security research and development of mutual interest. At this time, the defined focus areas of mutual interest are: Advanced Science and

Forensics, Experimental Capabilities, Science Based Output, Active Interrogation of Special Nuclear Material, and Nuclear Weapons Effects Modeling and Simulation.

The Infrastructure component of the appropriation includes Readiness in Technical Base and Facilities, Secure Transportation Asset, Facilities and Infrastructure Recapitalization Program, and Site Stewardship. The President's Budget Request is \$2.3 billion, a 4.8 percent increase over the FY 2010 level. Transformation and maintenance of supporting physical infrastructure for the nuclear security enterprise is a high priority in the upcoming FYNSP. Along with the funding to support the ongoing operations of the government-owned, contractor operated laboratories and manufacturing facilities, the President's Budget Request includes funding for major long-term construction projects needed to restore critical capabilities in plutonium and uranium essential to the Stockpile Management program.

The President's Budget Request includes funding to complete the design and begin construction of the Chemistry and Metallurgy Research Facility Replacement -- Nuclear Facility at the Los Alamos National Laboratory. This facility conducts plutonium research and development and provides analytical capabilities in support of pit surveillance and production. The facility will also support the broad range of NNSA's nuclear security missions, including: 1) stockpile stewardship; 2) nuclear nonproliferation and disarmament; 3) arms control treaty monitoring; 4) nuclear forensics; and, 5) counterterrorism and emergency response. Current planning schedules full operation in 2022. A related project is requested to improve the safety profile at the adjoining PF-4 facility. The budget request also includes funding for continuing the design and construction planning of the Uranium Processing Facility at the Y-12 National Security Complex to support production and surveillance of highly-enriched uranium components. This facility is also planned to achieve full operations by 2022.

Maintaining and improving the current infrastructure is also an important priority for NNSA. The Facilities and Infrastructure Recapitalization Program is continuing to reduce the deferred maintenance backlog as it proceeds toward its planned conclusion in 2013. Increased funding is provided for the Site Stewardship program that integrates institutional/landlord functions for our sites, including regulatory-driven long-term Stewardship, Nuclear Materials Consolidation, and energy efficiency projects.

The Security and Nuclear Counterterrorism component of the appropriation includes Defense Nuclear Security, Cyber Security, and Nuclear Counterterrorism Incident Response. The President's Budget Request for these programs is \$1.1 billion, which, except for a 5 percent increase in Nuclear Counterterrorism and Incident Response, represents an overall 3.2 percent decrease from FY 2010 appropriated levels. The decrease reflects efficiencies expected to be gained from risk-informed decisions identified through the Defense Nuclear Security program's Zero-Based Security Review, consistent with implementation of the Graded Security Protection Policy.

#### **Defense Nuclear Nonproliferation Appropriation**

The request for this appropriation is \$2.7 billion; an increase of 25.8 percent over the FY 2010 appropriated level. The increase is driven by the imperative for U.S. leadership in nonproliferation initiatives both here and abroad, including the consolidation of fissile materials

disposition activities into this account. In addition to the programs funded solely by the NNSA, our programs support the Department of Energy mission to protect our national security by preventing the spread of nuclear weapons and nuclear materials to terrorist organizations and rogue states. These efforts are implemented in part through the Global Partnership against the Spread of Weapons and Materials of Mass Destruction, formed at the G8 Kananaskis Summit in June 2002, and the Global Initiative to Combat Nuclear Terrorism, launched in Rabat, Morocco, in October 2006.

The FY 2011 President's Budget Request reflects support for the President's direction to secure vulnerable nuclear materials around the world in four years. The International Nuclear Materials Protection and Cooperation (MPC&A) program increases by 3 percent to support selective new security upgrades to buildings and areas that were added to the cooperation after the Bratislava summit, additional Second Line of Defense sites, sustainability of MPC&A upgrades, and continued expansion of nuclear and radiological material removal. The Global Threat Reduction Initiative increases by 68 percent to support an increase in reactor conversions and shutdowns, acceleration of domestic production capability of Molybdenum-99, and an acceleration of the removal and disposition of high-priority, vulnerable nuclear materials in full support of the President's nuclear security agenda. The Fissile Materials Disposition program increases by 47 percent reflecting continuing domestic construction on the MOX Fuel Fabrication Facility, and the design and construction of two major supporting facilities.

The NNSA's nonproliferation programs seek to secure nuclear materials worldwide that could be used for weapons and to convert such materials for peaceful applications, and, through the Second Line of Defense Program, provide the tools for partner countries to detect and interdict smuggling of these materials across international borders.

The Nuclear Nonproliferation Research and Development (R&D) activities seek to improve detection of nuclear material production and movement through advanced R&D. The program draws on the vast technical expertise of the NNSA and DOE national laboratories, as well as academia and industry, the program delivers solutions to the hardest technical nuclear security challenges. Focusing on nuclear detection instrumentation development that is tightly coordinated across federal and international agencies, these advanced detection techniques are a significant contributor to the U.S. ability to detect foreign nuclear materials production as well as the illicit movement of those materials. Further, the R&D program provides the backbone for advances in U.S. and international capabilities to monitor nuclear-related treaty obligations. In keeping with the President's commitment for verifiable treaties, the R&D program's FY 2011 budget request increases by 10% over the current year to include a more robust set of testing and evaluation activities to demonstrate new U.S. treaty monitoring capabilities.

The FY 2011 President's Budget Request has consolidated all of the funding requests for the Fissile Materials Disposition activities within the Defense Nuclear Nonproliferation and Waste Solidification Building projects were moved in the FY 2010 appropriation, and the Pit Disassembly and Conversion Facility project has been moved back to Defense Nuclear Nonproliferation appropriation starting in FY 2011. The DOE has decided to explore a proposed combination of the Office of Environmental Management Plutonium Preparation Project and the

Pit Disassembly and Conversion Project in a single project located in an existing K-Area Facility at the Savannah River Site. This activity will be evaluated using the Department's project management order, DOE O 413, and will move toward a Critical Decision 1 (approval of alternative selection and cost range).

The U.S. continues to work with the Russian Federation on plutonium disposition in Russia pursuant to the Plutonium Management and Disposition Agreement reached in September 2000. Congress had appropriated \$200 million in a FY 1999 Supplemental Appropriation to support Russian plutonium disposition activities; however, \$207 million of this and other funding for this program was rescinded in FY 2008 due to lack of progress in Russia. The FY 2011 Request includes \$100 million of the U.S. commitment to provide \$400 million to support plutonium disposition in Russia once a Protocol amending the 2000 Agreement, related liability provisions, and a monitoring and inspection regime is signed. The balance of more than \$2 billion in remaining cost associated with Russian plutonium disposition would be borne by Russia and non-U.S. contributions.

#### **Naval Reactors Appropriation**

The request for this appropriation is \$1.1 billion; an increase of 13.3 percent over the FY 2010 appropriated level. The program directly supports the U.S. Navy's nuclear fleet, which encompasses all Navy submarines and aircraft carriers. The nuclear fleet is comprised of 54 attack submarines, 14 ballistic missile submarines, 4 guided missile submarines, and 11 aircraft carriers. These ships, and their consistent forward presence, are relied on every day, all over the world, to protect our national interests.

Naval Reactors has a long history of providing safe and reliable Naval nuclear propulsion. This requires continual analysis for prompt identification of leading indicators from fleet operations and careful engineering to assure prudent, yet timely modernization, and scrupulous maintenance. Over the last decade, funding for these successful endeavors has been relatively constant. The onset of unavoidable, nondiscretionary requirements for spent reactor fuel processing and replacement, and maintenance and disposal of an aging support infrastructure has required continued rebalancing of funding priorities. Those priorities coupled with new challenges necessitated the additional funding included in the budget request. Increases in the FY 2011 President's Budget Request support three key deliverables— the OHIO-class submarine replacement reactor plant, the refueling of the land-based prototype located in New York, and the Expanded Core Facility at the Naval Reactors Facility located on the Idaho National Laboratory.

The most survivable leg of the Nation's strategic deterrent, the OHIO-class ballistic missile submarines are reaching the end of their operational life. Propulsion plant design and development efforts began in 2010 to support Navy procurement of reactor plant components in 2017, for ship construction starting in 2019. This schedule for development is consistent with previous designs. Key technical challenges include an effort to lower total ownership costs while maintaining the traditionally high operational availability of this new ship. The most important challenge to meet this is a life-of-the-ship reactor core.

The DOE land-based prototype reactor, which has served the Program's needs for R&D and training since 1978, requires refueling in 2017. The reactor provides a cost-effective test

platform for new technologies and components before they are introduced for Fleet applications, supports testing and evaluation of materials, and provides a vital training platform for reactor plant operators. The land-based prototype refueling will also provide key technical data for the OHIO-class submarine replacement, since the reactor core work to support the refueling will also support the core manufacturing development for the OHIO-class replacement. This approach is based on Naval Reactors' extensive experience in reactor design—taking advantage of the prototype refueling opportunity to proof-test new manufacturing techniques for reactor fuel cladding material never previously used by the Navy. This will reduce technical risk in manufacturing the OHIO-class replacement life-of-the-ship core.

The Expended Core Facility (ECF) is the central location for naval spent nuclear fuel receipt, inspection, dissection, packaging, and secure dry storage, as well as detailed examination of spent cores and irradiated specimens. The existing facility is more than 50 years old, and its mission has evolved significantly over time. While serviceable, it no longer efficiently supports the nuclear Fleet or the work required to meet the agreements we have with the State of Idaho for naval spent fuel. To minimize risks associated with an aging facility and support the timely refueling and defueling of nuclear-powered warships, construction is targeted to begin by 2015. Uninterrupted ECF receipt of naval spent nuclear fuel is vital to the timely, constant throughput of ship refuelings and return of these capital warships to the Fleet. The mission need statement for this project has been approved, and conceptual design and alternative analysis efforts began in 2010.

**Office of the Administrator Appropriation**

The request for this appropriation is \$448.3 million; an increase of 6.5 percent over the FY 2010 appropriated level. This appropriation provides for the Federal staff and related support for the NNSA Headquarters and field organizations. The Federal personnel level for FY 2011 is projected at 1,970 Full Time Equivalentents, essentially level with the expectation for FY 2010. Implicit in the request is a 1.4 percent cost of living adjustment and a 3.3 percent increase for performance-based salary increases, awards, and benefit escalation associated with the Federal workforce. Other increases reflect full funding for NNSA site office space requirements across the Nuclear Security Enterprise, funds for new building maintenance and lease requirements, and expansion of NNSA international offices for the NNSA's nonproliferation programs.

## National Nuclear Security Administration

### Appropriation and Program Summary Tables Outyear Appropriation Summary Tables

#### FY 2011 BUDGET TABLES

##### National Nuclear Security Administration

##### Overview

##### Appropriation Summary

	(dollars in thousands)		
	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
National Nuclear Security Administration			
Office of the Administrator	439,190	420,754	448,267
Weapons Activities	6,410,000	6,384,431	7,008,835
Defense Nuclear Nonproliferation	1,545,071	2,136,709	2,687,167
[non-add MOX Project funded in other appropriations]	[278,879]	N/A	N/A
Naval Reactors	828,054	945,133	1,070,486
<b>Total, NNSA</b>	<b>9,222,315</b>	<b>9,887,027</b>	<b>11,214,755</b>
Transfer of prior year balances - OMB scoring		-10,000	
<b>Total, NNSA</b>		<b>9,877,027</b>	

##### Outyear Appropriation Summary

##### NNSA Future-Years Nuclear Security Program (FYNSP)

	(dollars in thousands)				
	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
NNSA					
Office of the Administrator	448,267	426,424	430,726	435,069	448,498
Weapons Activities	7,008,835	7,032,672	7,082,146	7,400,966	7,648,200
Defense Nuclear Nonproliferation	2,687,167	2,507,191	2,715,191	2,833,243	2,956,328
Naval Reactors	1,070,486	1,099,734	1,171,178	1,226,017	1,310,530
<b>Total, NNSA</b>	<b>11,214,755</b>	<b>11,066,021</b>	<b>11,399,241</b>	<b>11,895,295</b>	<b>12,363,556</b>

**Office of the Administrator  
National Nuclear Security Administration**

**Overview  
Appropriation Summary by Program**

(dollars in thousands)			
	FY 2009 Actual Appropriation	FY 2010 Current Appropriation *	FY 2011 Request
<b>Office of the Administrator</b>			
Office of the Administrator	415,878	418,074	448,267
Congressionally Directed Projects	23,312	13,000	0
Use of Prior Year Balances	0	-10,320	0
<b>Total, Office of the Administrator</b>	<b>439,190</b>	<b>420,754</b>	<b>448,267</b>
Transfer of Prior Year Balances		-10,000	
<b>Total, OMB Scoring</b>	<b>439,190</b>	<b>410,754</b>	<b>448,267</b>

\* Note: In accordance with P.L. 111-85, \$10,000,000 of Office of the Administrator prior year balances have been transferred to Non-Defense Environmental Cleanup for cleanup efforts at the Argonne National Laboratory.

**Public Law Authorization:**

Energy and Water Development and Related Agencies Appropriations Act, 2010 (P.L. 111-85)  
FY 2009 Omnibus Appropriations Act (P.L. 111-8)  
National Nuclear Security Administration Act (P.L. 106-65), as amended

**Outyear Appropriation Summary**

(dollars in thousands)				
	FY 2012	FY 2013	FY 2014	FY 2015
<b>Office of the Administrator</b>	426,424	430,726	435,069	448,498

**Office of the Administrator**

**Congressionally Directed Projects**

**Funding Profile by Subprogram**

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
Congressionally Directed Projects	23,312	13,000	0

## Weapons Activities

### Overview Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Weapons Activities</b>			
Directed Stockpile Work	1,590,152	1,505,859	1,898,379
Science Campaign	316,690	295,646	365,222
Engineering Campaign	150,000	150,000	141,920
Inertial Confinement Fusion Ignition and High Yield Campaign	436,915	457,915	481,548
Advanced Simulation and Computing Campaign	556,125	567,625	615,748
Readiness Campaign	160,620	100,000	112,092
Readiness in Technical Base and Facilities	1,674,406	1,842,870	1,848,970
Secure Transportation Asset	214,439	234,915	248,045
Nuclear Counterterrorism Incident Response	215,278	221,936	233,134
Facilities and Infrastructure Recapitalization Program	147,449	93,922	94,000
Site Stewardship	0	61,288	105,478
Environmental Projects and Operations	38,596	0	0
Defense Nuclear Security	735,208	769,044	719,954
Cyber Security	121,286	122,511	124,345
Science, Technology and Engineering Capability	30,000	0	20,000
Congressionally Directed Projects	22,836	3,000	0
Use/Reversion of Prior Year Balances	0	-42,100	0
<b>Total, Weapons Activities</b>	<b>6,410,000</b>	<b>6,384,431</b>	<b>7,008,835</b>

**Public Law Authorization:**

National Defense Authorization Act for Fiscal Year 2010 (P.L. 111-84)

Energy and Water Development and Related Agencies Appropriations Act, 2010 (P.L. 111-85)

National Nuclear Security Administration Act, (P.L. 106-65), as amended

### Outyear Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
<b>Weapons Activities</b>				
Directed Stockpile Work	1,900,736	1,999,470	2,240,139	2,346,254
Science Campaign	397,460	418,823	416,199	394,766
Engineering Campaign	149,737	134,996	144,920	145,739
Inertial Confinement Fusion Ignition and High Yield Campaign	480,451	475,597	470,994	484,812
Advanced Simulation and Computing Campaign	622,940	616,257	615,420	633,134
Readiness Campaign	81,697	70,747	69,854	72,584
Readiness in Technical Base and Facilities	1,872,546	1,841,325	1,926,568	1,997,764
Secure Transportation Asset	251,272	249,456	252,869	261,521
Nuclear Counterterrorism Incident Response	222,914	222,508	235,300	237,986
Facilities and Infrastructure Recapitalization Program	94,000	94,000	0	0
Site Stewardship	101,929	103,536	174,071	205,802
Defense Nuclear Security	730,944	729,609	728,925	740,649
Cyber Security	126,046	125,822	125,707	127,189
<b>Total, Weapons Activities</b>	<b>7,032,672</b>	<b>7,082,146</b>	<b>7,400,966</b>	<b>7,648,200</b>

## Directed Stockpile Work

## Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Directed Stockpile Work</b>			
<b>Life Extension Programs</b>			
B61 Life Extension Program	1,854	0	0
W76 Life Extension Program	203,189	223,196	249,463
<b>Subtotal, Life Extension Programs</b>	<b>205,043</b>	<b>223,196</b>	<b>249,463</b>
<b>Stockpile Systems</b>			
B61 Stockpile Systems	90,204	91,956	317,136
W62 Stockpile Systems	1,500	0	0
W76 Stockpile Systems	63,219	56,554	64,521
W78 Stockpile Systems	40,347	48,311	85,898
W80 Stockpile Systems	30,712	27,398	34,193
B83 Stockpile Systems	26,938	33,502	39,349
W87 Stockpile Systems	40,949	48,139	62,603
W88 Stockpile Systems	43,928	51,940	45,666
<b>Subtotal, Stockpile Systems</b>	<b>337,797</b>	<b>357,800</b>	<b>649,366</b>
<b>Weapons Dismantlement and Disposition</b>			
99-D-141-01 Pit Disassembly and Conversion Facility-SRS	24,883	0	0
99-D-141-02 Waste Solidification Building-SRS	40,000	0	0
Weapons Dismantlement and Disposition	52,695	96,100	58,025
Pit Disassembly and Conversion Facility-O&M	69,351	0	0
<b>Subtotal, Weapons Dismantlement and Disposition</b>	<b>186,929</b>	<b>96,100</b>	<b>58,025</b>
<b>Stockpile Services</b>			
Production Support	308,806	300,037	309,761
Research & Development Support	35,049	37,071	38,582
Research & Development Certification and Safety	169,403	166,523	209,053
Management, Technology, and Production	192,072	183,223	193,811
Plutonium Capability	155,053	0	0
Plutonium Sustainment	0	141,909	190,318
<b>Subtotal, Stockpile Services</b>	<b>860,383</b>	<b>828,763</b>	<b>941,525</b>
<b>Total, Directed Stockpile Work</b>	<b>1,590,152</b>	<b>1,505,859</b>	<b>1,898,379</b>

**Outyear Funding Profile by Subprogram**

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
<b>Directed Stockpile Work</b>				
<b>Life Extension Programs</b>				
W76 Life Extension Program	255,000	255,000	255,000	255,000
<b>Subtotal, Life Extension Programs</b>	<b>255,000</b>	<b>255,000</b>	<b>255,000</b>	<b>255,000</b>
<b>Stockpile Systems</b>				
B61 Stockpile Systems	337,851	394,027	437,518	512,296
W76 Stockpile Systems	56,418	58,312	55,396	54,038
W78 Stockpile Systems	104,964	156,340	346,923	345,359
W80 Stockpile Systems	31,627	34,566	35,974	36,621
B83 Stockpile Systems	37,160	38,294	42,621	42,059
W87 Stockpile Systems	67,754	64,924	51,898	50,433
W88 Stockpile Systems	61,229	65,094	69,777	68,648
<b>Subtotal, Stockpile Systems</b>	<b>697,003</b>	<b>811,557</b>	<b>1,040,107</b>	<b>1,109,454</b>
<b>Weapons Dismantlement and Disposition</b>	<b>53,327</b>	<b>48,446</b>	<b>58,102</b>	<b>60,089</b>
<b>Stockpile Services</b>				
Production Support	288,227	271,067	265,429	274,509
Research & Development Support	35,044	34,667	35,497	36,711
Research & Development Certification and Safety	207,133	213,923	214,632	222,777
Management, Technology, and Production	202,020	196,676	198,660	205,454
Plutonium Sustainment	162,982	168,134	172,712	182,260
<b>Subtotal, Stockpile Services</b>	<b>895,406</b>	<b>884,467</b>	<b>886,930</b>	<b>921,711</b>
<b>Total, Directed Stockpile Work</b>	<b>1,900,736</b>	<b>1,999,470</b>	<b>2,240,139</b>	<b>2,346,254</b>

**Science Campaign**

**Funding Profile by Subprogram**

	(dollars in thousands)		
	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Science Campaign</b>			
Advanced Certification	19,400	19,400	76,972
Primary Assessment Technologies	80,181	83,181	85,723
Dynamic Plutonium Experiments	23,022	0	0
Dynamic Materials Properties	83,231	86,617	96,984
Advanced Radiography	28,535	28,535	23,594
Secondary Assessment Technologies	76,913	77,913	81,949
Test Readiness	5,408	0	0
<b>Total, Science Campaign</b>	<b>316,690</b>	<b>295,646</b>	<b>365,222</b>

**Outyear Funding Profile by Subprogram**

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
<b>Science Campaign</b>				
Advanced Certification	104,704	129,481	129,978	98,908
Primary Assessment Technologies	86,253	85,248	84,327	87,165
Dynamic Materials Properties	97,114	95,980	94,945	98,144
Advanced Radiography	27,132	26,816	26,528	27,421
Secondary Assessment Technologies	82,257	81,298	80,421	83,128
<b>Total, Science Campaign</b>	<b>397,460</b>	<b>418,823</b>	<b>416,199</b>	<b>394,766</b>

**Engineering Campaign**

**Funding Profile by Subprogram**

	(dollars in thousands)		
	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Engineering Campaign</b>			
Enhanced Surety	46,111	42,000	42,429
Weapon Systems Engineering Assessment Technology	16,593	18,000	13,530
Nuclear Survivability	21,100	21,000	19,786
Enhanced Surveillance	66,196	69,000	66,175
<b>Total, Engineering Campaign</b>	<b>150,000</b>	<b>150,000</b>	<b>141,920</b>

**Outyear Funding Profile by Subprogram**

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
<b>Engineering Campaign</b>				
Enhanced Surety	44,019	43,699	48,851	50,523
Weapon Systems Engineering Assessment Technology	16,533	15,199	19,730	20,404
Nuclear Survivability	20,627	18,550	10,334	10,687
Enhanced Surveillance	68,558	57,548	66,005	64,125
<b>Total, Engineering Campaign</b>	<b>149,737</b>	<b>134,996</b>	<b>144,920</b>	<b>145,739</b>

**Inertial Confinement Fusion Ignition and High Yield Campaign****Funding Profile by Subprogram**

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Inertial Confinement Fusion Ignition and High Yield Campaign</b>			
Ignition	100,535	106,734	109,506
NIF Diagnostics, Cryogenics, and Experimental Support	66,201	72,252	102,649
Pulsed Power Inertial Confinement Fusion	8,652	5,000	5,000
Joint Program in High Energy Density Laboratory Plasmas	3,053	4,000	4,000
Facility Operations and Target Production	203,282	269,929	260,393
NIF Assembly and Installation Program	55,192	0	0
<b>Total, Inertial Confinement Fusion Ignition and High Yield Campaign</b>	<b>436,915</b>	<b>457,915</b>	<b>481,548</b>

**Outyear Funding Profile by Subprogram**

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
<b>Inertial Confinement Fusion Ignition and High Yield Campaign</b>				
Ignition	110,222	74,410	71,479	73,886
Support of Other Stockpile Programs	17,240	39,637	35,522	49,154
NIF Diagnostics, Cryogenics, and Experimental Support	74,104	83,878	82,921	76,117
Pulsed Power Inertial Confinement Fusion	5,000	5,000	5,000	5,000
Joint Program in High Energy Density Laboratory Plasmas	4,000	4,000	4,000	4,000
Facility Operations and Target Production	269,885	268,672	272,072	276,655
<b>Total, Inertial Confinement Fusion Ignition and High Yield Campaign</b>	<b>480,451</b>	<b>475,597</b>	<b>470,994</b>	<b>484,812</b>

**Advanced Simulation and Computing Campaign**

**Funding Profile by Subprogram**

	(dollars in thousands)		
	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Advanced Simulation and Computing Campaign</b>			
Integrated Codes	138,917	140,882	165,947
Physics and Engineering Models	49,284	61,189	62,798
Verification and Validation	50,184	50,882	54,781
Computational Systems and Software Environment	156,733	159,022	175,833
Facility Operations and User Support	161,007	155,650	156,389
<b>Total, Advanced Simulation and Computing Campaign</b>	<b>556,125</b>	<b>567,625</b>	<b>615,748</b>

**Outyear Funding Profile by Subprogram**

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
<b>Advanced Simulation and Computing Campaign</b>				
Integrated Codes	167,327	163,752	163,887	168,143
Physics and Engineering Models	66,541	65,019	64,626	66,438
Verification and Validation	54,168	52,879	52,300	53,835
Computational Systems and Software Environment	175,833	175,833	175,833	180,912
Facility Operations and User Support	159,071	158,774	158,774	163,806
<b>Total, Advanced Simulation and Computing Campaign</b>	<b>622,940</b>	<b>616,257</b>	<b>615,420</b>	<b>633,134</b>

**Readiness Campaign****Funding Profile by Subprogram**

	(dollars in thousands)		
	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Readiness Campaign</b>			
Stockpile Readiness	27,869	5,746	18,941
High Explosives and Weapon Operations	8,581	4,608	3,000
Nonnuclear Readiness	32,545	12,701	21,864
Tritium Readiness	70,409	68,246	50,187
Advanced Design and Production Technologies	21,216	8,699	18,100
<b>Total, Readiness Campaign</b>	<b>160,620</b>	<b>100,000</b>	<b>112,092</b>

**Outyear Funding Profile by Subprogram**

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
<b>Readiness Campaign</b>				
Tritium Readiness	81,697	70,747	69,854	72,584
<b>Total, Readiness Campaign</b>	<b>81,697</b>	<b>70,747</b>	<b>69,854</b>	<b>72,584</b>

**Readiness in Technical Base and Facilities**

**Funding Profile by Subprogram**

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Readiness in Technical Base and Facilities</b>			
Operations of Facilities			
Kansas City Plant	89,871	156,056	186,102
Lawrence Livermore National Laboratory	82,605	86,670	80,106
Los Alamos National Laboratory	289,169	311,776	318,464
Nevada Test Site	92,203	79,583	80,077
Pantex	101,230	131,602	121,254
Sandia National Laboratory	123,992	104,133	117,369
Savannah River Site	92,762	128,580	92,722
Y-12 National Security Complex	235,397	229,774	220,927
Institutional Site Support	56,102	120,129	40,970
Subtotal, Operations of Facilities	1,163,331	1,348,303	1,257,991
Program Readiness	71,626	73,021	69,309
Material Recycle and Recovery	70,334	69,542	70,429
Containers	22,696	23,392	27,992
Storage	31,951	24,708	24,233
<b>Subtotal, Operations and Maintenance</b>	<b>1,359,938</b>	<b>1,538,966</b>	<b>1,449,954</b>
Construction	314,468	303,904	399,016
<b>Total, Readiness in Technical Base and Facilities</b>	<b>1,674,406</b>	<b>1,842,870</b>	<b>1,848,970</b>

**Outyear Funding Profile by Subprogram**

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
<b>Readiness in Technical Base and Facilities</b>				
Operations of Facilities	1,178,512	1,129,208	1,061,276	1,097,791
Program Readiness	48,492	47,998	63,541	65,713
Material Recycle and Recovery	61,678	63,673	63,386	65,554
Containers	22,043	23,100	22,971	23,757
Storage	19,535	21,425	21,942	22,693
<b>Subtotal, Operations and Maintenance</b>	<b>1,330,260</b>	<b>1,285,404</b>	<b>1,233,116</b>	<b>1,275,508</b>
Construction	542,286	555,921	693,452	722,256
<b>Readiness in Technical Base and Facilities</b>	<b>1,872,546</b>	<b>1,841,325</b>	<b>1,926,568</b>	<b>1,997,764</b>

**Secure Transportation Asset**

**Overview**

**Funding Profile by Subprogram**

	(dollars in thousands)		
	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Secure Transportation Asset (STA)</b>			
Operations and Equipment	127,701	138,772	149,018
Program Direction	86,738	96,143	99,027
<b>Total, Secure Transportation Asset</b>	<b>214,439</b>	<b>234,915</b>	<b>248,045</b>

**Outyear Funding Profile by Subprogram**

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
<b>Operations and Equipment</b>				
Operations and Equipment	149,274	144,398	144,660	150,066
Program Direction	101,998	105,058	108,209	111,455
<b>Total, Operations and Equipment</b>	<b>251,272</b>	<b>249,456</b>	<b>252,869</b>	<b>261,521</b>

**Secure Transportation Asset****Operations and Equipment****Funding Profile by Subprogram**

	(dollars in thousands)		
	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Operations and Equipment</b>			
Mission Capacity	70,107	75,038	84,010
Security/Safety Capability	20,617	26,472	27,001
Infrastructure and C5 Systems	25,978	23,217	23,681
Program Management	10,999	14,045	14,326
<b>Total, Operations and Equipment</b>	<b>127,701</b>	<b>138,772</b>	<b>149,018</b>

**Outyear Funding Profile by Subprogram**

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
<b>Operations and Equipment</b>				
Mission Capacity	82,966	76,764	75,672	79,699
Security/Safety Capability	27,541	28,092	28,654	29,227
Infrastructure and C5 Systems	24,155	24,638	25,131	25,633
Program Management	14,612	14,904	15,203	15,507
<b>Total, Operations and Equipment</b>	<b>149,274</b>	<b>144,398</b>	<b>144,660</b>	<b>150,066</b>

## Secure Transportation Asset

## Program Direction

## Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Program Direction</b>			
Salaries and Benefits	75,226	81,225	83,311
Travel	10,188	11,331	7,746
Other Related Expenses	1,324	3,587	7,970
<b>Total, Program Direction</b>	<b>86,738</b>	<b>96,143</b>	<b>99,027</b>
<b>Total, Full Time Equivalents</b>	<b>570</b>	<b>647</b>	<b>637</b>

## Outyear Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
<b>Program Direction</b>				
Salaries and Benefits	85,781	88,323	90,943	93,641
Travel	7,980	8,218	8,465	8,719
Other Related Expenses	8,237	8,517	8,801	9,095
<b>Total, Program Direction</b>	<b>101,998</b>	<b>105,058</b>	<b>108,209</b>	<b>111,455</b>
<b>Total, Full Time Equivalents</b>	<b>637</b>	<b>637</b>	<b>637</b>	<b>637</b>

**Nuclear Counterterrorism Incident Response****Funding Profile by Subprogram**

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Nuclear Counterterrorism Incident Response (Homeland Security)<sup>a</sup></b>			
Emergency Response (Homeland Security) <sup>a</sup>	132,918	139,048	134,092
National Technical Nuclear Forensics (Homeland Security) <sup>a</sup>	12,557	10,217	11,698
Emergency Management (Homeland Security) <sup>a</sup>	7,428	7,726	7,494
Operations Support (Homeland Security) <sup>a</sup>	8,207	8,536	8,675
International Emergency Management and Cooperation	4,515	7,181	7,139
Nuclear Counterterrorism (Homeland Security) <sup>a</sup>	49,653	49,228	64,036
<b>Total, Nuclear Counterterrorism Incident Response</b>	<b>215,278</b>	<b>221,936</b>	<b>233,134</b>

**Outyear Funding Profile by Subprogram**

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
<b>Nuclear Counterterrorism Incident Response</b>				
Emergency Response (Homeland Security) <sup>a</sup>	137,715	138,359	139,504	141,107
National Technical Nuclear Forensics (Homeland Security) <sup>a</sup>	11,589	11,694	11,577	11,828
Emergency Management (Homeland Security) <sup>a</sup>	7,129	6,629	6,505	6,694
Operations Support (Homeland Security) <sup>a</sup>	8,691	8,799	8,749	9,000
International Emergency Management and Cooperation	7,129	7,139	7,032	7,275
Nuclear Counterterrorism (Homeland Security) <sup>a</sup>	50,661	49,888	61,933	62,082
<b>Total, Nuclear Counterterrorism Incident Response</b>	<b>222,914</b>	<b>222,508</b>	<b>235,300</b>	<b>237,986</b>

<sup>a</sup> Office of Management and Budget (OMB) Homeland Security designation.

**Facilities and Infrastructure Recapitalization Program**

**Funding Profile by Subprogram**

	(dollars in thousands)		
	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Facilities and Infrastructure Recapitalization Program</b>			
Operations and Maintenance (O&M)			
Recapitalization	69,226	69,377	79,600
Infrastructure Planning	10,324	8,982	9,400
Facility Disposition	0	5,600	5,000
<b>Subtotal, Operations and Maintenance (O&amp;M)</b>	<b>79,550</b>	<b>83,959</b>	<b>94,000</b>
Construction	67,899	9,963	0
<b>Total, Facilities and Infrastructure Recapitalization Program</b>	<b>147,449</b>	<b>93,922</b>	<b>94,000</b>

**Outyear Funding Profile by Subprogram**

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
<b>Facilities and Infrastructure Recapitalization Program</b>				
Operations and Maintenance (O&M)				
Recapitalization	79,600	86,600	0	0
Infrastructure Planning	9,400	2,400	0	0
Facility Disposition	5,000	5,000		
<b>Subtotal, Operations and Maintenance (O&amp;M)</b>	<b>94,000</b>	<b>94,000</b>	<b>0</b>	<b>0</b>
Construction	0	0	0	0
<b>Total, Facilities and Infrastructure Recapitalization Program</b>	<b>94,000</b>	<b>94,000</b>	<b>0</b>	<b>0</b>

**Site Stewardship**

**Funding Profile by Subprogram**

(dollars in thousands)			
	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Site Stewardship</b>			
Operations and Maintenance	0	61,288	90,478
Construction			15,000
<b>Total, Site Stewardship</b>	<b>0</b>	<b>61,288</b>	<b>105,478</b>

**Outyear Funding Profile by Subprogram**

(dollars in thousands)				
	FY 2012	FY 2013	FY 2014	FY 2015
<b>Site Stewardship</b>				
Operations and Maintenance	101,929	103,536	174,071	205,802
Construction	0	0	0	0
<b>Total, Site Stewardship</b>	<b>101,929</b>	<b>103,536</b>	<b>174,071</b>	<b>205,802</b>

**Environmental Projects and Operations**

**Funding Profile by Subprogram**

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Environmental Projects and Operations</b>			
Long-Term Stewardship	38,596	0	0
<b>Total, Environmental Projects and Operations</b>	<b>38,596</b>	<b>0</b>	<b>0</b>

## Safeguards and Security

## Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Safeguards and Security (S&amp;S)</b>			
<b>Defense Nuclear Security (Homeland Security)</b>			
Operations and Maintenance	689,510	720,044	667,954
Construction	45,698	49,000	52,000
<b>Total, Defense Nuclear Security</b>	<b>735,208</b>	<b>769,044</b>	<b>719,954</b>
<b>Cyber Security (Homeland Security)</b>	<b>121,286</b>	<b>122,511</b>	<b>124,345</b>
<b>Total, Safeguards and Security</b>	<b>856,494</b>	<b>891,555</b>	<b>844,299</b>

## Outyear Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
<b>Safeguards and Security (S&amp;S)</b>				
<b>Defense Nuclear Security (Homeland Security)</b>				
Operations and Maintenance	675,229	672,344	671,671	681,259
Construction	55,715	57,265	57,254	59,390
<b>Total, Defense Nuclear Security</b>	<b>730,944</b>	<b>729,609</b>	<b>728,925</b>	<b>740,649</b>
<b>Cyber Security (Homeland Security)</b>	<b>126,046</b>	<b>125,822</b>	<b>125,707</b>	<b>127,189</b>
<b>Total, Safeguards and Security</b>	<b>856,990</b>	<b>855,431</b>	<b>854,632</b>	<b>867,838</b>

**Defense Nuclear Security**

**Funding Profile by Subprogram**

	(dollars in thousands)		
	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Defense Nuclear Security</b>			
<b>Operations and Maintenance (Homeland Security)</b>			
Protective Forces	418,694	453,000	414,166
Physical Security Systems	77,245	74,000	73,794
Transportation	420	0	0
Information Security	25,880	25,300	25,943
Personnel Security	31,263	30,600	30,913
Materials Control and Accountability	35,929	35,200	35,602
Program Management	71,364	83,944	80,311
Technology Deployment, Physical Security	9,431	8,000	7,225
Graded Security Protection Policy (formerly DBT)	19,284	10,000	0
<b>Total, Operations and Maintenance (Homeland Security)</b>	<b>689,510</b>	<b>720,044</b>	<b>667,954</b>
Construction (Homeland Security)	45,698	49,000	52,000
<b>Total, Defense Nuclear Security</b>	<b>735,208</b>	<b>769,044</b>	<b>719,954</b>

**Outyear Funding Profile by Subprogram**

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
<b>Defense Nuclear Security</b>				
<b>Operations and Maintenance (Homeland Security)</b>				
Protective Forces	422,221	414,432	414,617	421,346
Physical Security Systems	71,405	73,987	71,165	72,297
Information Security	26,202	26,464	26,729	26,996
Personnel Security	31,222	31,534	31,849	32,167
Materials Control and Accountability	35,958	36,318	36,681	37,048
Program Management	80,924	82,239	83,186	83,887
Technology Deployment, Physical Security	7,297	7,370	7,444	7,518
<b>Total, Operations and Maintenance (Homeland Security)</b>	<b>675,229</b>	<b>672,344</b>	<b>671,671</b>	<b>681,259</b>
Construction (Homeland Security)	55,715	57,265	57,254	59,390
<b>Total, Defense Nuclear Security</b>	<b>730,944</b>	<b>729,609</b>	<b>728,925</b>	<b>740,649</b>

**Cyber Security**

**Funding Profile by Subprogram**

	(dollars in thousands)		
	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Cyber Security (Homeland Security)</b>			
Infrastructure Program	93,776	99,011	97,849
Enterprise Secure Computing	25,500	21,500	21,500
Technology Application Development	2,010	2,000	4,996
<b>Total, Cyber Security (Homeland Security)</b>	<b>121,286</b>	<b>122,511</b>	<b>124,345</b>

**Outyear Funding Profile by Subprogram**

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
<b>Cyber Security (Homeland Security)</b>				
Infrastructure Program	99,550	99,326	98,211	99,693
Enterprise Secure Computing	21,500	21,500	22,500	22,500
Technology Application Development	4,996	4,996	4,996	4,996
<b>Total, Cyber Security (Homeland Security)</b>	<b>126,046</b>	<b>125,822</b>	<b>125,707</b>	<b>127,189</b>

**Science, Technology and Engineering Capability**

**Funding Profile by Subprogram**

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Operations and Maintenance	30,000	0	20,000
<b>Total, Science, Technology and Engineering Capability</b>	<b>30,000</b>	<b>0</b>	<b>20,000</b>

**Outyear Funding Profile by Subprogram**

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Operations and Maintenance	0	0	0	0
<b>Total, Science, Technology and Engineering Capability</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Weapons Activities**

**Congressionally Directed Projects**

**Funding Profile by Subprogram**

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Congressionally Directed Projects</b>	<b>22,836</b>	<b>3,000</b>	<b>0</b>

**Defense Nuclear Nonproliferation**

**Overview  
Funding Profile by Subprogram**

	(dollars in thousands)		
	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Defense Nuclear Nonproliferation</b>			
Nonproliferation and Verification Research and Development	356,281	317,300	351,568
Nonproliferation and International Security	150,000	187,202	155,930
International Nuclear Materials Protection and Cooperation	460,592 <sup>a</sup>	572,050	590,118
Elimination of Weapons-Grade Plutonium Production	141,299	24,507	0
Fissile Materials Disposition	41,774	701,900	1,030,713
Global Threat Reduction Initiative	404,640 <sup>b</sup>	333,500	558,838
Congressional Directed Projects	1,903	250	0
<b>Subtotal, Defense Nuclear Nonproliferation</b>	<b>1,556,489</b>	<b>2,136,709</b>	<b>2,687,167</b>
Use of Prior Year Balances	-11,418	0	0
<b>Total, Defense Nuclear Nonproliferation</b>	<b>1,545,071</b>	<b>2,136,709</b>	<b>2,687,167</b>

NOTES: FY 2009 funds appropriated in Other Defense Activities for the Mixed Oxide Fuel Fabrication Facility, and in Weapons Activities for the Waste Solidification Building and Pit Disassembly and Conversion Facility (FY 2009 and FY 2010) are not reflected in the above table.

**Public Law Authorization:**

Energy and Water and Related Agencies Appropriations Act, 2010 (P.L. 111-85)  
National Nuclear Security Administration Act, (P.L. 106-65), as amended  
National Defense Authorization Act for Fiscal Year 2010 (P.L. 111-84)

**Outyear Funding Profile by Subprogram**

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
<b>Defense Nuclear Nonproliferation</b>				
Nonproliferation and Verification Research and Development	315,941	317,558	328,194	351,145
Nonproliferation and International Security	161,083	165,275	169,861	181,741
International Nuclear Materials Protection and Cooperation	570,798	561,790	558,492	623,670
Fissile Materials Disposition	859,375	1,010,642	789,558	743,600
Global Threat Reduction Initiative	599,994	659,926	987,138	1,056,172
<b>Total, Defense Nuclear Nonproliferation</b>	<b>2,507,191</b>	<b>2,715,191</b>	<b>2,833,243</b>	<b>2,956,328</b>

<sup>a</sup> FY 2009 amount includes international contributions of \$4,067,065 from Government of Canada, \$387,335 from New Zealand, \$837,600 from Norway, and \$300,000 from South Korea.

<sup>b</sup> FY 2009 amount includes international contributions of \$3,918,000 from the Government of Canada, and \$5,722,212 from the United Kingdom of Great Britain and Northern Ireland.

**Nonproliferation and Verification Research and Development**

**Funding Profile by Subprogram**

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Nonproliferation and Verification R&amp;D</b>			
<b>Operations and Maintenance (O&amp;M)</b>			
Proliferation Detection	195,400	181,839	225,004
Homeland Security-Related Proliferation Detection [Non-Add]	[50,000]	[50,000]	[50,000]
Nuclear Detonation Detection	142,421	135,461	126,564
<b>Subtotal, O&amp;M</b>	<b>337,821</b>	<b>317,300</b>	<b>351,568</b>
Construction	18,460	0	0
<b>Total, Nonproliferation and Verification R&amp;D</b>	<b>356,281</b>	<b>317,300</b>	<b>351,568</b>

**Outyear Funding Profile by Subprogram**

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
<b>Nonproliferation and Verification R&amp;D</b>				
<b>Operations and Maintenance</b>				
Proliferation Detection (PD)	182,614	183,549	189,696	202,962
Homeland Security-Related Proliferation Detection [Non-Add]	[50,000]	[50,000]	[50,000]	[50,000]
Nuclear Detonation Detection	133,327	134,009	138,498	148,183
<b>Total, Nonproliferation and Verification R&amp;D</b>	<b>315,941</b>	<b>317,558</b>	<b>328,194</b>	<b>351,145</b>

**Nonproliferation and International Security****Funding Profile by Subprogram**

	(dollars in thousands)		
	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Nonproliferation and International Security</b>			
Dismantlement and Transparency	47,529	72,763	49,207
Global Security Engagement and Cooperation	44,076	50,708	47,289
International Regimes and Agreements	40,793	42,703	39,824
Treaties and Agreements	17,602	21,028	19,610
<b>Total, Nonproliferation and International Security</b>	<b>150,000</b>	<b>187,202</b>	<b>155,930</b>

**Outyear Funding Profile by Subprogram**

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
<b>Nonproliferation and International Security</b>				
Dismantlement and Transparency	50,832	52,155	53,602	57,351
Global Security Engagement and Cooperation	48,852	50,124	51,514	55,117
International Regimes and Agreements	41,141	42,210	43,383	46,417
Treaties and Agreements	20,258	20,786	21,362	22,856
<b>Total, Nonproliferation and International Security</b>	<b>161,083</b>	<b>165,275</b>	<b>169,861</b>	<b>181,741</b>

**International Nuclear Materials Protection and Cooperation**

**Funding Profile by Subprogram**

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>International Nuclear Materials Protection and Cooperation</b>			
Navy Complex	30,316	33,880	34,322
Strategic Rocket Forces/12 <sup>th</sup> Main Directorate	51,767	48,646	51,359
Rosatom Weapons Complex	76,070	71,517	105,318
Civilian Nuclear Sites	45,542	63,481	59,027
Material Consolidation and Conversion	21,560	13,611	13,867
National Programs and Sustainability	54,901	68,469	60,928
Second Line of Defense	174,844	272,446	265,297
International Contributions	5,592 <sup>a</sup>	0	0
<b>Total, International Nuclear Materials Protection and Cooperation</b>	<b>460,592</b>	<b>572,050</b>	<b>590,118</b>

**Outyear Funding Profile by Subprogram**

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
<b>International Nuclear Materials Protection and Cooperation</b>				
Navy Complex	31,764	0	0	0
Strategic Rocket Forces/12 <sup>th</sup> Main Directorate	37,830	0	0	0
Rosatom Weapons Complex	52,000	0	0	0
Civilian Nuclear Sites	18,502	0	0	0
Material Consolidation and Conversion	14,306	14,627	14,627	16,433
National Programs and Sustainability	61,967	39,006	39,006	43,623
Second Line of Defense	354,429	508,157	504,859	563,614
International Contributions	0	0	0	0
<b>Total, International Nuclear Materials Protection and Cooperation</b>	<b>570,798</b>	<b>561,790</b>	<b>558,492</b>	<b>623,670</b>

<sup>a</sup> FY 2009 amount includes international contributions of \$4,067,065 from Government of Canada, \$387,335 from New Zealand, \$837,600 from Norway, and \$300,000 from South Korea.

**Elimination of Weapons-Grade Plutonium Production**

**Funding Profile by Subprogram**

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Elimination of Weapons-Grade Plutonium Production (EWGPP)</b>			
Zheleznogorsk Plutonium Production Elimination (ZPPEP)	139,282	22,507	0
Crosscutting and Technical Support Activities	2,017	2,000	0
<b>Total, Elimination of Weapons-Grade Plutonium Production (EWGPP)</b>	<b>141,299</b>	<b>24,507</b>	<b>0</b>

**Outyear Funding Profile by Subprogram**

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Elimination of Weapons-Grade Plutonium Production	0	0	0	0

**Fissile Materials Disposition****Funding Profile by Subprogram**

	(dollars in thousands)		
	FY 2009 Current Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Fissile Materials Disposition (FMD)</b>			
<b>U.S. Surplus Fissile Materials Disposition</b>			
<b>Operations and Maintenance (O&amp;M)</b>			
U.S. Plutonium Disposition	0	90,896	278,940
U.S. Uranium Disposition	39,274	34,691	25,985
Supporting Activities	1,500	1,075	0
<b>Subtotal, O&amp;M</b>	<u>40,774</u>	<u>126,662</u>	<u>304,925</u>
Construction	0	574,238	612,788
<b>Total, U.S. Surplus FMD</b>	<u>40,774</u>	<u>700,900</u>	<u>917,713</u>
<b>Russian Surplus FMD</b>			
Russian Materials Disposition	1,000	1,000	113,000
<b>Total, Fissile Materials Disposition</b>	<u>41,774</u>	<u>701,900</u>	<u>1,030,713</u>

**Outyear Funding Profile by Subprogram**

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
<b>Fissile Materials Disposition</b>				
U.S. Surplus Fissile Materials Disposition (O&M)	302,276	482,185	478,897	459,827
Construction	556,099	527,457	309,661	282,773
Russian Surplus Fissile Materials Disposition	1,000	1,000	1,000	1,000
<b>Total, Fissile Materials Disposition</b>	<u>859,375</u>	<u>1,010,642</u>	<u>789,558</u>	<u>743,600</u>

## Global Threat Reduction Initiative (GTRI)

Funding Profile by Subprogram<sup>a</sup>

	(dollars in thousands)		
	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Global Threat Reduction Initiative</b>			
<b>Highly Enriched Uranium (HEU) Reactor Conversion</b>	76,706	102,772	119,000
<b>Nuclear and Radiological Material Removal</b>			
Russian-Origin Nuclear Material Removal	123,083	94,167	145,191
U.S.-Origin Nuclear Material Removal	8,331	9,889	16,500
Gap Nuclear Material Removal	4,982	9,111	108,000
Emerging Threats Nuclear Material Removal	7,600	5,556	16,000
International Radiological Material Removal	21,702	8,333	45,000
Domestic Radiological Material Removal	17,063	17,778	25,000
<b>Subtotal, Nuclear and Radiological Material Removal</b>	<b>182,761</b>	<b>144,834</b>	<b>355,691</b>
<b>Nuclear and Radiological Material Protection</b>			
BN-350 Nuclear Material Protection	50,977	9,109	2,000
International Material Protection	42,909	41,463	57,000
Domestic Material Protection	41,647	35,322	25,147
<b>Subtotal, Nuclear and Radiological Material Protection</b>	<b>135,533</b>	<b>85,894</b>	<b>84,147</b>
<b>Total, Global Threat Reduction Initiative (appropriation)</b>	<b>395,000</b>	<b>333,500</b>	<b>558,838</b>
<b>Funds from International Contributions</b>	<b>9,640</b>	<b>0</b>	<b>0</b>
<b>Total, Global Threat Reduction Initiative Funds Available</b>	<b>404,640</b>	<b>333,500</b>	<b>558,838</b>

<sup>a</sup> FY 2009 amount includes international contributions of \$3,918,000 from the Government of Canada, and \$5,722,212 from the United Kingdom of Great Britain and Northern Ireland.

**Outyear Funding Profile by Subprogram**

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
<b>Global Threat Reduction Initiative</b>				
<b>HEU Reactor Conversion</b>	<b>176,000</b>	<b>210,000</b>	<b>245,000</b>	<b>293,000</b>
<b>Nuclear and Radiological Material Removal</b>				
Russian-Origin Nuclear Material Removal	96,000	70,000	82,000	83,000
U.S.-Origin Nuclear Material Removal	1,000	3,000	1,000	1,000
Gap Nuclear Material Removal	22,000	16,000	27,000	1,000
Emerging Threats Nuclear Material Removal	16,000	16,000	194,000	188,000
International Radiological Material Removal	44,000	39,000	10,000	10,000
Domestic Radiological Material Removal	31,000	31,000	33,000	34,000
<b>Subtotal, Nuclear and Radiological Material Removal</b>	<b>210,000</b>	<b>175,000</b>	<b>347,000</b>	<b>317,000</b>
<b>Nuclear and Radiological Material Protection</b>				
BN-350 Nuclear Material Protection	2,000	0	0	0
International Material Protection	100,000	125,000	130,000	143,000
Domestic Material Protection	111,994	149,926	265,138	303,172
<b>Subtotal, Nuclear and Radiological Material Protection</b>	<b>213,994</b>	<b>274,926</b>	<b>395,138</b>	<b>446,172</b>
<b>Total, Global Threat Reduction Initiative</b>	<b>599,994</b>	<b>659,926</b>	<b>987,138</b>	<b>1,056,172</b>

**Congressionally Directed Projects****Funding Profile by Subprogram**

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Congressionally Directed Projects</b>	<b>1,903</b>	<b>250</b>	<b>0</b>

**Naval Reactors**

**Overview  
Appropriation Summary by Program**

	(dollars in thousands)		
	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
<b>Naval Reactors Development</b>			
Operations and Maintenance (O&M)	771,600	877,533	997,886
Program Direction	34,454	36,800	40,000
Construction	22,000	30,800	32,600
<b>Total, Naval Reactors Development</b>	<b>828,054</b>	<b>945,133</b>	<b>1,070,486</b>

**Public Law Authorizations:**

P.L. 83-703, "Atomic Energy Act of 1954"

"Executive Order 12344 (42 U.S.C. 7158), "Naval Nuclear Propulsion Program"

P.L. 107-107, "National Defense Authorizations Act of 2002", Title 32, "National Nuclear Security Administration"

John Warner National Defense Authorization Act for FY 2007, (P.L. 109-364)

FY 2008 Consolidated Appropriations Act (P.L. 110-161)

National Nuclear Security Administration Act, (P.L. 106-65), as amended

FY 2009 Consolidated Appropriations Act (P.L. 111-8)

FY 2010 Energy and Water and Related Agencies Appropriations Act (P.L. 111-85)

**Outyear Appropriation Summary by Program**

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
<b>Naval Reactors Development</b>				
Operations and Maintenance	1,018,634	1,102,978	1,177,817	1,240,430
Program Direction	41,200	42,400	43,700	45,000
Construction	39,900	25,800	4,500	25,100
<b>Total, Naval Reactors Development</b>	<b>1,099,734</b>	<b>1,171,178</b>	<b>1,226,017</b>	<b>1,310,530</b>

Senator BEN NELSON. Thank you.

Senator Bingaman, do you have some opening remarks you might want to make?

Senator BINGAMAN. I'll just wait for questions, Mr. Chairman. Thank you.

Senator BEN NELSON. Thank you.

You mentioned the NPR, and it supports the decision, in the New START, to reduce the nuclear weapons stockpile to 1,500 deployed nuclear weapons. It's a reduction from the maximum of 2,200 deployed nuclear weapons allowed under the Moscow Treaty, but this number doesn't represent the size of the total stockpile, which is considerably larger than the number of deployed weapons. What is your understanding of the impact that the NPR and START will have on the total stockpile size?

Mr. D'AGOSTINO. The total stockpile size is a size that includes, as you described, sir, the operationally deployed warheads and a reserves stockpile—a classified number, at this point—to essentially backup the operationally deployed warheads. Because we do have to do maintenance, it requires a bit of movement back and forth. Also, as part of that, because we hadn't been actively involved—and this is that phase we're entering into, is this active LEP management—we hadn't been as actively involved in that. Now that we have a defined and clear path forward, DOD will be looking at whether or not, and by how much, we ought to be looking at the reserve stockpile and changing the size of that. Decisions

on that point have not yet been made, because as we note, the NPR was just released last week. So we want to phase those in as we move forward.

Senator BEN NELSON. In that regard, will you be able to, as far as you know right now, retire and disassemble more nuclear warheads than previously scheduled? Or will it have any impact on that?

Mr. D'AGOSTINO. In addition to the operationally deployed and reserve stockpile, there are a set of warheads in a dismantlement queue. Our last report that we provided, about 2 years ago to Congress, laid out an accelerated dismantlement path for those warheads, and for that third queue to be taken apart. We're proceeding on marching down that plan that we had laid out 2 years ago. It's a fairly aggressive plan.

The question that has to come to play, that we will be looking at as we develop our fiscal year 2012 budgets in the out-years, is whether it makes sense to take another bite and try to even go faster taking down that retired set of warheads, or are those resources better spent on taking care of the warheads that we have right now? That's an ongoing discussion, right now, that I'm having with DOD. We're looking at various options on that, but we remain committed to taking apart all those warheads in that retirement queue by 2022. Granted, that's 12 years from now, but we are talking about a number of warheads, and they are nuclear warheads, so we want to make sure that we don't rush. Safety's the most important thing, from my standpoint.

Senator BEN NELSON. Now, there are different categories of non-deployed warheads. Some are active, reserve, and some are inactive, while some are in line, waiting for dismantlement. Can you tell us the current categories of these nondeployed warheads? Will the category or will the situation change under NPR?

Mr. D'AGOSTINO. I think the NPR allows us to look at changing the situation. I don't have the details on how it would change, at this point. It's important that there are a couple of things happening at the same time. One is extending the lives and actively getting into finishing the W76 warhead and doing the design work and costing studies needed for the B61 warhead. That's incredibly important. As we move forward in that, we'll be in the position to look at whether we should accelerate our retirement of the retired warheads and/or whether we should move those warheads that are in the active and inactive reserve into the retirement category. Those are decisions made by DOD, they're advised upon by my organization, particularly since we look very closely at which warhead systems are reaching their end of life, and in what manner, and what sequence we ought to be taking these apart.

Senator BEN NELSON. Now, in terms of the categories, can you outline the nature of each category?

Mr. D'AGOSTINO. The categories, right now, are operationally deployed strategic warheads; an active and inactive reserve set of warheads to back up the operationally deployed warheads; and the third queue are the retired warheads, warheads that are being retired, but they're awaiting dismantlement. There's a significant number of warheads there, and we have to balance our resources between taking care of the stockpile and retiring warheads.

Senator BEN NELSON. In that regard, even though you can't talk about the classified total number of these nondeployed warheads, will we be able to handle the maintenance requirements of each of those warheads?

Mr. D'AGOSTINO. Yes, very much so. What the NPR allows us to do is provide certainty in the work plan. Where we are right now is translating the broad NPR requirements into very specific 20-year plans. We have a document called the Requirements Planning Document (RPD) and the Program and Planning Document (PPD). These are the detailed documents that say what warhead gets worked on at what time sequence. So, the fact that we have this type of certainty, that we are going to work on the W76, finish the production of the W76; we are proposing to actively engage in the full B61 LEP, including the nuclear life extension; and that we are going to start studying—this is more from a laboratory side—what we might and what are the best approaches to dealing with the W78 warhead—that certainty allows us to allocate resources at the Pantex plant and the Y-12 plant, which are the hands-on people on the warhead components, with some degree of certainty.

Senator BEN NELSON. In connection with the Pantex operation, the budgets for those operations are down from fiscal year 2010 levels, at a time when Pantex will be conducting full-rate production of the W76 life extension and will be increasing the dismantlement rate, even though you say that perhaps things will be delayed on some dismantlement. Why is the budget down? It looks to me like maybe the operation tempo is up, but the budget's down. It's not that I want budgets up, but I want to make certain that they're correlated.

Mr. D'AGOSTINO. Right. The budget we asked for, for the NNSA overall, allows us to do the work at the Pantex plant. There's an element in the President's budget request where we take, early on, and we allocate resources to each of the sites. Because of final questions on how much goes through what particular site, there is an element of the President's request called the headquarters account. Essentially, it's the Defense Program's General Harenchak, who's sitting behind me—as the requirements become better defined, we allocate those resources out to the sites.

Since we're talking about next year's budget, there are still resources to be allocated out to take care of any reductions or perceived reductions at the site. Obviously we don't spend the money in headquarters so that money gets spent at our laboratories and production plants.

I wanted also to clarify my comment on the accelerated dismantlement rate. We submitted a plan to Congress, in a classified report, that we accelerated our dismantlement rates from the 2006 levels. So, now we are currently operating on the plan we submitted to you, sir, 2 years ago. We aren't going to accelerate on top of that plan, unless we have the freed-up resource at our plants to do that.

Senator BEN NELSON. In terms of Pantex and the operations, are you satisfied that you have enough financial resources in the budget to be able to do what the plan is?

Mr. D'AGOSTINO. Yes, sir. I'm satisfied.

Senator BEN NELSON. Okay. Thank you.

Senator Vitter.

Senator VITTER. Thank you, Mr. Chairman.

Mr. Administrator, thanks again for your service.

As I noted briefly in my opening statement, the center directors seem to have suggested a level above what we're looking at for fiscal year 2011. We're looking at an increase of \$624 million. My understanding is, they suggested an increase of \$1 to \$1.2 billion. What's the difference? What are we not doing in this request? How do you anticipate meeting those needs in the future?

Mr. D'AGOSTINO. When we worked the internal budget process last year, I asked for input, broadly. Defense Programs runs that input process. About this time last year, we received feedback that said, "Yes, in order to do, broadly, the kind of work we think that might happen"—this is before, by the way, we knew what the requirements actually were—"we think, on the order of about a billion-plus is needed." This is, again, just as a reminder, without any real requirements. As the year progressed last year, and the NPR was moving through its paces, the requirements became clearer. My staff and I were very aware that the requirements were happening, but because the NPR is drafted within the Federal Government and doesn't involve a broad range of people outside of our laboratories, our labs and plants don't become aware of all of those requirements. So, I can take their input and work it down.

Additionally, early on what we had were what I would call power-point level of quality, with respect to budget input. But, what we had, as the year progressed last year, was a greater level of clarity on what it actually takes to do maintenance, build buildings, do work on the stockpile and as the stockpile requirements came through. So, I took a look at that request against the power-point-quality level of request, and applied their actual requirements to that. That brought that number down into our internal budget process. The resources we have, and the increases we have in the President's budget, are exactly what I feel is needed in order to satisfy the requirements.

I've talked to our folks at the labs and plants. They understand that. They agree with me, that what we have right now is what we need. Will folks always want more money? I think, early on, it's hard to find a program manager that doesn't want increased resources.

A final and very important filter, frankly, from my standpoint, is our ability to appropriately execute the resources to get the job done. The layout that we have before us here, is what I feel is a significant increase, and it's what is required to get the job done.

Senator VITTER. Okay. Certainly, Mr. Administrator, I assume you agree that this project has to be sustained over many years. We have asked for, in the authorization language, a 10-year plan about this. When do you expect that we'll get that plan, in significant detail?

Mr. D'AGOSTINO. This is the Stockpile Stewardship and Management Program Plan?

Senator VITTER. Right.

Mr. D'AGOSTINO. We are working on that plan. It's going to be a 10-year plan. It will indicate, to the best of our ability, the 10-year program stream that we will need. We expect to get that plan

to the Hill in early May, if not by the 1st of May, which is what my target is. My internal target is to get that up by the first, but it's certainly within the next few weeks, sir.

Senator VITTER. Okay. I know it's not finalized yet, but can you describe, roughly, what you think the funding line over time of that plan will look like? Obviously, we have a significant increase proposed here. Over those next 10 years, what would you expect that proposal to look like, in terms of dollars?

Mr. D'AGOSTINO. As you said, sir, the plan is not final, and I actually haven't seen the tables. But, I will point out that the program we have in front of the committee today takes the—just the weapons activities account—I'm setting aside nuclear nonproliferation, for the time being—but, just the weapons activities grows, as you pointed out—it starts at \$7 billion in fiscal year 2011, and it grows to \$7.6 billion in fiscal year 2015. From that standpoint alone, I expect—because the out-years will be deep into the actual construction of these large facilities at Los Alamos and Y-12, and we'll be into the work on the actual stockpile, the B61 warhead—will be in the production of that—that the increase will continue on into the out-years, years 6 through 10.

But, I want to caveat, I haven't seen the budget tables yet. It's my best expectation, at this point, that we'll see that increase continue. But, we will also, in parallel, continue to drive down and look at cost efficiencies, as I described in my oral opening remarks.

Senator VITTER. Okay. In my statement, I highlighted the B61 life extension. I know the fiscal year 2010 Appropriations bill did not fully fund your request for that. In unclassified terms, could you please share why that project is urgently needed, and the complexities associated with the plan, and why future delays imposed by Congress would be particularly detrimental?

Mr. D'AGOSTINO. Certainly. The B61 warhead is one of our oldest warheads in the stockpile, from a design standpoint and actual warheads in the stockpile. As General Chilton has pointed out in the past, as I've pointed out in the past, we have components in that warhead that have vacuum tubes. They are pretty hard to make these days. It could be hard to find somebody that actually has them. We can't continue to operate in this manner, where we're replacing things with vacuum tubes.

Neutron generators and power supplies and the radar, essentially, are components that have to be addressed in this warhead.

Also, I think, importantly, the work on this warhead will provide our first real opportunity to actually increase the safety and security of that warhead, and put 21st century safety and security into that warhead. So, when we work on warheads from now on, I'd like to be in the position of saying, "We made it safer. We made it more secure. We increased the reliability to ensure that we would stay very far away from ever having to conduct an underground test."

Senator VITTER. Okay. Once we are beyond the B61 scope of work, do you anticipate a significant sort of recalculation of necessary fiscal year 2012-and-beyond funding?

Mr. D'AGOSTINO. I think it's important to note that the work that we are proposing in the fiscal year 2011 request—whether we're talking about our major capital projects, the uranium and plutonium facilities that we're proposing, or whether we're talking actu-

ally about work on the stockpile itself—a good part of this work is work in the design phase or in the, what we call, defining the cost, scope, and schedule, because these are defined activities; they have a beginning, a middle, and an end. For these types of projects, we will be establishing performance baselines. In other words, the Government's commitment, or the executive branch's commitment, to saying, "I'm going to deliver such-and-such, by a certain date, for a certain dollar amount, on a certain dollar stream." We expect for our two large facilities and the B61 warhead to be in that performance baseline decision point in fiscal year 2012 and fiscal year 2013. At that point, those are the numbers that I want to lock in and commit to from a multiple-year standpoint, and will lock in and commit to getting the job done for those projects.

We have to expect increases and decreases and adjustments in our program as we have a better understanding of what it takes to do a design.

If I could just add a little bit more to that. We know that there have been some important changes in DOE lately, with Secretary Chu and with Deputy Secretary Poneman on approaches to large projects. In particular, one I want to point out for large capital projects is making sure that we know what we're going to build before we start building it. It's this idea of getting very close to finishing the design work before committing to a performance baseline. On these large facilities, particularly the capital projects, our goal is to get to 90 percent of design prior to construction, pouring concrete in the ground, and then finding out. Because that way we're assured, we have a much greater confidence that we know what a project costs and how long it will take.

Senator VITTER. Okay.

Thank you, Mr. Chairman.

Senator BEN NELSON. Senator Bingaman?

Senator BINGAMAN. Thank you very much.

Tom, thank you for your service.

You testified to this subcommittee, last year, that the Los Alamos Neutron Science Center (LANSC) was an important tool to help maintain the stockpile. I wanted to be sure that's still your view.

Mr. D'AGOSTINO. It's absolutely my view that the LANSC provides the important experimental data that we need to help validate our codes, as well as help our scientists. It helps us in the basic science area as it well helps us in the energy area as we look at nuclear energy and being able to have materials that can handle neutron flux environments well.

Senator BINGAMAN. Thank you. Let me ask about the CMRR Facility. The budget you've given us doesn't have in it any cost estimates. I guess your statement, just a few minutes ago, related to this. When would we expect to have firm cost estimates and completion dates for that project?

Mr. D'AGOSTINO. I expect, in calendar year 2012—whether it bridges into fiscal year 2012 or 2013—I'd have to double check. It's going to take us a good year and a half more of design work to be confident. I think the most important thing is our desire to get DOE's reputation back on track, with respect to large facilities. We do have programs in DOE that do well in this, and what we've

learned is that getting the design work largely completed, or getting it to around the 80 to 90 percent level is what it takes in order to do that. So, we're going to work on that approach here for these two facilities. My expectation is about the 2012 timeframe to get that done. If it takes longer though, sir, I'm willing to push back the performance baseline by a year in order to make sure I know what we're asking for. I think, in the long run, that will be the right thing to do.

Senator BINGAMAN. Has the decision been made as to whether that CMRR Facility will manufacture plutonium pits?

Mr. D'AGOSTINO. I don't think there's any decision needed, sir. Here's how I would describe that. The plutonium pits are manufactured in a building called PF4. It's a building at Los Alamos that was brought up in the 1980s. It's 20, 25 years old. We're in the midst of upgrading that facility, working on the ventilation systems and the power systems and the like. The CMRR Facility will do a couple of things for us. It will do the materials characterization work that we need to characterize plutonium material for nuclear forensics work and for the stockpile. It will do the analytical chemistry that's needed to do the surveillance work on the stockpile, which means if we take a stockpile pit, we take a little sample of that, and we send it over to the CMRR facility so that analysis can be done, so we can understand the aging of that warhead. Finally, there will be a component of this facility that will include storage. One of the things that we found that we're having problems with is making sure that we have the adequate and appropriate storage for all of our material. So, it will provide those three functions. We will not make pits in the CMRR Facility. We'll make them in the existing older facility.

Senator BINGAMAN. As I understand it, the Defense Nuclear Facility Safety Board (DNFSB) has criticized the PF4 facility for its safety envelope under a worst-case accident scenario. Does NNSA have a campaign to reduce or remove plutonium from that facility to deal with that?

Mr. D'AGOSTINO. Senator, we absolutely have a campaign to do that. We have a campaign to do a couple of things. One, the concern of the DNFSB is a concern of mine in that the analysis was an unbounded analysis. That said, if the facility was completely full of plutonium, and all the worst things happened, then we would have a release. What we have done since then is taken a look at how much material is actually in the building, versus the building filled up to the rafters with plutonium. That reduced the risk to the public by a factor of 15, so that's a significant reduction. We're still not satisfied with that reduction.

What we're doing, even though the risk has been reduced by a factor of 15, is packaging and taking material out, and we've incentivized the laboratory to accelerate its packaging. Item two is, we've reduced the amount of—what we call fire loading, material in the building that could catch fire, because the accident was a fire accident. The building breaks open, there's a fire, and then the wind carries everything out. If we reduce the amount of fire-loaded material and add fire upgrades, that also causes the risk to the public to go down.

We're moving material out; we've reduced the fire loading; and we're also putting in some—not ventilation adjustments, but, in essence, doors that will close automatically, to reduce the risk even further. I'm confident that the right steps are being taken.

Senator BINGAMAN. Let me ask about the scientific and engineering complex that has been considered there at Los Alamos. I believe your budget proposes to cancel that. This was intended to house many of the scientists at the lab in a single facility. What is the plan for a facility of this sort? Is there an alternative course that you plan to follow?

Mr. D'AGOSTINO. Yes, sir. I would characterize it slightly differently, if I could, sir. We canceled the approach that the lab was proposing to the Federal Government, which was a third-party-financed approach which we felt did not meet the requirements. First of all, it did not meet the requirements that we had laid out, with the administration, and it did not meet the Office of Management and Budget requirements for third-party financing. So, we're working with the laboratory, right now, on a different approach. We do need, frankly, a place to put our scientists at the laboratory. We don't have the solution yet. The Defense Programs organization hasn't closed on that particular approach yet. I don't have anything I can say right now to you, sir. But, I'll be glad, once we close on that approach, to communicate back to you, once we close on what that may be.

Senator BINGAMAN. Thank you very much.

Mr. Chairman, I may have some questions to submit in writing, but thank you very much.

Senator BEN NELSON. They will be received.

Senator SESSIONS.

Senator SESSIONS. Thank you.

Mr. D'Agostino, we appreciate your being with us today.

One of the things that is really crucial to the START ratification process is the commitment, that we believe is there, to modernize the nuclear weapons program. It's part of our 2010 Defense bill, and it says, "Must have a plan to modernize U.S. nuclear deterrent and estimated budget requirements over 10 years."

I was just going to tell you that there are a lot of concerns about this treaty. I don't think it's critical to our national defense, and I will try to be cooperative so people can celebrate all these meetings and signing all these documents. It makes them feel good. But, we need to know whether or not you have the money and the plan in place to modernize the arsenal. If it's not there, I think Senator Lieberman was quoted as saying that he didn't think the treaty could be ratified. I guess I see there is \$5 billion for the first 5 years, but what kind of plan is there for the second? Are we backloading the funding here to sometime when some new administration would have to come up with the money, not the one that's signing this treaty? To put it all bluntly. [Laughter.]

Mr. D'AGOSTINO. Senator, the fiscal year 2011 budget is not just a budget for 1 year. Within the program that we've submitted, we have a 5-year lookahead. The program does go up significantly from fiscal year 2011 through fiscal year 2015. We do owe you a 10-year plan to describe what years 6, 7, 8, 9, and 10 look like, as well. Our commitment is to get that plan to you. I believe that

what's not needed is a 1-year step-up, which, frankly, we do have a significant increase from fiscal year 2010 to fiscal year 2011, but it has to be a long-term commitment that crosses administrations and crosses Congresses and the like. That's our approach, sir.

Senator SESSIONS. I understand that. But you testified last summer that, "We anticipate that identified funding levels for the out-years may not be sufficient to meet the post-NPR stockpile requirements, including science-based stewardship, recapitalization of the aging plutonium and highly-enriched uranium facilities." Do you still stand by that?

Mr. D'AGOSTINO. No, I stand by the President's budget. Last summer, I didn't know where we were going to end up with the year. What we have here is a plan that does what the NPR asked for. The NPR lays out broad requirements, we've submitted a program and budget that has a very significant set of well-understood work for the next decade on working on the nuclear weapons themselves.

Senator SESSIONS. But, you haven't identified, yet, the funding for the out-years, that's correct. Yes or no?

Mr. D'AGOSTINO. Yes. I've identified funding for the next 5 years, but I haven't—

Senator SESSIONS. The next 5 years. Excuse me.

Mr. D'AGOSTINO. For the years 6 through 10, I have that plan in place. I haven't gotten it out in public yet.

Senator SESSIONS. Will it call for more spending per year, in years 6 through 10 than 1 through 5?

Mr. D'AGOSTINO. I haven't seen the details of the plan yet, or the tables. We don't have approval on the tables. My expectation is that, because we will be entering into the construction phase of some of these facilities, that the \$7.6 billion that we have in year 5 will continue, appropriately, to increase to reflect that.

Senator SESSIONS. Where does \$7.6 billion come from?

Mr. D'AGOSTINO. That's the amount of money in our weapons activities account in fiscal year 2015. Right now, our weapons account has \$7 billion in fiscal year 2011, that \$7 billion increases to \$7.6 over a 5-year period.

Senator SESSIONS. But, you have a new responsibility, a big new responsibility. I thought you were getting \$1 billion a year from the Secretary of Defense to do the New START plan to modernize?

Mr. D'AGOSTINO. I gave you the total number, sir, which is an element of that, is the resources provided by DOD.

Senator SESSIONS. You're cutting other expenditures within the account?

Mr. D'AGOSTINO. I'm trying to drive efficiencies, because this is not just a matter of getting more money, it's making sure the resources we have in our base account are spent well.

Senator SESSIONS. I couldn't agree more about that. But this \$5 billion for this project in the first 5 years, as I understand it, is that about \$1 billion a year you plan to apply? Or does it ramp up over the 5 years?

Mr. D'AGOSTINO. Since, I haven't seen my years 6, 7, 8, 9, and 10, I can't give you a solid answer to that. But very shortly, you'll be getting the 10-year plan and we will have that level of detail for you.

Senator SESSIONS. I just want to say, I learned something here, when I first came to the Senate, President Clinton had a lot of increases in the defense budget in the out-years, and I realized he's going to be out of office, but he wasn't spending his money this year to get it started. So, I'm trying to make the point that this is not going to be a pleasant process if you don't have us really good numbers that we can believe in, and with credibility, and a real commitment is there to improve our stockpile.

With regard to the W78 and W88, it seems that the NPR raises the bar to make it more difficult to recommend improvements or replacement options. Why would we constrict ourselves in the options that we would have to make the arsenal safer and more reliable?

Mr. D'AGOSTINO. Senator, I don't believe we are constricting ourselves. After taking a look at the NPR, the lab directors feel that the NPR provides them the flexibility they need in order to maintain the stockpile, including the W78 and the W88.

Senator SESSIONS. They work for you guys, and they pretty much follow orders. But, I'm going to ask you again, do the restrictions that are included in any way weaken the options that might be available in the future as we work to replace and modernize these weapons systems?

Mr. D'AGOSTINO. I believe the NPR does not provide any restrictions to modernize. So, there's no impact, there's flexibility for the lab directors to study all types of approaches to do life extensions on the warheads. The NPR is real clear on that, sir.

Senator SESSIONS. All right. We'll review that.

Mr. D'AGOSTINO. Yes, sir.

Senator SESSIONS. I would just note, if you want to save some money, you have \$6 billion in cleanup money, is that correct, in your budget?

Mr. D'AGOSTINO. In the DOE budget, yes, sir.

Senator SESSIONS. Another \$6 billion of stimulus money for cleanups, that's \$12 billion. That right? Counting the money that was in the stimulus bill?

Mr. D'AGOSTINO. I'm more confident on the environment management work money. I don't keep track of the stimulus money.

Senator SESSIONS. If you want to look for a place to save money, I suggest that \$12 billion would be a good place to start and that you have plenty of money to modernize our nuclear arsenal. Otherwise, we may not have a treaty to sign.

Thank you, Mr. Chairman.

Senator BEN NELSON. Senator Reed.

Senator REED. Thank you very much.

Thank you, Mr. Director.

Just in a general question—we have a challenge of modernizing our nuclear stockpile in both deployed and stockpile weapons, et cetera. Is there any significant difference, in terms of the status of ground-based, air-launched, or sea-launched systems, in terms of their modernization or their status?

Mr. D'AGOSTINO. I can answer part of that.

Senator REED. Yes.

Mr. D'AGOSTINO. It's probably better addressed to DOD.

Senator REED. Right.

Mr. D'AGOSTINO. General Chilton and Mr. Miller will be here, I think, next week.

Senator REED. Yes, sir.

Mr. D'AGOSTINO. My sense is, from the sea-launch standpoint, for example, I—because I'm a former submarine officer, I keep track of the trends—

Senator REED. I know there was something I liked about you. [Laughter.]

Mr. D'AGOSTINO. We do have work that we have in our program request to do the design work on the follow-on *Ohio*-class submarine core.

Senator REED. Right.

Mr. D'AGOSTINO. An element of that, obviously, is the replacement of the *Ohio*-class submarine. There is significant work and discussions underway within Strategic Systems Program organization on how we best move forward on that Trident replacement submarine. There's a general understanding that this is the most survivable leg of our deterrent, and there's a commitment to work with the Navy on getting this piece done. My element of the budget, as I described earlier, is over a \$100-million increase in the naval propulsion program just to do that work on the *Ohio*-class submarine replacement, as well as refuel the reactor core on the prototype facility.

From a submarine standpoint, I'm confident. But, I'll have to leave it to my colleagues in DOD to deal with the other part of your question, sir.

Senator REED. Very good. You are already beginning to undertake the work for the design of the new reactor system for the follow-on to *Ohio*.

Mr. D'AGOSTINO. Absolutely, sir. This budget gets this going in high gear.

Senator REED. One of the other aspects of the naval system is that their spent fuel is currently stored in the water basin up at naval reactors facilities in Idaho Falls, and the facility is 50 years old. It's been described to me as a design that is not the most modern.

Mr. D'AGOSTINO. Right.

Senator REED. I don't want to denigrate it, but it's a swimming pool with—am I getting too far off the point here?

Mr. D'AGOSTINO. Getting pretty close, sir.

Senator REED. Swimming pool with material in it.

Mr. D'AGOSTINO. Right.

Senator REED. So, what are we going to do to recapitalize that, in terms of the disposition of the fuel?

Mr. D'AGOSTINO. The facility you're referring to is the Expended Core Facility, ECF, for short. This is a facility that's done great work for the Nation. It's a facility that is in need of upgrading. Just like our plutonium and uranium facilities, which were there in the 1950s, and were designed to 1950s standards and the like, as we take a look at the work that we anticipate out into the future, with cores coming out, we know this facility is not going to be able to cut it. So we have \$40 million requested in the fiscal year 2011 budget on the ECF. We're going to be working with the Office of Management and Budget. Once we establish the performance base-

line again—is to make sure that those out-year funds are there to support this activity.

Senator REED. You might have covered this already. But, what opportunity did you have to participate and observe this week's summit meetings?

Mr. D'AGOSTINO. I was intimately involved with it. Because it was a nuclear security summit, our folks in the NNSA were actively involved in the workups to this.

Senator REED. Yes.

Mr. D'AGOSTINO. It's taken almost a year, frankly, worth of effort in securing commitments from other nations to protect their material, to repatriate highly-enriched uranium or plutonium that either United States or Russia had provided; and to convert research reactor cores from highly-enriched uranium to low-enriched uranium. Starting on Sunday, it culminated with a set of bilateral meetings, and Monday, with our counterparts from other nations, and then the summit yesterday, where we actually secured commitments and received agreement on an integrated work plan. My organization was actively involved. I was there for the last 3 days.

We're quite excited about this many countries that are interested in dealing with this global problem, and addressing it in a very systematic way. Being an engineer, I like to see things follow a certain work plan, with requirements and our goal is to have an agreed work plan and meet regularly and report back up to our presidents regularly on how we're doing. Two years from now, we'll have another opportunity to ask the world, "Did we do what we said we were going to do?" I think that's very important, that followup.

Senator REED. This integrated work plan encompasses all of the nations that participated?

Mr. D'AGOSTINO. All of the nations, and possibly more. Some nations have a lot less to do than others. Obviously the United States and Russia have a fair burden and moral obligation as well as programmatic obligation to do this work. But, you've probably heard the announcements about Ukraine agreeing to give up the material they have and allowing us to bring that back to Russia; and agreements with Canada, as well, on bringing back U.S. material. We have secured agreements from various nations to allow us to put security upgrades in their facilities, put radiation detectors in their seaports, and have them take over that responsibility, and agree to sustain that. It was, frankly, remarkable.

The last piece of it, which is something that many on the committee know about, is an agreement by Russia and the United States to sign the Plutonium Management Disposition Agreement. This, unfortunately, had been in negotiation, I'm afraid to say, for 10 years. We finally got it signed, and it's an important part—that way, what we'll do is get the International Atomic Energy Agency to verify that both nations, the United States and Russia, will be eliminating 68 metric tons of plutonium, plus a couple of hundred metric tons of highly-enriched uranium to go with that. So, it's quite a set of days. We're quite happy with that.

Senator REED. Thank you very much.

Mr. D'AGOSTINO. Thanks.

Senator REED. Thanks for your testimony.

Mr. D'AGOSTINO. Thank you sir.

Senator REED. Thank you, Mr. Chairman.

Senator BEN NELSON. Thank you.

You heard my colleagues from the other side raising questions about adequate financing and funding for the job that is going to be required as part of the New START. Based on what you now know, certainly with the current budget, years 1 through 5, do you believe that there's adequate funding for the United States to fulfill our obligations under the Treaty as it relates to the nuclear arsenal?

Mr. D'AGOSTINO. Yes, Mr. Chairman, I do believe that.

Senator BEN NELSON. Is it your opinion on years 6 through 10, based on what you know at the present time and what you will be submitting as part of the 10-year plan, that there will be plans for adequate funding in those out-years, as well?

Mr. D'AGOSTINO. Yes, Mr. Chairman. Our goal is to put together that 10-year plan to describe the work, as we understand it today.

Senator BEN NELSON. Yes.

Mr. D'AGOSTINO. In recognizing that, as our project baselines are established, my goal is that those project baselines—as this plan is dynamic, change from year to year, and those project plan numbers get inserted into this plan.

Senator BEN NELSON. There is no effort, as far as you're concerned, that the front-end funding is light, inadequate, or is a smaller number than it should be, in anticipation that the out-years would be funded at a higher level. In other words, so that the funding should be adequate for each and every one of those years, based on the budgeting process that we have as part of Congress.

Mr. D'AGOSTINO. That's right, sir. We put forward a program that meets the requirements and is executable. It doesn't make sense for the executive branch to put together a political budget, because, in the end, what we're trying to do is get the job done, and get it done in a way that best uses the taxpayers' dollars and meets the requirements. That's what we have in our budget submission, sir.

Senator BEN NELSON. You don't believe that partisanship or any kind of political pressure is being placed on this budgeting process, as far as you're concerned?

Mr. D'AGOSTINO. Not as far as I'm concerned. I was intimately involved in putting this budget together, and received great support in doing so. In understanding that we needed to recapitalize our infrastructure, we needed to increase our resources in the science area, and that we needed to work on the stockpile. Sir, that's what we have before us.

Senator BEN NELSON. Okay, thank you. In connection with some facilities modernization efforts, there've always been people saying that the current facilities, in many instances, are in shambles; that they're not current, they're not up-to-date, they're not state-of-the-art, but that does not seem to be borne out by the facts, because you have, over the last several years, increased the level of facilities management during these recent years. Maybe you can tell us a little bit about some of the things that you've done so far on some of the facilities, recognizing that I think there are two major facili-

ties that are going to have to have more than some work done on them.

Mr. D'AGOSTINO. Right, certainly, absolutely, sir. We've done a significant amount, as you pointed out. I'll give you some quick examples.

Senator BEN NELSON. Sure.

Mr. D'AGOSTINO. At Sandia, for example, we've done work on a facility called the Microsystems Engineering Science Application facility. This is a facility that was critically important. It added on to an older facility, called the Microelectronics Development Laboratory. But, this facility, we knew we needed it, because, as components were getting smaller, we knew that we could pack more capability into a smaller size. When we're talking about nuclear warhead designs, size and weight are huge factors in the equation. So, that facility was up and running, supported by and authorized by Congress within the last 10 years.

Additionally, within the last 10 years, we built a facility called the Tritium Extraction Facility. This facility was vitally important to reestablishing the Nation's capability to produce and extract tritium for use in the deterrent, also vitally important, something that could get done.

We've saved the hardest for last, if I could put it one way.

Senator BEN NELSON. Sure.

Mr. D'AGOSTINO. The hard work is the uranium and plutonium work. These are the last two big facilities that have to get done. They are multibillion-dollar facilities. I won't kid you, sir, these are expensive. But, at the same time, we were trying to get as much out of what we had. Now we're at the point where we have to recapitalize those. But, just as with any large operation, any organization needs a recapitalization budget to replace buildings as they get old. We expect that to continue on, at the couple-of-hundred-million-dollar-per-year level.

Finally, one last point, if I could. Up at LANL, which had a very old administration building, it was the center building. It was one of the very first structures that went up in the early days of the Cold War. That facility was torn down and replaced with a new modern structure at LANL.

We are turning the enterprise around. But, we are now left with our big jobs, and that's what we have to get done over the next 10 years.

Senator BEN NELSON. In connection with the two new facilities, what portion of the design would be complete before construction starts?

Mr. D'AGOSTINO. My goal is to get design as close to 90 percent as possible before construction starts. The reason why I can't give you an exact number now is, it's hard for me to look out in the future and find out, "Should I wait another year and spend another X-million dollars to get that last 5 percent? Or do I have enough now to go on? Does that last 5 percent really matter with respect to performing a baseline?" But, our goal is to get into this 80- to 95-percent range on complete design before we start asking for increased resources from you, sir, and other committees, on the actual construction itself.

Senator BEN NELSON. Are you planning to get any kind of an independent cost estimate (ICE) of these facilities before you start making budget requests for significant amounts of money?

Mr. D'AGOSTINO. Absolutely. DOE recently—I would say, within the last 2 months, put out a new policy on project management. The new policy had a couple of key elements to it. One, I've just alluded to, which is this idea of doing as much design work before you commit to the construction. The second one is ICEs at each of the critical decision points. In the past, we would only do this ICE at one of the major critical decision points. We're going to do them at each of the four critical decision points. The third element is making sure that we have qualified project managers, and the right number of them on each of the projects. There's an algorithm that's been developed, and an approach and a desire to make sure we have enough project managers on the project.

There are a couple of others, but for the sake of brevity, we could submit those details for the record, if you'd like. Or I could provide a copy of that.

Senator BEN NELSON. I think that would be helpful.

Mr. D'AGOSTINO. Yes, sir.

[The information referred to follows:]

As a result of the Department of Energy (DOE)/National Nuclear Security Administration (NNSA) residing on the GAO's High Risk List for Project Management Execution, the Department conducted a Root Cause Analysis (RCA) with resultant Corrective Action Plan (CAP—July 2008). The participants in this RCA were all experienced, senior members of the Department. The second most significant root cause of project failures was determined to be the lack of Federal staff (both contract professionals and project professionals) assigned to the project management team. The corrective action for this particular item resulted in the development of an algorithm by the Office of Engineering and Construction Management (OECM) that when used would predict the necessary Federal staffing levels. This model was based upon a similar model utilized by NavFac. Although the Federal project staff can be supplemented with contractor personnel, there remain certain "inherently Federal" functions that must be executed by Federal staff and cannot be allocated to contractors.

After conducting a review of this model, NNSA adopted additional criteria into the algorithm that more closely reflected the actual staffing methodologies used within NNSA and the complexities of NNSA projects, as compared to a linear \$/FTE concept suggested by the original OECM model. NNSA then utilized the model to predict the necessary staffing levels of the five largest NNSA projects. The model's predictions were closely aligned to the Federal Project Director's staffing plans. The results indicated that NNSA had a staffing deficit on these five projects in fiscal year 2012. Further decisions regarding the funds to support the Federal Project staffing have been deferred until the fiscal year 2013 budget formulation.

To address the immediate needs of Chemical Metallurgy Research building Replacement project and Uranium Processing Facility project, NA-10 has assigned a senior Federal Project Director to establish a HQ Project Support Office which will provide oversight of all activities for these critical projects. Additional NA-10 staff have been assigned to work under this FPD's direction.

NNSA is committed to the overall improvement of project management within NNSA and the eventual, near-term removal of NNSA from the GAO's High Risk List. As such, NNSA will continue development of the logistics necessary to obtain the additional required staff to support these critical NNSA projects.

## NNSA Project Staffing Review

April 14, 2010

### Presentation Content

- Review Methodology
- Review Charge
- NNSA Model Algorithm
  - NNSA vs OECM Model Comparison
- Project Results
  - NNSA Model Verification of FPD Estimates
  - Support available (Feds, Matrix, Technical Assistance, etc)
  - Delta from need
- Total NNSA FTE Needs from 2010 Baseline
- Funding Requirement
- Conclusions
- Recommendations

## Review Methodology

- Team of 5 individuals
  - 1, Federal Team Lead, 25 years of Government experience
  - 4, Consultants, Over 120 years of Government experience
- Interview the FPDs and project staff of the largest NNSA projects
  - MFFF
  - WSB
  - PDCF
  - UPF
  - CMRR

3

## Review Charge

1. How do the Federal IPTs for the five largest NNSA projects compare with the DOE Guide 413.3-19 model results?
2. Make a determination on the reasonableness of the size and composition of the five project IPTs.
3. Considering the OECM Staffing Model, identify a NNSA “normalizing” factor to better represent and standardize the NNSA approach to project staffing.

4

## NNSA Project Comparison with Draft DOE Guide 413.3-19

- OECM Model Linear function.
  - Primarily affected by Productivity Factor (used \$10M/FTE)
- NNSA developed an algorithm to give credit for project team experience and project efficiencies.
  - Larger the project; more experience the Federal IPT.
- NNSA modified the input criteria and gave points to CD-3 in the Project Phase.
- In the unadjusted case, from \$0 - \$100M of annual authority, the NNSA model suggests more FTEs, but from \$100 to infinity, the OECM model suggests more FTEs.
  - Major Key Factor after Productivity Factor is Project CD Phase.

5

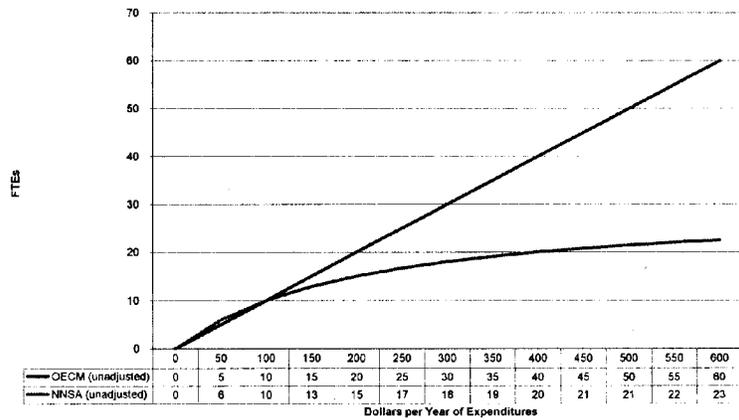
## NNSA Algorithm

- OECM model based on FTEs/\$M
  - Linear model and does not take into consideration experience.
  - Not giving credit for more visible project and a more experienced FPD and project team.
  - No efficiencies
- NNSA model is logarithmic-like using slope calculation.
  - Allows calculations close to zero.
  - More closely matches FPDs' published needs.
- By default, NNSA model considers project team experience.

6

## NNSA vs OECM - Unadjusted

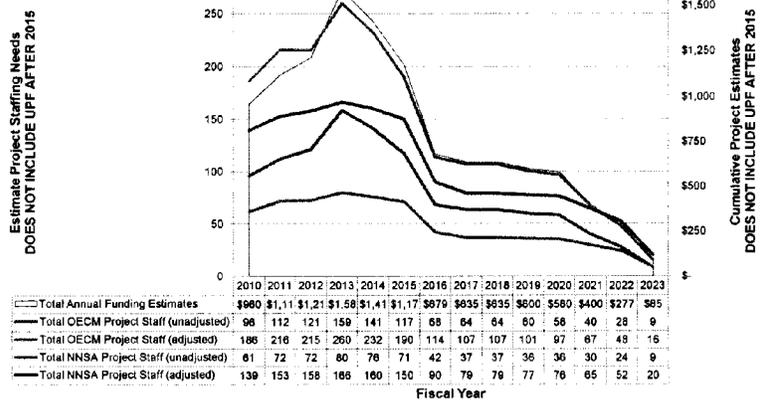
NNSA vs. OECM Unadjusted Project FTEs  
Economies of Scale vs Linear



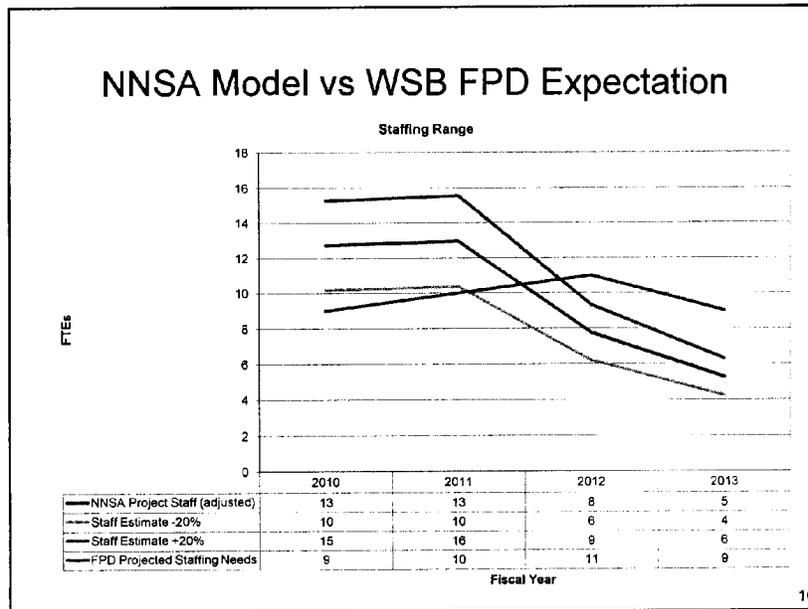
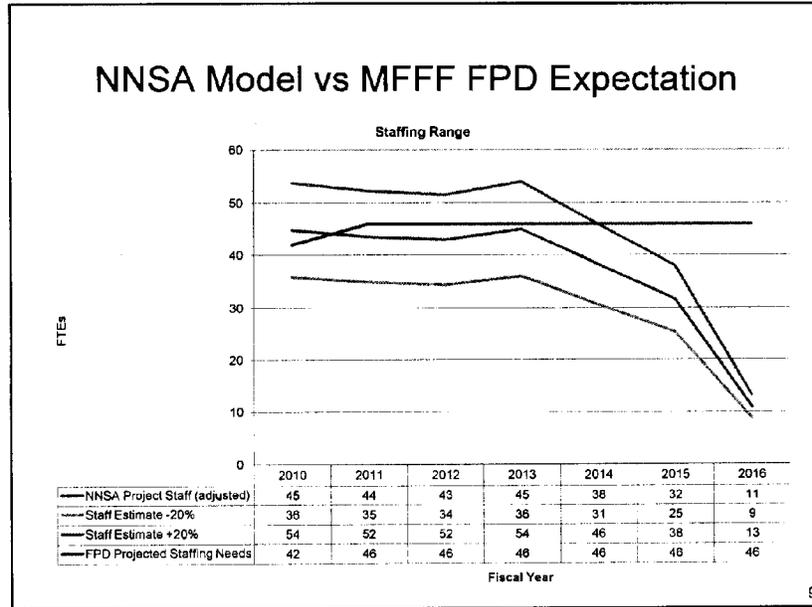
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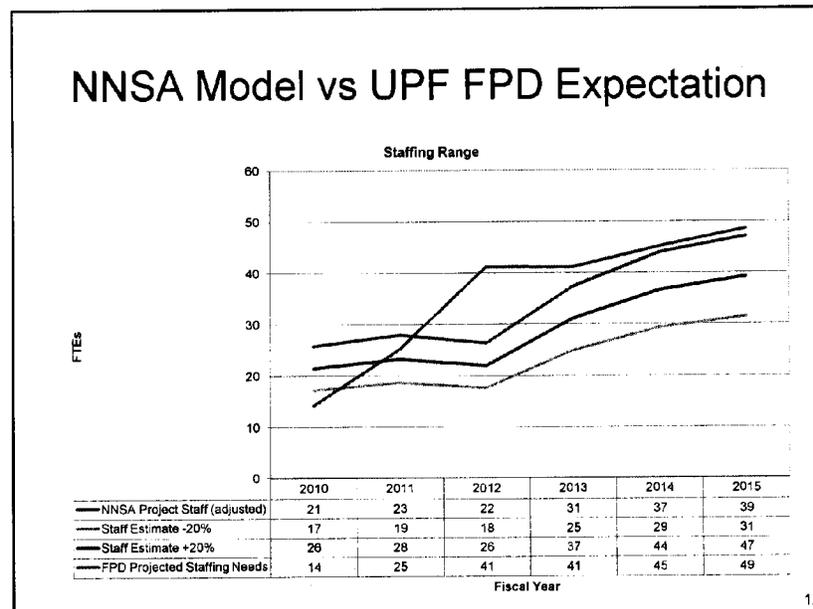
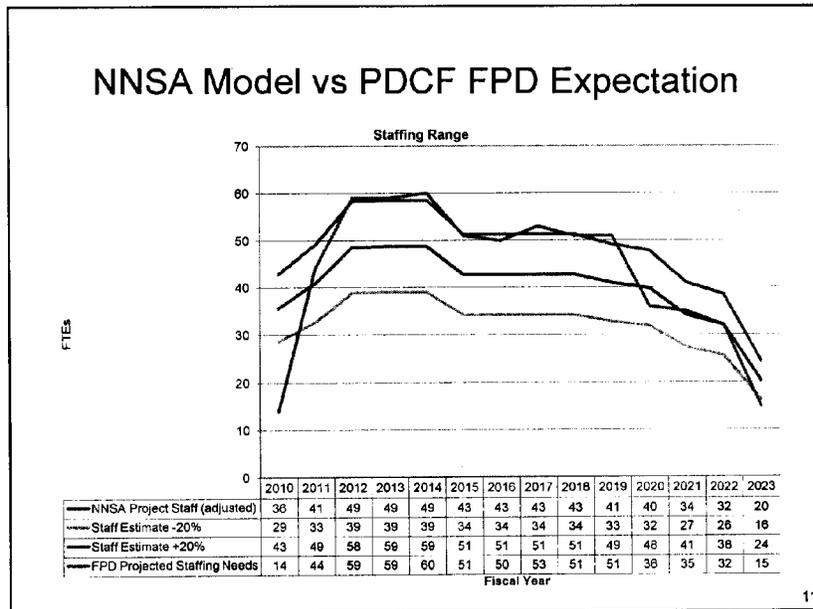
## NNSA vs OECM Model

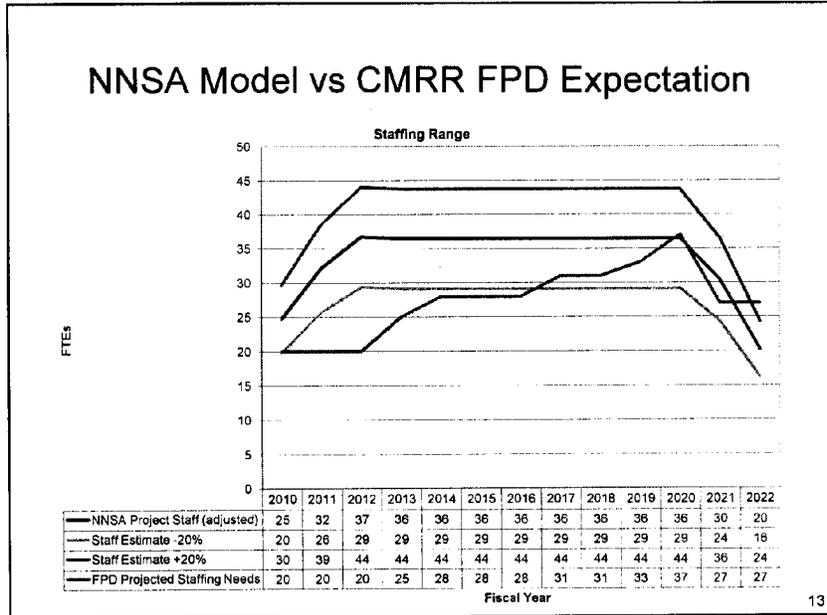
NNSA vs OECM Model for MFFF, WSB, PDCF, UPF, & CMRR



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### MFFF FTE Delta

	MFFF FPD Needs						
	CD-3	CD-3	CD-3	CD-3	CD-3	CD-3	CD-3
Fiscal Year	2010	2011	2012	2013	2014	2015	2016
<b>Critical Decision</b>							
Fed Direct	12	14	14	14	14	14	14
Fed Matrix (Site Office, NNSA SC)	10	10	10	10	10	10	10
Technical Assistance	5	7	7	7	7	7	7
Other (FLP, COE, etc)	15	15	15	15	15	15	15
<b>Total</b>	<b>42</b>	<b>46</b>	<b>46</b>	<b>46</b>	<b>46</b>	<b>46</b>	<b>46</b>
<b>NNSA MFFF Model</b>	45	44	43	45	38	32	11
-20%	36	35	34	36	31	25	9
20%	54	52	52	54	46	38	13
<b>Delta from NNSA Model</b>	-3	2	3	1	8	14	35
-20%	6	11	12	10	15	21	37
20%	-12	-6	-6	-8	0	8	33
<b>FPD Support Delta from 2010</b>	0	-4	-4	-4	-4	-4	-4
<b>FPD FED Support Delta from 2010</b>	0	-2	-2	-2	-2	-2	-2

## WSB FTE Delta

Critical Decision Fiscal Year	WSB FPD Needs			
	CD-3 2010	CD-3 2011	CD-3 2012	CD-3 2013
<b>Fed Direct</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>6</b>
Fed Matrix (Site Office, NNSA SC)	3	3	3	3
Technical Assistance				
Other (FLP, COE, etc)				
<b>Total</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>9</b>
<b>NNSA WSB Model</b>	<b>13</b>	<b>13</b>	<b>8</b>	<b>5</b>
-20%	10	10	6	4
20%	15	16	9	6
<b>Delta from NNSA Model</b>	<b>-4</b>	<b>-3</b>	<b>3</b>	<b>4</b>
-20%	-1	0	5	5
20%	-6	-6	2	3
<b>FPD Delta from 2010</b>	<b>0</b>	<b>-1</b>	<b>-2</b>	<b>0</b>
<b>FPD FED Support Delta from 2010</b>	<b>0</b>	<b>-1</b>	<b>-2</b>	<b>0</b>

15

## PDCF FTE Delta

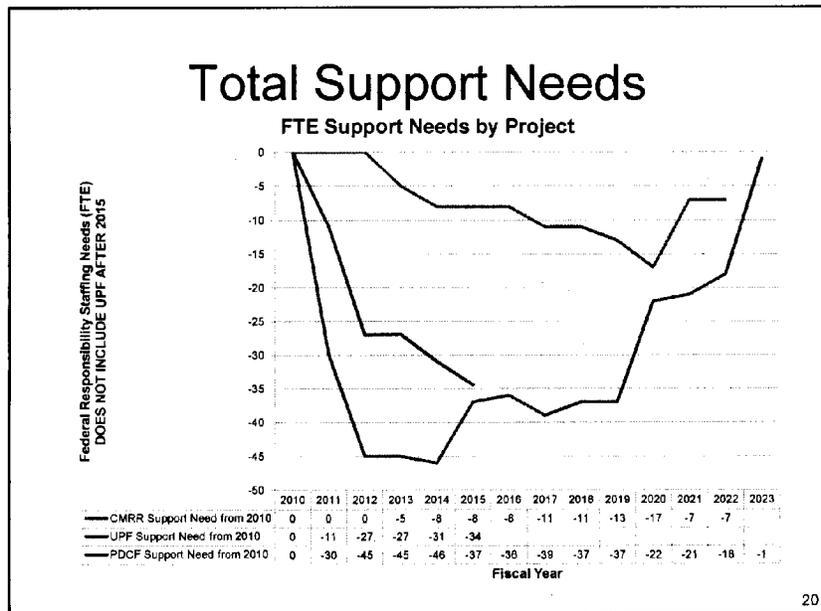
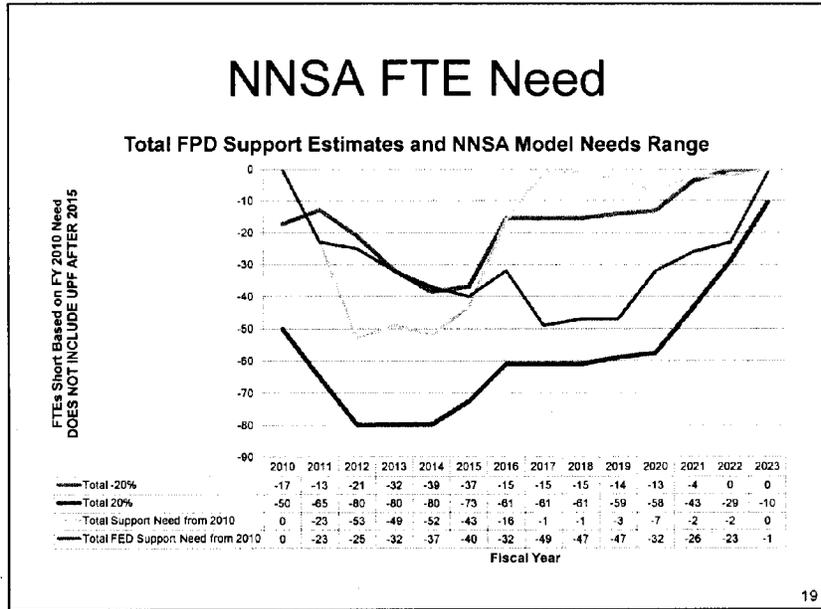
Critical Decision Fiscal Year	PDCF FPD Needs (Site Office Non-contributor)													
	CD-1 2010	CD-1 2011	CD-2 2012	CD-3 2013	CD-3 2014	CD-3 2015	CD-3 2016	CD-3 2017	CD-3 2018	CD-3 2019	CD-3 2020	CD-3 2021	CD-3 2022	CD-3 2023
<b>Fed Direct</b>	<b>14</b>	<b>27</b>	<b>27</b>	<b>27</b>	<b>30</b>	<b>33</b>	<b>34</b>	<b>53</b>	<b>51</b>	<b>51</b>	<b>36</b>	<b>35</b>	<b>32</b>	<b>15</b>
Fed Matrix (Site Office, NNSA SC)	0	9	16	16	15	9	8	0	0	0	0	0	0	0
Technical Assistance	0	8	16	16	15	9	8	0	0	0	0	0	0	0
Other (FLP, COE, etc)														
<b>Total</b>	<b>14</b>	<b>44</b>	<b>59</b>	<b>59</b>	<b>60</b>	<b>51</b>	<b>50</b>	<b>53</b>	<b>51</b>	<b>51</b>	<b>36</b>	<b>35</b>	<b>32</b>	<b>15</b>
<b>NNSA PDCF Model</b>	<b>36</b>	<b>41</b>	<b>49</b>	<b>49</b>	<b>49</b>	<b>43</b>	<b>43</b>	<b>43</b>	<b>43</b>	<b>41</b>	<b>40</b>	<b>34</b>	<b>32</b>	<b>20</b>
-20%	29	33	39	39	39	34	34	34	34	33	32	27	26	16
20%	43	49	58	59	59	51	51	51	51	49	48	41	38	24
<b>Delta from NNSA Model</b>	<b>-22</b>	<b>3</b>	<b>10</b>	<b>10</b>	<b>11</b>	<b>8</b>	<b>7</b>	<b>10</b>	<b>8</b>	<b>10</b>	<b>-4</b>	<b>1</b>	<b>0</b>	<b>-5</b>
-20%	-15	11	20	20	21	17	16	19	17	18	4	8	6	-1
20%	-29	-5	1	0	1	0	-1	2	0	2	-12	-6	-6	-9
<b>FPD Delta from 2010</b>	<b>0</b>	<b>-30</b>	<b>-45</b>	<b>-45</b>	<b>-46</b>	<b>-37</b>	<b>-36</b>	<b>-39</b>	<b>-37</b>	<b>-37</b>	<b>-22</b>	<b>-21</b>	<b>-18</b>	<b>-1</b>
<b>FPD FED Support Delta from 2010</b>	<b>0</b>	<b>-13</b>	<b>-13</b>	<b>-13</b>	<b>-16</b>	<b>-19</b>	<b>-20</b>	<b>-39</b>	<b>-37</b>	<b>-37</b>	<b>-22</b>	<b>-21</b>	<b>-18</b>	<b>-1</b>

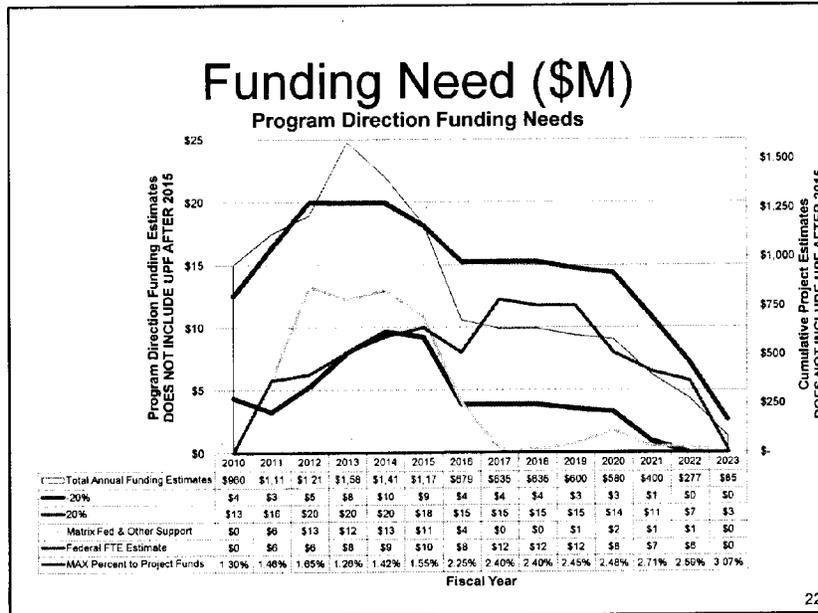
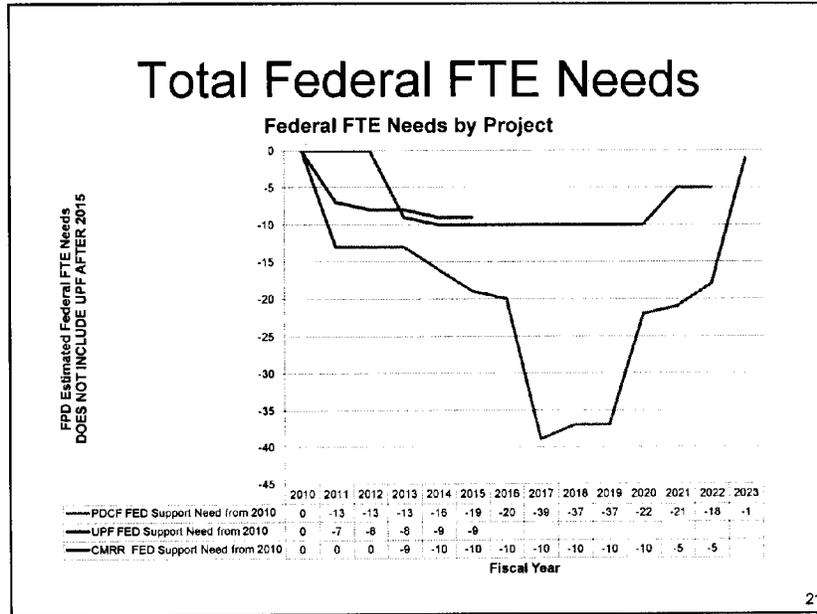
### UPF FTE Delta

		UPF FPD Needs (Site Office Contributor)					
Critical Decision		CD-1	CD-2	CD-2	CD-3	CD-3	CD-3
Fiscal Year		2010	2011	2012	2013	2014	2015
<b>Fed Direct</b>		5	12	13	13	14	14
Fed Matrix (Site Office, NNSA SC)		4	4	4	2	2	3
Technical Assistance		5	9	24	26	29	32
Other (FLP, COE, etc)							
	<b>Total</b>	14	25	41	41	45	49
<b>NNSA UPF Model</b>		21	23	22	31	37	39
	-20%	17	19	18	25	29	31
	20%	26	28	26	37	44	47
<b>Delta from NNSA Model</b>		-7	2	19	10	8	9
	-20%	-3	7	24	16	16	17
	20%	-12	-3	15	4	1	2
	<b>FPD Delta from 2010</b>	0	-11	-27	-27	-31	-34
	<b>FPD FED Support Delta from 2010</b>	0	-7	-8	-8	-9	-9

### CMRR FTE Delta

		CMRR FPD Need (Site Office Contributor)												
Critical Decision		CD-1	CD-2	CD-3										
Fiscal Year		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>Fed Direct</b>		5	5	5	14	15	15	15	15	15	15	15	10	10
Fed Matrix (Site Office, NNSA SC)		9	9	9	5	7	7	7	10	10	12	16	16	16
Technical Assistance		6	6	6	6	6	6	6	6	6	6	6	1	1
Other (FLP, COE, etc)														
	<b>Total</b>	20	20	20	25	28	28	28	31	31	33	37	27	27
<b>NNSA CMRR Model</b>		25	32	37	36	36	36	36	36	36	36	36	30	20
	-20%	20	26	29	29	29	29	29	29	29	29	29	24	16
	20%	30	39	44	44	44	44	44	44	44	44	44	35	24
<b>Delta from NNSA Model</b>		-5	-12	-17	-11	-8	-8	-8	-5	-5	-3	1	-3	7
	-20%	0	-6	-9	-4	-1	-1	-1	2	2	4	8	3	11
	20%	-10	-19	-24	-19	-16	-16	-16	-13	-13	-11	-7	-9	3
	<b>FPD Delta from 2010</b>	0	0	0	-5	-8	-8	-8	-11	-11	-13	-17	-7	-7
	<b>FPD FED Support Delta from 2010</b>	0	0	0	-9	-10	-10	-10	-10	-10	-10	-10	-5	-5





## Observations

- NNSA is severely behind in Federal Staffing needs starting in FY2010 (PDCF, UPF, CMRR)
- MFFF and WSB FPDs are on track with Program Office staffing support.
- PDCF FTE needs are most accurate due to complete “bottoms-up” staffing estimate.
- NNSA model is good verification tool of FPD Federal staffing plan/needs.
- OECM Model does not consider CD-4 activities.



Department of Energy  
National Nuclear Security Administration  
Washington, DC 20585

June 14, 2010

EXEC-2010-010114

MEMORANDUM FOR THE DEPUTY SECRETARY

OFFICE OF THE ADMINISTRATOR

FROM: THOMAS P. D'AGOSTINO  
ADMINISTRATOR

SUBJECT: Staffing Capacity for Capital Asset Projects

**ISSUE:** In response to Ingrid Kolb's May 5, 2010, memorandum, subject as above, I offer the following plan of action to satisfy NNSA's project staffing issues.

**BACKGROUND:** In your March 4, 2010, memorandum regarding Project Management Principles, you addressed capital asset project staffing. In part, you referred to the Root Cause Analysis Corrective Action Plan and discussed the need to adequately staff capital asset projects with Federal employees. The Office of Engineering and Construction Management (OECM) proposed a staffing model, based on the Department of Defense project staffing model, which is proposed to be used by DOE and National Nuclear Security Administration (NNSA) Program Offices to help determine adequate staffing levels for capital asset projects when no other, more authoritative estimate is available. The NNSA Office of Project Management and Systems Support (NA-54) conducted an evaluation of the OECM staffing model using several nuclear, high profile NNSA projects to validate the OECM model and compare the results to the Federal Project Director's (FPDs) assessed needs.

The OECM proposed DOE Guide – 413.3-19, *Federal Staffing Guide for Project Management*, can be used as a guide to determine the appropriate level and type of Federal personnel to effectively plan, direct, and oversee project execution. A preliminary review by NNSA indicates that the proposed model in the guide appears to overstate the size of NNSA Federal Integrated Project Teams needed to provide effective project management and oversight for large projects (i.e., those with Budget Authority (BA) > \$100M/yr).

The results of the attached study confirmed that: (a) the desired Federal staffing levels between projects can vary widely, based on project-specific details. In particular, the Federal management approach that is employed by the FPD to oversee and manage the project is the determining factor in the level of Federal staffing required; and (b) the Federal staffing needs do not correlate well to annual BA levels. To the extent that a correlation exists, a quasi-logarithmic behavior fits data better than does the strictly linear model that was developed by OECM above a BA level of approximately \$100M/yr.

**RECOMMENDATION:** The NNSA Business and Operating Policy (BOP) will require FPDs to develop a bottoms-up staffing estimate, prepare a Federal oversight plan for each NNSA project, compare results to the NNSA staffing model, and submit results to the Acquisition Executive for approval at Critical Decision-1 (CD-1), *Approved Alternative Selection and Cost Range*. Once approved, the respective Program Office would then develop a plan for addressing all project staffing needs during the annual budget formulation process. This method of address can include: submittal of a budget request for additional program direction funding (for direct hire of project resources to satisfy the "inherently" Federal functions), or re-allocation of existing NNSA resources to more adequately address the project personnel shortages.

NNSA will adopt the use of the NNSA staffing model as an approach for benchmarking Federal staffing needs on capital asset projects against bottoms-up estimates developed by the FPDs. NNSA will codify the use of the NNSA staffing algorithm in a NNSA BOP as a tool to verify a FPD's Federal oversight plan. This Federal oversight plan will be submitted at CD-1 to the Acquisition Executive and be incorporated in the budget formulation process. The BOP will be placed in the RevCom process no later than August 31, 2010. In addition, by September 30, 2010, NNSA will conduct a staffing evaluation utilizing the NNSA staffing model for those NNSA projects that have achieved a CD-1 decision. Based on the results of this evaluation, NNSA will evaluate actions to satisfy staffing deficits.

I am taking action and including the request for additional program direction funding in FY 2012 to support the results of the staffing review.

Attachment

APPROVE:  DISAPPROVE: \_\_\_\_\_ DATE: JUN 30 2010

CONCURRENCES: MA-1/Ingrid Kolb/6/10/10

*Provided that all NNSA plans, evaluations and decisions hereunder are reviewed/cleared by MA/OECM.*

**PROJECT STAFFING REVIEW**  
of  
**MOX FUEL FABRICATION FACILITY,  
WASTE SOLIDIFICATION BUILDING,  
PIT DISASSEMBLY AND CONVERSION FACILITY,  
URANIUM PROCESSING FACILITY, and  
CHEMISTRY and METALLURGY RESEARCH BUILDING  
REPLACEMENT**

Review Date: March 22-31, 2010



April 14, 2010

A handwritten signature in black ink, appearing to be "C. J. Paul", written over a horizontal line.

Approved by:  
Office of Project Management and Systems Support, NA-54



**PROJECT STAFFING REVIEW**  
**MFFF, WSB, PDCF, UPF, and CMRR**

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**PROJECT STAFFING REVIEW****MFFF, WSB, PDCF, UPF, and CMRR****SECTION 1 – EXECUTIVE SUMMARY****1.1 INTRODUCTION**

The National Nuclear Security Administration (NNSA) is in the midst of significant capital improvements to ensure the safe, environmentally compliant, and secure activities associated with the stewardship of the nation's nuclear stockpile and the disposition of excess nuclear materials. These capital improvements include large, complex, nuclear projects ranging in cost from approximately \$350 million to more than \$ 4.5 billion over the next ten to fifteen years. To ensure that these projects are accomplished in an efficient and cost effective manner, the appropriate Federal management and oversight is necessary. This management and oversight is conducted by Integrated Project Teams (IPT) located at the project work location, staffed by Federal employees with assistance, as necessary, from other agency personnel and support service contractor team members. The IPT's traditionally report to the specific site office management, which are ultimately responsible for the project's success. In some cases, NNSA Headquarters program offices have fielded staff to manage and oversee project at a site location, and have integrated staff support from the site offices, who become ultimately responsible for the project's success.

The Office of Engineering and Construction Management drafted DOE Guide – 413.3-19, *Federal Staffing Guide for Project Management*, to be used to determine the appropriate level and type of federal personnel to effectively plan, direct, and oversee project execution. A preliminary review by DOE program offices (including NNSA) indicated that the guide's model appeared to overstate the size of federal PM teams needed to provide effective project management and oversight.

**1.2 CHARGE TO REVIEW COMMITTEE**

The NNSA Office of the Administrator (NA-1) tasked the Office of Project Management and Systems Support (NA-54) to examine the five largest NNSA projects and determine:

1. How do the Federal IPTs for the five largest NNSA projects compare with the DOE Guide 413.3-19 model results?
2. Make a determination on the reasonableness of the size and composition of the five project IPTs.
3. Considering the OECM Staffing Model, identify a NNSA "normalizing" factor to better represent and standardize the NNSA approach to project staffing.



The five projects are:

- Mixed Oxide Fuel Fabrication Facility (MFFF), Savannah River Site (SRS);
- Waste Solidification Building (WSB), SRS;
- Pit Disassembly and Conversion Facility (PDCF), SRS;
- Uranium Processing Facility (UPF), Y-12 Plant; and
- Chemistry and Metallurgy Research Building Replacement (CMRR), Los Alamos National Laboratory (LANL).

### 1.2.1 Response to Charge

The Review Committee was comprised of a team lead from NA-54, and four senior consultants with significant experience in major project management at both the field and HQ level. The resumes of the team members are located in Appendix C.

The team travelled to the three sites (SRS, Y-12 and LANL) for interviews with IPT Federal Project Directors (FPDs), members of their staff, site office senior staff, and toured most of the facilities associated with these projects. Lines of inquiry were established prior to site visits to help ensure consistency among the analysis of each project. In-depth discussions regarding the oversight philosophy, staffing methodology, use of the OECM draft guidance, experience with other major projects, and specific site experience occurred at each site. Additional reviews of project documentation regarding staffing and project specific activities were also conducted.

The analysis and the resultant recommendations and comments provided as a part of this effort will assist in determining appropriate staffing levels of current and future projects, at the various project decision points; compare those with the OECM guidelines as adjusted for NNSA projects; and form a basis to allow decision maker(s) to budget for the funds and FTE levels necessary to provide successful management oversight. This will also allow senior NNSA management to maintain consistent staffing levels within the site office structure while maintaining a consistent oversight philosophy and methodology.

Finally, the results of this task will assist NNSA management in continuously improving the quality and consistency of project management at all levels of projects across NNSA.

### 1.2.2 Results

#### REPORT PROCESS

- Report will be issued in Draft for Factual Accuracy no later than May 5, 2010.
- Send Factual Accuracy comments to Team Lead (Cliff Holman) within one day of receiving the Draft for Factual Accuracy Report.
- Report will be issued in Final following resolution of the factual accuracy comments.



## PROJECT STAFFING REVIEW

MFFF, WSB, PDCF, UPF, and CMRR

### SECTION 2 – GENERAL REVIEW INFORMATION

#### 2.1 BACKGROUND

Independent Project Reviews (IPRs) are one means by which NA-54 can provide benefits to projects that are to acquire capital assets. The Review, performed by experts not involved with the Project, details observations and recommendations that can be used by Project staff to optimize project performance or justify a mission need. The IPR provides an opportunity for the Project staff to obtain professional, independent, opinions or determinations on the Project, or Projects, such as the case with this report. The Review can be used to benefit Projects by adding both a valuable, outside perspective and suggestions from lessons learned at other sites with similar projects. Although the IPR Report and subsequent briefings are products of the Review Committee, the Review itself should be a collaborative process with a high degree of Project Staff interaction. The Review follows procedures set forth in DOE Order 413.3A (7/26/06) and Business Operating Procedure 50.003.

#### 2.2 REVIEW PROCESS

The Project Staffing Review took place on March 22-24, 2010 in Aiken, SC, at the SRS; March 25, 2010 in Oak Ridge, TN, at the Y-12 Plant; and March 30, 2010, in Los Alamos, NM, at LANL. Prior to the site visit, the Project staff was asked to supply the Review Committee with relevant documents to help determine the appropriate project staffing levels and compare to the Office of Engineering and Construction Management staffing model. Additional documents were provided at the time of the onsite visit. The document examination was followed by face-to-face interviews with Project staff specialists.

Each Project was assigned a leader from the Review Committee, who was responsible for collecting and producing the observations and recommendations related to that project. A Factual Accuracy Draft IPR Report was issued within a week of the last interview and sent in draft to the Project staff. The Project staff's review of the Factual Accuracy Draft Report ensures that all of the statements in the report are accurate as of the date of the IPR. The final step in the review process is to issue the Final IPR Report and brief the results to the appropriate level of management.

##### 2.2.1 Project Participants

The following Federal Project Directors and integration staff were interviewed as primary points of contact for project management on the respective projects. Appendix G contains all the project personnel interviewed.



## SECTION 2 – GENERAL REVIEW INFORMATION

NAME	AFFILIATION	TELEPHONE
Clay Ramsey	NNSA, NA-265	803-952-4283
Tom Cantey	NNSA, NA-266	803-952-3754
Scott Cannon	NNSA, NA-26	803-952-5860
Harry Peters	NNSA, YSO	865-576-6812
Herman LeDoux	NNSA, LASO	505-665-8432
Bill Clark	NNSA, NA-262	803-952-7046
Roger Snyder	NNSA, LASO	505-667-2650

**2.2.2 Review Committee Members**

The following experts staffed the Review Committee. A resume for each Team Member is provided in Appendix C.

NAME	AFFILIATION	LEADER FOR FOCUS AREA
<b>Review Committee Leader:</b>		
Cliff Holman	NA-54/NNSA SC	Review Committee Leader
<b>Other Review Committee Members:</b>		
John Phillips	SMS	MFFF, WSB, & PDCF
Ralph Erickson	Navarro	Model Comparison
John Scango	TechSource	CMRR & Conclusions
Dale Oliff	TechSource	UPF

**2.3 REVIEW REPORT DEFINITIONS*****Independence***

During the formulation of Independent Project Review Committees, the independence of the Review Committee members must be maintained. Two independence standards must be used, one for the Review Committee Leader and a slightly less rigorous standard for the remaining Team members.

**Team Leader** - For qualification as an NNSA Independent Review Committee Leader or Chair of a Technical Independent Project Review, an individual can have no present or prior participation in the project to be reviewed. Participation means direct responsibility for or assignment to a given Project Team, including NNSA, other Federal and state agencies, contractors and sub-tier contractors. Team Leaders may not review projects from their current line program [Deputy and Associate Administrators] or field site.

**Review Committee Members** - To qualify as a member of a Review Committee, an individual can have no current involvement in the project to be reviewed. In addition to a personal standard, the organization to which an individual is currently assigned cannot be a participant in the project. Organization is defined to be a corporation, non-profit entity, state or Federal agency, laboratory, or NNSA program/project office (at the



Deputy and Associate Administrators level). Headquarters program personnel may participate as observers or in limited non-critical roles.

Other exclusion criteria may apply:

- An individual or the organization to which he/she belongs, has a relationship to the project being reviewed which would cause, or could be perceived to cause, bias in their assessment of the project.
- An individual is a member of a corporation which is an active competitor to the corporation performing the project which is being reviewed.

In matters of judgment, the bias shall be towards erring on the side of conservatism in order to ensure the integrity of the review process. That is, the bias shall be to exclude individuals and entities which may have the potential to have a conflict of interest.

In cases of dispute, the decisions of the Review Committee Leader, in consultation with the Director, Office of Project Management and Systems Support shall make a determination. In extreme cases where there is a disagreement, the decision may be appealed to the Deputy Associate Administrator of Infrastructure and Environment, whose decision shall be final. In some cases, it may be necessary to document the basis for inclusion/exclusion of members of the Review Committee.



### PROJECT STAFFING REVIEW

#### MFFF, WSB, PDCF, UPF, and CMRR

#### SECTION 3 – PROJECTS REVIEWED

##### 3.1 MOX FUEL FABRICATION FACILITY

The MFFF will process surplus plutonium oxide into mixed oxide fuel assemblies for use in commercial power reactors. The MFFF is integral with two other NA-20 projects at the Savannah River Site. The plutonium oxide output from the PDCF will be one of the feeds to the MFFF. The WSB processes waste from both the PDCF and the MFFF.

The MFFF project, currently under construction, is well defined in terms of the scope, cost, and schedule. The project is scheduled for completion in FY 2016 with a Total Project Cost of \$4.86B. The MFFF is being constructed under a FAR contract and managed by the MFFF Federal IPT. As such, the MFFF team assumes many of the contract administration and management roles that typically are performed by M&O contractors at the eight NNSA sites.

##### 3.1.1 Project Management Philosophy and Status

The MFFF project staffing plan, shown below, was discussed with the FPD, Deputy FPD, NNSA Site Office Deputy Manager, MFFF senior engineer, the project controls lead, and the NA-26 Director of the Site Engineering and Project Integration Division at SRS. The MFFF is regulated and will be licensed by the Nuclear Regulatory Commission (NRC). The NRC provides 10-15 FTEs for nuclear safety and licensing oversight. This project benefits from the NA-262 Site Engineering and Project Integration Division, which provides project matrix support as well as project integration services. Contract support service is available as well as Corps of Engineers support through an interagency agreement. The Corps of Engineers support is included in the Support Contractor row in the table below. Finally, the project is utilizing two Future Leaders. The Future Leader positions do not count against any FTE limit.

The MFFF dedicated team members are employees of NA-26. The project is in construction, and the project staff is near its planned peak. The planned staffing is based on a well defined project cost and schedule baseline.



### 3.1.2 FPD Staffing Projections

Fiscal Year	2010	2011	2012	2013	2014	2015	2016
BA (\$M)	\$561	\$506	\$482	\$569	\$340	\$217	\$44
Fed Direct FTE	12	14	14	14	14	14	14
Fed Matrix FTE	10	10	10	10	10	10	10
Support Contractor FTE	5	7	7	7	7	7	7
Sub-Total FTE	29	31	31	31	31	31	31
Other (NRC, 10-15/yr) FTE	13	13	13	13	13	13	13
Sub-Total FTE	42	44	44	44	44	44	44
Other (Future Leaders) FTE	2	2	2	2	2	2	2
<b>Total FTE</b>	<b>44</b>	<b>46</b>	<b>46</b>	<b>46</b>	<b>46</b>	<b>46</b>	<b>46</b>

### 3.1.3 Review Committee Analysis

The current MFFF federal oversight appears to be appropriate and effective. The MFFF project staffing plan is in close agreement with the Review Committee Recommendation. The Review Committee has no recommended adjustments to the staffing plan other than to ramp down the project team towards the end of the project.

The MFFF project team also ran the OECM draft model for the MFFF project. The results along with the Review Committee recommendations are provided in the chart below. The Review Committee recommendations are derived from the Review Committee developed model, which is based on the OECM draft model, but modified to include staffing efficiencies based on project maturity and employee experience.

#### OECM Project Staffing Model and Review Committee Recommendation

Fiscal Year	CD-3						
	2010	2011	2012	2013	2014	2015	2016
Project BO Profile (\$M)	\$561	\$506	\$482	\$569	\$340	\$217	\$44
OECM Model FTE	88	80	76	90	54	34	7
Review Committee Recommendation FTE	45	44	43	45	38	32	11

**Recommendation:** Plan to ramp down the MFFF project staff in FY 14 - FY 16, as shown by the Review Committee recommended FTE above.



The OECM model run for MFFF gives a total staff as much as 100% higher than the MFFF project staffing plan and the Review Committee recommended staffing during the peak years. The difference is caused by a constant productivity factor for \$/FTE in the OECM draft staffing model versus an increasing productivity factor with increasing annual cost in the Review Committee staffing model. The Review Committee believes a constant productivity factor for \$/FTE is not reasonable. Economies of scale should be realized.

See Section 4.0 for more of the Review Committee's assessment and recommendations regarding the OECM draft staffing model.

### **3.2 WASTE SOLIDIFICATION BUILDING**

The WSB will process radioactive waste streams from both the MFFF and PDCF. Transuranic (TRU) waste will be processed into forms suitable for disposal at the Waste Isolation Pilot Plant (WIPP). Low Level waste will be processed into forms suitable for disposal at the Nevada Test Site. The project is planned for a FY 2013 completion at a Total Project Cost of \$344.5M.

The WSB is being constructed by the SRS M&O contractor – Savannah River Nuclear Solutions (SRNS). The FPD's dedicated team members are also NA-26 employees. Likewise the WSB FPD has access to the NA-26 on-site project support organization.

The project is in construction, and the project staff is near its planned peak. The planned staffing is based on a well defined project cost and schedule baseline.

#### **3.2.1 Project Management Philosophy and Status**

The Review Committee interviewed the FPD, Deputy FPD, NNSA Site Office Deputy Manager, the NA-26 Director of the Site Engineering and Project Integration Division at SRS, two senior project construction engineers, and the NNSA Site Office Deputy Manager. This project also benefits from the NA-26 Site Engineering and Project Integration Division, which provides project matrix support, as well as project integration services. Contract support service is available, as well as Corps of Engineers support through an interagency agreement. The Corps of Engineers support is included in the Support Contractor row in the table below. The M&O owns and manages the construction contract and provides design, construction, and start-up integration. The following WSB staffing plan was provided to the Review Committee.



### 3.2.2 FPD Staffing Projections

Fiscal Year	2010	2011	2012	2013
<b>BA (\$M)</b>	\$77	\$79	\$41	\$26
<b>Fed Direct FTE</b>	6	7	8	6
<b>Fed Matrix FTE</b>	3	3	3	3
<b>Support Contractor FTE</b>	0	0	0	0
<b>Total FTE</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>9</b>

### 3.2.3 Review Committee Analysis

The Review Committee ran the OECM draft staffing model and developed the Review Committee staffing recommendations. The Review Committee recommendations are based on the Review Committee developed staffing model. The results are shown below.

#### OECM Project Staffing Model and Review Committee Recommendation

Fiscal Year	CD-3			
	2010	2011	2012	2013
<b>Project BO Profile (\$M)</b>	\$77	\$79	\$41	\$26
<b>OECM Model FTE</b>	12	12	6	4
<b>Review Committee recommendation FTE</b>	<b>13</b>	<b>13</b>	<b>8</b>	<b>5</b>

The WSB project, currently under construction, is well defined in terms of the scope, cost, and schedule. Design is essentially complete. The staff is at its planned peak. The staff consists of experienced and well qualified persons. For this size project, the Review Committee believes the OECM draft staffing model, and in particular the productivity factor of \$10M/FTE, is appropriate.

Both the OECM staffing model and the Review Committee recommended staffing suggest that the WSB projected staffing needs are slightly understated in the near term, i.e. FY 10 and FY 11. The Review Committee recognizes that the high quality and experience of the staff may off-set the perceived under-staffing.

The Review Committee was informed that the Deputy FPD provides extensive project controls oversight for the WSB project. On large projects, the Review Committee believes a government projects controls specialist should be permanently assigned to the Federal IPT. However, early in the WSB project, the FPD and the NA-26 Project Integration Division Director made a decision to transfer a project controls FTE from the WSB IPT to the Project Integration Division, thereby transferring a FTE from full-time to matrix support. In part, the FTE is responsible for assuring the WSB budget and funding are consistent with the Congressional allocations, as well as performing



assessments of the M&O contractor's project controls for WSB. The Deputy FPD provides an additional layer of oversight.

The project staffing does not ramp down significantly towards the end of the project as would be expected.

**Recommendation:** Ramp down the project staffing in FY 12 and FY 13 as suggested by the OECM draft staffing model and Review Committee recommended staffing shown above.

### 3.3 PIT DISASSEMBLY AND CONVERSION FACILITY

The PDCF will disassemble surplus nuclear weapons pits, and convert the surplus plutonium metal to oxide. The PDCF is integral with the other two NA-20 projects at the Savannah River Site. The plutonium oxide will be feed to the MFFF. The WSB will process waste from both the PDCF and the MFFF. The PDCF project has been delayed considerably from the original schedule due to various technical and programmatic reasons. The most recent delay is the proposed combination of this project with an Environmental Management Plutonium project to be installed in the existing Savannah River Site K Reactor building.

A CD-1 is planned for June 2011 to receive approval of the new preferred alternative by the Acquisition Executive. The project will continue with process design while developing a conceptual design for the K-Area alternative to be considered at CD-1. The design efforts are being performed by a DOE direct contract with an AE firm. The technology development is being performed by the M&O at the Los Alamos National Laboratory. The primary design agent is located in Denver, Colorado. The transition acquisition strategy is for the SRS M&O to award and manage the construction contract. The M&O will also be responsible for project management integration of design, construction, and start-up. The final acquisition strategy will be determined by the Acquisition Executive at CD-1

As with WSB and MOX, the PDCF FPD Federal team are employees of NA-26. The project staffing plan is based on the alternative to use the existing Savannah River Site K Reactor structure to house the PDCF process. The PDCF is currently in design and is evaluating the combination of this project with an Environmental Restoration and Waste Management (EM) Plutonium project, Plutonium Preparation Project (PuP).

#### 3.3.1 Project Management Philosophy and Status

The chart below shows the project staffing plan described to the Review Committee by the FPD, Deputy FPD, and the NA-26 Director of the Site Engineering and Project Integration Division at SRS. The total staffing numbers were given to the Review Committee by the FPD. Because the project is in a state of re-planning for the K Reactor alternative, the FPD and program office are understandably unwilling to provide a written funding profile or a staffing plan broken out by Federal direct, matrix, and support contractor. The staffing plan below was constructed by the Review Committee



based on interviews with the PDCF project staff. As can be seen by the matrix below, the plan is to staff up to 27 full time direct FTEs in the near term, fiscal years 2010 - 2012. The delta between the full time staff and need will be made up with matrix and contractor support. As the WSB and MFFF projects ramp down, the PDCF project plans to pick up Federal personnel from those projects. The plan is to have all full-time, functional positions staffed as Federal direct FTEs. The project team will utilize contractor support where part-time specialized tasks are needed or where specific short-term expertise is needed. The MFFF, WSB, and PDCF projects all benefit from a Site Engineering and Project Integration division, which provides part-time matrix support as well as project and program integration services to NA-26. Since the PDCF project schedule extends well beyond the other two projects, the assumption is that some of the matrix support resources currently serving MFFF and WSB will eventually be transferred directly to the PDCF FPD. Some of the MFFF, WSB, and Integration Office staff will remain and support the program and operations of the two new facilities. The resource levels for the operation of each facility is yet to be determined.

### 3.3.2 FPD Staffing Projections

Fiscal Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
<b>Fed Direct FTE</b>	14	27	27	27	30	33	34	53	51	51	36	35	32	15
<b>Fed Matrix FTE</b>	0	9	16	16	15	9	8	0	0	0	0	0	0	0
<b>Support Contracts FTE</b>	0	8	16	16	15	9	8	0	0	0	0	0	0	0
<b>Total FTE</b>	<b>14</b>	<b>44</b>	<b>59</b>	<b>59</b>	<b>60</b>	<b>51</b>	<b>50</b>	<b>53</b>	<b>51</b>	<b>51</b>	<b>36</b>	<b>35</b>	<b>32</b>	<b>15</b>

The PDCF staff also ran the OECM model by phase, i.e. by conceptual design, detail design, and construction phases. The Review Committee ran the OECM model by Fiscal Year so that the output would be easier to compare to the PDCF staffing plan and the Review Committee recommended PDCF staffing. In running the OECM model, the Review Committee used the same factors used by the PDCF staff, and extrapolated the estimated annual expenditures into individual fiscal years. The estimated annual expenditures were used solely for the purpose of estimating staffing needs and are not shown. Below are the results of the OECM model run and the Review Committee Recommendations.

### 3.3.3 Review Committee Analysis

The Review Committee recommendations result from the Review Committee developed model. The Review Committee model is discussed in section 4.0.



**OECM Project Staffing Model and Review Committee Recommendation**

Fiscal Year	CD-1		CD-2	CD-3										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
<b>OECM Model FTE</b>	42	55	65	91	91	61	61	61	61	51	51	37	32	16
<b>Review Committee Recommended FTE</b>	36	41	49	49	49	43	43	43	43	41	40	34	32	20

As mentioned in section 3.3, the project staffing plan is based on a preferred alternative to use the existing Savannah River Site K Reactor structure to house the PDCF process. This alternative has not yet been approved by the Acquisition Executive. A CD-1, which will include approval of the approved alternative, is planned for June 2011. Any change in the preferred alternative would likely result in significant changes to the project scope, cost, and schedule and would therefore necessitate a re-evaluation of the staffing plan.

The PDCF project team staffing plan was a bottoms up estimate based on a Project Oversight Plan. The oversight plan is based on DOE project oversight requirements given in various DOE orders, the FAR, and 10 CFR 830 A & B, Nuclear Facility Management, Quality and Safety.

The PDCF staffing plan is generally 20% higher than the Review Committee's recommendation. The difference is not considered to be major, but is at the upper limit of what the Review Committee considers to be a reasonable variation of + or – 20%. We therefore offer some recommendations for the PDCF staff to consider.

The Review Committee believes the PDCF staffing plan for Business Management, and in particular Contract Management, is excessive. The plan is to add 20 Business Management FTEs between FY 2012 through FY 2019; 10 of which are Contract Management. The Review Committee believes the Contract Management need is overstated. The justification for the additional contract management staff is that the design contract is a DOE direct contract. The Review Committee agrees that a DOE direct contract requires more contract management resources than an M&O hired contract, but believes the need is overstated in the plan, especially once the design effort transitions from design to design support of construction and start-up (Title III). The current plan is for the M&O to issue the construction contract(s) and to provide project integration services. If the acquisition strategy changes to a DOE direct construction contract, then the staffing numbers for contract management should be revised. The Business Management portion of the PDCF staffing plan did not appear to



be based on the same level of bottoms up detail as was documented for technical oversight.

**Recommendation:** Reduce the number of planned Business Management FTEs, and in particular, the number of planned Contract Management FTEs until an acquisition strategy is approved by the Acquisition Executive. Then provide a similar bottoms-up estimate of the required Business Management resources.

The Review Committee staffing model contains an economy of scale feature. The productivity factor increases as the planned annual expenditure increases. This is the primary difference between the Review Committee staffing model and the OEMC staffing model.

**Recommendation:** Look for economies of scale especially in the higher planned spending years and reduce the planned staffing accordingly.

The Review Committee believes at least some of the need should be fulfilled by matrix support and support service contracts. These options allow more flexibility in skill mix, especially for skills that are in short supply.

**Recommendation:** The PDCF project should plan for 20% of the staffing need through matrix support and support service contracts throughout the project.

#### 3.4 URANIUM PROCESSING FACILITY

The Uranium Processing Facility is a project to replace the essential uranium machining, casting, and other processes to support the nuclear weapons enterprise including Defense Programs, Nuclear Non-Proliferation, and Naval Reactors. The Review Committee interviewed the UPF FPD; two Deputy UPF FPDs; and additional YSO FPD staff; on their federal oversight plans for the project, application of the OEMC model, and project status. The UPF federal staff is organized into five oversight areas of the project: Engineering, Project Controls, Construction, Operations/Facility, and Quality Assurance. To cover these five areas of oversight, there are currently six full time YSO employees, (including the FPD and deputies). The UPF management team has hired a project support contractor, Navarro, to assist the YSO project controls employee. Currently, one of the Deputy FPDs, is also acting as the Engineering oversight lead for the project, and another member of the team is covering both the Quality Assurance and Construction areas. The UPF Project is currently in design, with the design being managed by the Y-12 M&O contractor, B&W Y-12. There are currently over 400 engineering design staff working on the UPF design, both from B&W Y-12 engineering and design subcontractors.

The federal UPF project team has developed a Project Oversight Plan that details the process and procedures that the federal IPT will use to oversee the project. The UPF oversight plan has emphasis on regularly scheduled assessments of the project by the IPT staff.



#### 3.4.1 Project Management Philosophy and Status

The project team presented their oversight plan in regards to the OECM model and their own staffing estimates based on their oversight processes. The Federal UPF team took an optimistic approach to the OECM model by using the lower range of the project characteristic factors that increase the staff size. Using an optimistic approach with the OECM model, results in a smaller Federal IPT size. With this optimistic approach, the model projected the UPF Federal IPT support is in the range of 45-49 FTE, for the out years. The UPF Project Team would meet the projected staff increase with contracted support. Of note, the projected Federal Direct FTEs is larger than all of the current YSO Project Management staff.

#### 3.4.2 FPD Staffing Projections

The UPF team based their IPT estimates on a funding profile that is above the current FYNISP numbers on the chart below. The FTE levels represented in this section are only projected through FY 2018 and not the end of the project. At this point, the project is in CD-1. The project funding profile is not completed through the end of project construction.

Fiscal Year	2011	2012	2013	2014	2015
<b>BA (current FYNISP) x M</b>	\$115	\$105	\$190	\$270	\$320
<b>Fed Direct (FTE)</b>	12	13	13	14	14
<b>Fed Matrix (FTE)</b>	4.2	4.2	2.1	2.1	2.6
<b>Support Contractors (FTE)</b>	9	24	26	29	32
<b>Total (FTE)</b>	<b>25.2</b>	<b>41.2</b>	<b>41.1</b>	<b>45.1</b>	<b>48.6</b>

#### 3.4.3 Review Committee Analysis

The OECM model treats the IPT needs as a linear function, when there appears to be economies of scale for larger projects due to the repetitive nature of constructing a large facility, project maturity, and project staff experience. After discussions with the project managers and internal Review Committee discussions, a better algorithm has been developed by the Review Committee and inserted into the Review Committee model. It uses the OECM FTE productivity factors, but takes into account economies of scale. The main issue that the UPF data reveals is that the Federal IPT support does not ramp down in the later years of the project. One would expect that the total number would be smaller once construction, procurement, and contracting come to a close, and project close-out is the only thing remaining after CD-4. There should be an uptick in the ORR and transition to operations FTE requirements, but overall there should be a significant reduction in FTE support after construction is closed out.



**Recommendation:** UPF FPD should re-evaluate the later years staffing estimates to determine whether the transition from construction to operations should result in a lower IPT staff requirement.

Based upon Review Committee experience, the interviews with the FPDs, and the project teams, the Review Committee has produced a 'revised' version of the OECM model that is more sensitive to 'economies of scale', which one would expect with larger projects. Using the UPF data in the 'revised' model resulted in the following spread of IPT support (the full output from the revised model for UPF is attached in Appendix D).

**OECM Project Staffing Model and Review Committee Recommendation**

Fiscal Year	2011	2012	2013	2014	2015
<b>BA (current FYNSP) x M</b>	\$115	\$105	\$190	\$270	\$320
<b>Review Committee Recommendation FTE</b>	23	22	31	37	39
<b>NNSA Project staff +20%</b>	28	26	37	44	47
<b>OECM Model FTE</b>	23	21	29	41	49

When comparing the 'revised' model output to the OECM and FPD projections, it is apparent that the OECM model is significantly above both the FPD and 'revised' model projections. The 'revised' model's projections are lower than the UPF FPD estimate, however the UPF FPD's estimate is close to the 'revised' model's + 20 % output. A variation of 20% would not appear unreasonable for a model projection versus the FPD estimate. This difference would infer that the FPD's estimates are relatively close to the 'revised' model's output and would lend credence to the FPD's request.

**3.5 CHEMISTRY AND METALLURGY RESEARCH BUILDING REPLACEMENT**

The Chemistry and Metallurgy Research Replacement (CMRR) Project includes design, construction, and start-up of new laboratory facilities so that the LANL can continue its mission to maintain and certify the United States nuclear stockpile, while better protecting the health and safety of workers, the public, and the environment. The CMRR Project will make it possible for mission-critical technical capabilities, such as analytical chemistry, materials characterization, and metallurgy research and development, to be relocated from the existing Chemistry and Metallurgy Research (CMR) facility to modern laboratory facilities that meet or exceed current safety and environmental protection standards. In addition, the new facilities are located near facilities that house similar operations. Collocating related operations reduces operating expenses while providing enhanced physical security. The CMRR project is divided into three phases: 1) Radiological Laboratory/Utility/Office Building (RULOB), 2) RULOB Equipment and Installation (REI), and the Nuclear Facility (NF).



The first phase of the CMRR Project consists of the design and construction of the RLUOB. The building will provide approximately 19,500 net square feet of radiological laboratory space that includes 26 separate modules. Each module will be equipped to function as an individual unit or be combined to create several larger laboratories. The RLUOB will also house a consolidated training facility; four separate classrooms; non-radiological training, simulation laboratories; a centralized utilities and services building for all CMRR Project facilities; and office space to accommodate up to 350 personnel in both cleared and uncleared areas. In addition, RLUOB will have a facility incident-command center, an operations center, and space for future support of the LANL defense program activities. The RULO Building is scheduled for completion in FY 2010 at an estimated total project cost of \$164M.

The second phase of the CMRR Project is REI. The REI Project is expected to begin in FY 2010 and complete in FY 2013. The REI Project will install the operational equipment into the RULO to complete the functionality of the building. This equipment includes laboratory equipment, furniture, mechanical and electrical equipment, and other essential equipment to sustain operations. The estimated total project cost for the REI Project is \$199.4M.

The third phase of the CMRR Project consists of the design and construction of the NF. This phase of the project is a single building facility that comprises approximately 400,000 total square feet, including laboratory space with additional, auxiliary space for worker access-control and personal-protective-clothing change-out facilities. The facility will house Hazard Category II actinide chemistry/materials characterization and actinide research and development operations; special nuclear material storage vaults; and large-vessel handling capabilities. The NF will provide replacement capability for the existing Chemistry and Metallurgy Research facility. Preliminary design work is complete and the final design is about to begin on this phase of the CMRR Project. The NF will be designed and built to meet all applicable nuclear and safety requirements.

The M&O contractor, Los Alamos Nuclear Security, LLC (LANS), is responsible for managing the CMRR Project.

### **3.5.1 Project Management Philosophy and Status**

The Review Committee interviewed the CMRR FPD and two CMRR Project staff on the status of the project, the management plan, and the staffing projections. The Review Committee later interviewed the Los Alamos Site Office (LASO) Deputy Manager on the relationship of CMRR with the other LASO projects, and site integration issues specifically related to the issue of LASO matrix support to the CMRR Project. As part of the Review Committee's evaluation of the Federal Staffing requirements, it was necessary to understand the complexities of the CMRR project, LANL site impacts (Pajarito Road, security requirements, warehousing, and lay-down areas), and the relationship to other, ongoing LANL projects. The CMRR Project is adjacent to several LANL projects, including: the Nuclear Materials Safeguards and Security Upgrades Project, Phase II (NMSSUP-II), the TA-55 Reinvestment Project, Phase II (TRP-II), and



the Radioactive Liquid Waste Treatment Facility (RLWTF) Project. Although the equipment to be installed in the CMRR, both RLUOB and NF, is relatively 'state-of-the-art', it requires no research or development. The NF subproject is a 'Nuclear Hazard Category 2 facility, and will be designed under NQA-1 standards. Interface with the Defense Nuclear Facility Safety Board (DNFSB), LANL site security, safety, and plant operations is also required.

The CMRR Project received CD-0 (Reaffirmed) and CD-1 (June, 2005). Management plans to request approximately five CD-2/3 decisions for the NF which will include multiple infrastructure and equipment subprojects. Design for the entire NF project is scheduled to be approximately 90% complete for the final CD-2/3 planned in the second quarter of FY 2014. A cost and schedule Reasonableness Review is scheduled for completion on April 19, 2010, which is expected to significantly increase the original CD-1 total project cost and schedule from the original CD-1 approval of approximately \$700M. No advance information was available to the Review Committee because of the timing of the Reasonableness Review, but the FPD projected the revised TPC will be beyond \$3B, and the schedule would extend through 2022.

The NF is being designed by an Architectural/Engineering firm, currently under contract. The M&O contractor will subcontract the construction of the facility, and serve as the construction integrator. It was explained to the Review Committee by the FPD, that the Federal project team bases much of the Federal Staffing assumptions on the positive relationship that has been developed with the M&O contractor. The FPD fully expects the relationship to continue. The FPD Project Staffing plan is shown in the table below. The project currently has a staff of five employees, and is anticipating and additional five FTEs in 2010 through a 'borrowing of billets' from LASO until the 2012 budget is approved. There is nothing to substantiate the plan, therefore the Review Committee assumed the FPD would continue with 5 FTEs until 2012. When hired, these FTEs will fill critical, near-term needs, including: Fire Protection Engineer, Senior Cost Engineer, Quality Assurance Manager, and Safety Analyst. The FPD's projected federal staffing level is based on the premise that the M&O will manage all aspects of the design and construction in a manner which allows federal staff to perform performance oversight. The FPD has an Interagency Agreement with the U.S. Corp of Engineers to provide matrix support of approximately six FTEs over the project life; primarily for cost and schedule support. The project Federal staffing plan includes \$50M, to cover the first five years of the project for contracting future technical support services to include the U.S. Corp of Engineers. Startup and Operations support is anticipated to be included in about 2018. Federal matrix support is not included after 2013, but is anticipated through LASO and the NNSA Service Center in Albuquerque, NM, for all other required disciplines.

It was unclear whether the FPD had integrated Federal CMRR IPT staffing needs with the LASO management team. The Review Committee interviewed the LASO Deputy Manager to get a better understanding of how the CMRR Project was being integrated in the LASO project management needs. The Deputy Manager confirmed that LASO is



aware of the Federal CMRR staffing needs and is preparing to hire additional matrix support that will assist with all projects at LANL. In addition to the FPD staffing projections, the LASO Deputy Manager identified additional matrix support to be included the CMRR staffing needs. This Federal matrix support has been added to the table below.

### 3.5.2 FPD Staffing Projections

The Project staffing projections as presented to the Review Committee are indicated in the chart below. No staff requirements check against the OECM model was conducted by the Federal Project Team.

Fiscal Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
BA (\$M)	\$97	\$225	\$305	\$300	\$300	\$300							
FED Direct	5	5	5	14	15	15	15	15	15	15	15	10	10
FED Matrix	9	4	4	0	0	0	0	0	0	2	2	2	2
LASO Estimated Matrix Support	0	5	5	5	7	7	7	10	10	10	14	14	14
Support Contractors (FTE)	6	6	6	6	6	6	6	6	6	6	6	1	1
<b>Total (FTE)</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>25</b>	<b>28</b>	<b>28</b>	<b>28</b>	<b>31</b>	<b>31</b>	<b>33</b>	<b>37</b>	<b>27</b>	<b>27</b>

### 3.5.3 Review Committee Analysis

The Review Committee assessment of the CMRR Project are included in the following Charts. Because the RLUOB subproject is almost complete, and the REI subproject is ready to begin equipment installation, the Review Committee focused the Federal FTE questions on the NF subproject. The first chart, OECM Project Staffing Model and Review Committee Recommendation includes a Review Committee run of the OECM model with adjusted input factors, which it considered appropriate. In addition, the Review Committee's modified model output is also included. The Review Committee's model adjusts staffing on a non-linear scale as described in Section 4, and takes into consideration economies of scale.


**OECM Project Staffing Model and Review Committee Recommendation**

Fiscal Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
BA (\$M)	\$97	\$225	\$305	\$300	\$300	\$300							
OECM Model FTE	24	46	47	46	46	46	46	46	46	46	46	31	15
Review Committee Recommended FTE	25	32	37	36	36	36	36	36	36	36	36	30	20

Because of the size, criticality, duration, and early stage of its lifecycle, the NF subproject presented an interesting case for evaluation of the Project staffing projections. It also presented a situation where those results could be assessed in a Review Committee adjustment of the OECM model as presented above and further discussed in Section 4.

The Review Committee believes that the defined Federal staffing, at this stage of the project, should be higher. The Project Team has allocated funding for procuring support services which will augment the Federal staffing, if needed. The Review Committee believes the Project Team should verify the funding for support services prior to reaching CD-2. The following is the Team rationale for increasing the staffing:

**Recommendation:** Better define the Federal Staffing.

1. The Review Committee believes the CMRR project is of such criticality and visibility that sufficient Federal staff must be 'on-board' or matrix available, dedicated, and defined. The NNSA and LASO should support this near-term definition and include staff in the budget planning.
2. The Review Committee believes the CMRR site integration, although well understood by the project, is sufficiently complex and should have more near-term defined staff to coordinate and ensure the interfaces are fully met by the M&O contractor.
3. The Review Committee believes the project effort for the CD-2/3 approvals will require more time from the CMRR staff than expected such that additional federal staff will be required. This includes facility representatives to help in the oversight of operations and safety. These personnel will bring continuity through



the facilities' start-up, operational readiness reviews, and operational turnover phases of the project.

**Recommendation:** Bring the operations specialist staff on earlier than planned to ensure that the institutional requirements are continuously and consistently incorporated into the design. The Review Committee believes this early infusion of staff experts helps ensure a key element of the DOE Root Cause Report; lack of early definition of the project.



### PROJECT STAFFING REVIEW

#### MFFF, WSB, PDCF, UPF, and CMRR

#### SECTION 4 – REVIEW COMMITTEE ASSESSMENT OF OEMC MODEL

The Office of Construction Management (OECM) has produced a draft guidance document entitled *Federal Staffing Guide for Project Management*, DOE G 413.3-19, for use by all Department elements. The purpose of the guide is to "... provide an approach to determine the appropriate level and type of federal personnel to effectively plan, direct and oversee project execution." As a part of this review, the Review Committee analyzed the OECM draft guide, compared it to the staffing levels of the five projects, and provided specific comments and recommendations relative to the use and viability of the OECM draft guide for NNSA projects. These comments and recommendations are summarized in Section 5.0 of this report and are based on the analysis detailed in this report.

Overall the OECM draft guide provides a reasonable initial approach to determining Federal IPT staffing requirements. The draft guide employs a formulaic approach. First the project's unadjusted staffing level (PS) is determined by dividing the project yearly budget by a Productivity Factor (PF). This factor has the largest single impact on staffing. The draft guide provides suggestions for this productivity factor for several DOE organizations, specifically Office of Science (\$12.5M/FTE), NNSA (\$10M/FTE) and EM (\$7.5M/FTE). It also includes as a reference point the DOD (\$5M/FTE). The draft guide does acknowledge that use of an appropriate factor is "... left to the discretion of the program office."

To determine the adjusted project staffing levels, a number of adjusting factors are used: the project type (PT), project complexity (PC), project execution (PE), project phase (PP), regulatory involvement (RI), external influences (EI), project uniqueness (PU) and contract type (CT). The formula used by the Review Committee for Project Staffing (PS) is:

$$PS_{adjusted} = PS_{unadjusted} \times (1 + (PT+PC+PE+PP+RI+EI+PU+CT))$$

This corrected formula was obtained during discussions with OECM staff and is used in all calculations in this report.

As an example, the chart below shows the draft guide calculation results for IPT staffing levels using a project spending of \$125M per year at the Critical Decision 2/3 timeframe for a "typical" NNSA project using the various PF values shown above.



## SECTION 5 – REVIEW COMMITTEE GENERAL COMMENTS AND RECOMMENDATIONS

Productivity Factor (PF)	Calculated IPT Unadjusted Staffing Level
\$12.5 M/FTE	21 FTE's
\$10.0 M/FTE	27 FTE's
\$7.5 M/FTE	36 FTE's
\$5.0 M/FTE	53 FTE's

The draft guide does provide significant latitude in staffing guidance when the various factors are considered. The draft guide numbers should be considered as a range in the team's opinion – using a "+" or "-" of 20 % as an appropriate range depending on specific site circumstances, programmatic factors, and most importantly, the experience of the FPD. The FPD should consider the "economics of scale" while calculating Federal staffing needs. To this end the Review Committee recommends, rather than using the "one size fits all" approach, it would be prudent to use a sliding scale to establish the Productivity Factor (PF) for NNSA projects using the following formula:

$$PF_{\text{unadjusted}} = (PV+200)/30$$

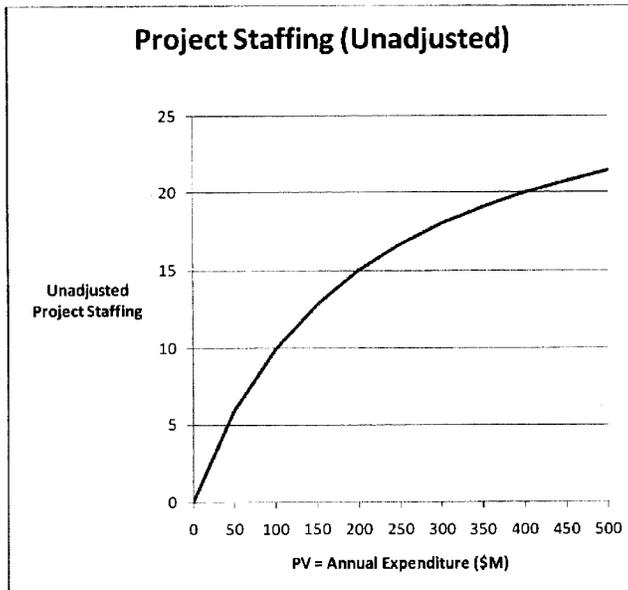
Where, the value of PV is the project value in dollars for a specific fiscal year.

The unadjusted staffing formula in the Review Committee model then becomes:

$$PS_{\text{unadjusted}} = PV/PF$$

$$PS_{\text{unadjusted}} = PV/(PV+200)/30$$

This formula results in a logarithmic relationship between the unadjusted staffing level and the annual project value, as can be seen by the graph below. The logarithmic relationship takes into account economies of scale for project IPTs.



This calculation was used for unadjusted project staffing in all estimates made by the team for the five specific projects reviewed for this report.

The team's review of the other sub-factors used in the calculation of the IPT staffing range resulted in one other recommend change for the Project Phase factor. The factor in question is the Project Phase (PF) factor. The draft guidance recommends a factor of 2.0 when the project is in the CD-0 phase. At that point in the project, the funding is low yet staff is necessary to prepare the necessary documents, support briefings, and other activities to move the project forward. These activities are primarily assigned to programmatic staff in the HQ or Field program offices. The Review Committee recommends this factor be reduced to 1.0 for NNSA. The Review Committee is in overall agreement with the other sub-factor values and the application to specific projects.

The Review Committee recommends that a preliminary calculation of the Federal IPT size be made available at CD-0 by the program office and the requesting organization, and be included in the presentation to the decision making official to aid in the understanding of the staffing needs for the success of the project. These staffing estimates should be presented as a range (+/- 20%), include an estimate of program



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**SECTION 5 – REVIEW COMMITTEE GENERAL COMMENTS AND RECOMMENDATIONS**

direction funds required to provide Federal staff, and costs to the projects (TEC) to fund any support service or Interagency agreements for staff. At CD-1, the Federal Project Director should have the flexibility to adjust these estimates when he or she is designated; typically at the approval of CD-1. And, as a part of the CD-1 package, a staffing plan, vetted through the Site and Program Offices, should be submitted to the Acquisition Executive for approval.

The OECM model was used, with the changes/updates detailed here, to calculate a staffing level for each of the five projects reviewed for this report. These calculations and the comparison to actual/forecast staffing levels are detailed in the project specific sections of the report.



### PROJECT STAFFING REVIEW

MFFF, WSB, PDCF, UPF, and CMRR

#### SECTION 5 – REVIEW COMMITTEE GENERAL COMMENTS AND RECOMMENDATIONS

##### 5.1 GENERAL COMMENTS ON OVERSIGHT PHILOSOPHY

In reviewing these projects for Federal IPT staffing, it became clear that the determining factor for IPT staffing is the oversight philosophy of the FPDs, Site Office management, and Program Office management. The Review Committee was charged to validate the project's requests for IPT support and compare the results of the OEMC staffing model. The OEMC model was adapted from the Naval Facilities Command model, which was developed in concert with the US Army Corps of Engineers. Three of the FPDs interviewed have military construction backgrounds, and their IPT staffing requirements aligned more closely with the OEMC model results. This is consistent with their experience and expectations of the oversight involved in large construction projects.

As a result of this review the Review Committee has some recommendations relative to the OEMC Model and concerning federal staffing in general. The Model Recommendations are covered in Section 3 of this report. The general recommendations are as follows.

##### 5.1.1 Prepare and publish a guidance document on Oversight Philosophies

The Review Committee determined that there is a difference in perception of what constitutes reasonable support for project teams. The Review Committee believes that NNSA (and DOE) should develop a project management philosophy that can be translated into levels of support and oversight by projects. This philosophy should include statements of project management guidelines that would detail the requirements and responsibilities of the FPD in NNSA projects. For example:

- 1) "What does NNSA expect in regards to reviewing and approving the cost estimate of the project?"
- 2) The issue of 'weak' versus 'strong' matrix should be addressed as policy.
- 3) The issue of what are inherently Federal responsibilities should be addressed.

NNSA needs to define what is expected of the FPDs regarding oversight and what outcomes are acceptable. Until there is a clear expectation, there can, and will be a spectrum of involvement and oversight in regards to project management from being a 'pass through' from the M&O to 'micro managing' the project outputs.

**Recommendation:** The NNSA should publish a 'Guideline' on Project oversight policy.



#### 5.1.2 Benchmark Previous NNSA Projects

Five of largest, current NNSA projects were reviewed to make a determination on the reasonableness of the Federal FTE staffing. During the review, the Review Committee continuously asked themselves, "What made Project X successful when compared to this project?" The FPDs of projects that have been successful should be interviewed to determine level of support they received on their federal teams from the NNSA Site Office, NNSA Program Office, technical assistance contractor hired by DOE, the NNSA Service Center, or other support directly to DOE. This should exclude support provided by the construction or integrating contractor. These FPDs could also provide any 'defining events' in their projects which helped them bring the project to completion. Project managers that have had less than successful outcomes should also be reviewed to determine the impacts additional staffing might have made on the project.

**Recommendation:** The NNSA should conduct a follow-up benchmarking effort to confirm/update the OEM Model with actual results, and develop a Lessons Learned Report on the findings.

#### 5.1.3 Require Federal IPT Staffing Estimates at each Critical Decision or other Project Milestones

The Review Committee believes this review was helpful with focusing the interviewed FPDs on the support they would request for overall project. Many times, Site Office managers, Program Office managers, FPDs, and site contractors start a project without the concept of transitioning the project to operations. They determine the mission need, and identify the initial scope, schedule, and cost; but forget that it will take a government staff to bring the facility to operations. Staffing estimates at critical project milestones, such as critical decisions, could be used to help Acquisition Executives, Site Office Managers, and Program Offices managers understand the commitments that the FPD needs to fulfill the mission need.

**Recommendation:** The Site Office Management, Program Office management, and FPDs should evaluate Federal staffing levels at each project phase and present an updated staffing plan to the Acquisition Executive during each Energy Secretary Acquisition Advisory Board meeting. In addition, the Federal Staffing Plan should be included as a item of discussion at each Project Quarterly Progress Review.

#### 5.1.4 Prepare Oversight and Staffing Plans

A staffing plan for each project, which defines the project oversight philosophy and the initial thought for staffing needs, would be valuable if it was available at CD-0. Such a plan was presented by PDCF and provided excellent supporting information for staffing philosophy despite the early stage of the project.

**Recommendation:** NNSA should require an Oversight Plan at CD-0 for each project.

**5.1.5 Utilize early project staffing**

Adequate early staffing of projects with qualified individuals is an issue which is addressed in the DOE Project Management Root Cause Analysis. The Review Committee's model calculations include more direct Federal or matrix staff earlier in the project, and is based on the Review Committee experience and OECM guidance. This is especially true regarding high risk projects with intensive site integration, security concerns, safety concerns, and NQA-1 requirements. Federal operations personnel should be brought on-board early in design when significant integration with present or future site operations is required.

**Recommendation:** Establish adequate staffing early in the project process.

**5.1.6 Staffing Estimates**

Estimates of Federal Staff should be 'bottoms-up' and include justification. Use of models such as the OECM staffing model and the NNSA staffing model represented in this report, should only be used to confirm the project manager's estimate. The NNSA staffing model can give Site Office Management and Program Office management a good indication of the expected Federal Staffing expected range. Models provide a 'parametric' estimate with an accuracy similar to that of parametric cost estimate. Only a project estimate of staff by fiscal year and by discipline, which is well supported by a project schedule and with recognition of site and project conditions, will yield accurate projections.

**Recommendation:** Require all staffing estimates be 'bottoms up' and then confirmed by models.



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**PROJECT STAFFING REVIEW**

**MFFF, WSB, PDCF, UPF, and CMRR**

**SECTION 6 – SUMMARY**

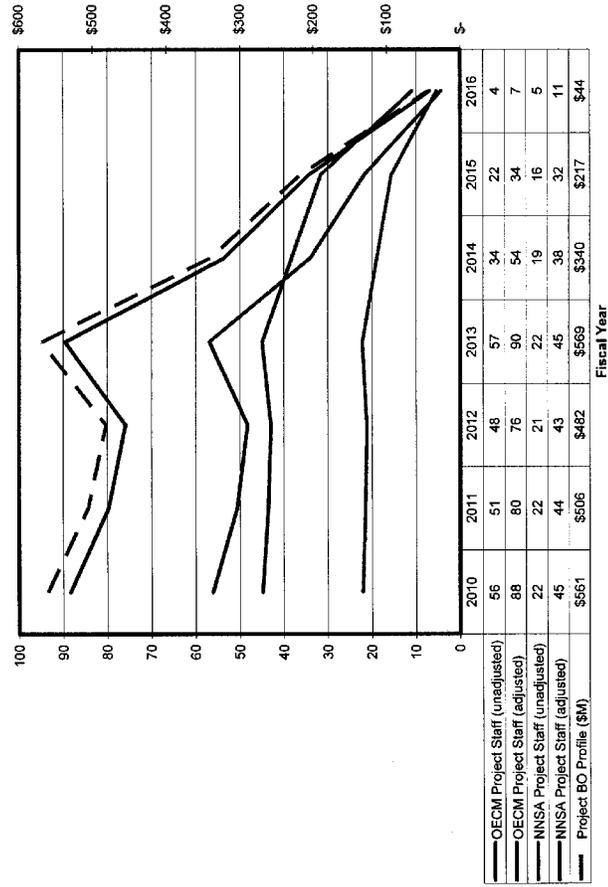
On behalf of Michael Hickman, Acting Director of Project Management and Systems Support, we appreciate the opportunity of working with you on this project and look forward to working with you in the future.



**PROJECT STAFFING REVIEW**  
**MFFF, WSB, PDCF, UPF, and CMRR**  
**APPENDIX A – MFFF STAFFING CHARTS**

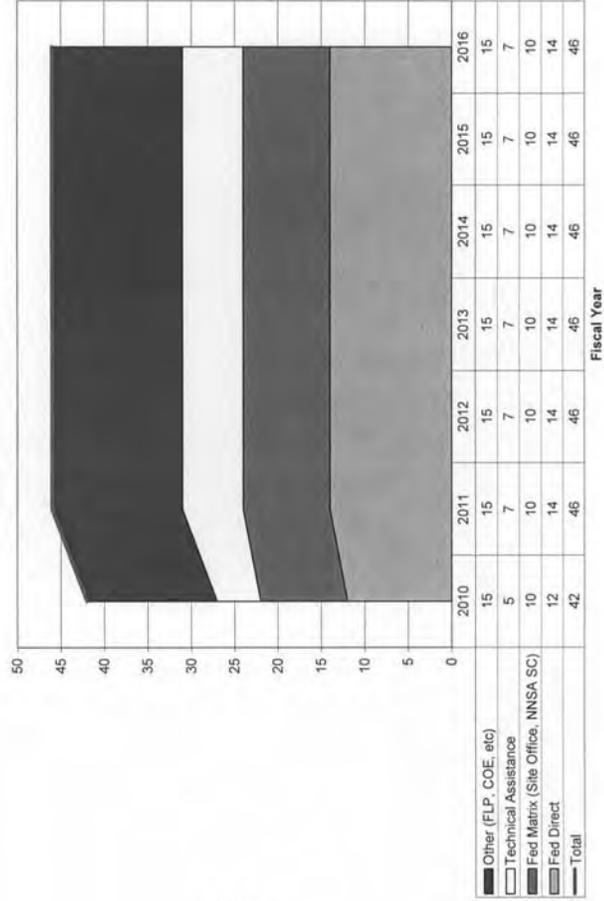


Unadjusted and Adjusted Staffing



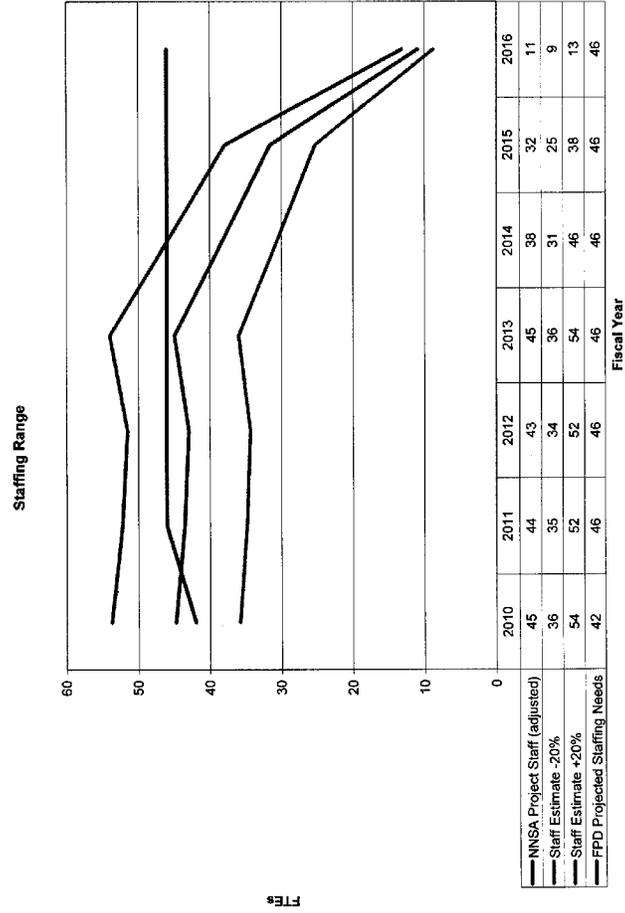


Staffing Plan



FTEs

Fiscal Year

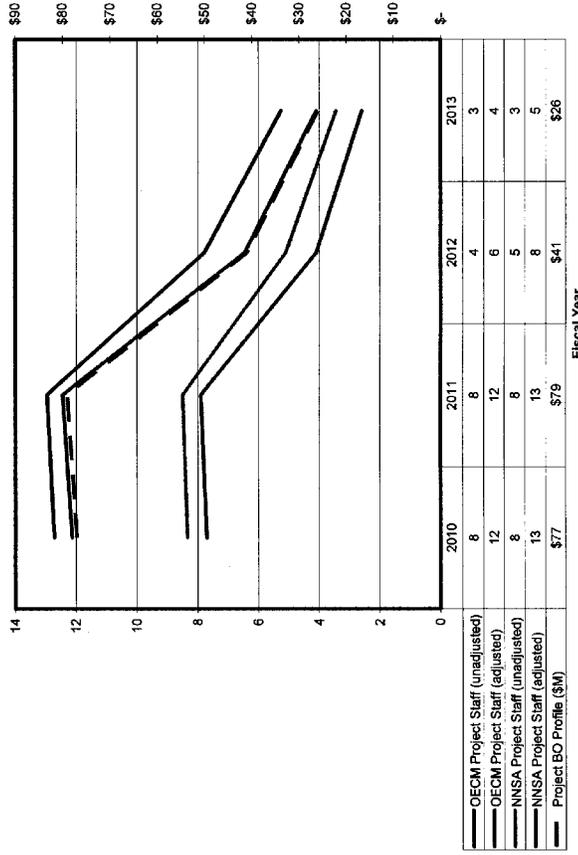




**PROJECT STAFFING REVIEW**  
**MFFF, WSB, PDCF, UPF, and CMRR**  
**APPENDIX B – WSB STAFFING CHARTS**



Unadjusted and Adjusted Staffing

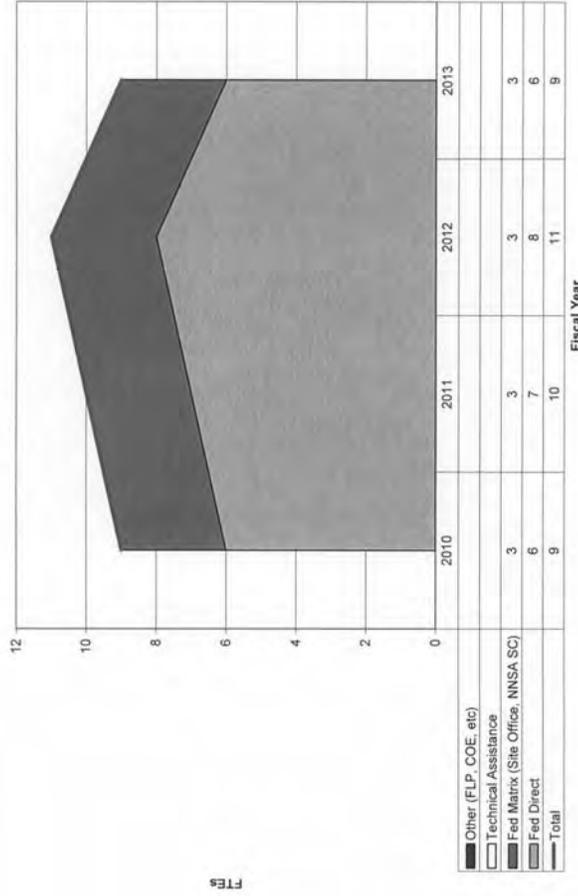


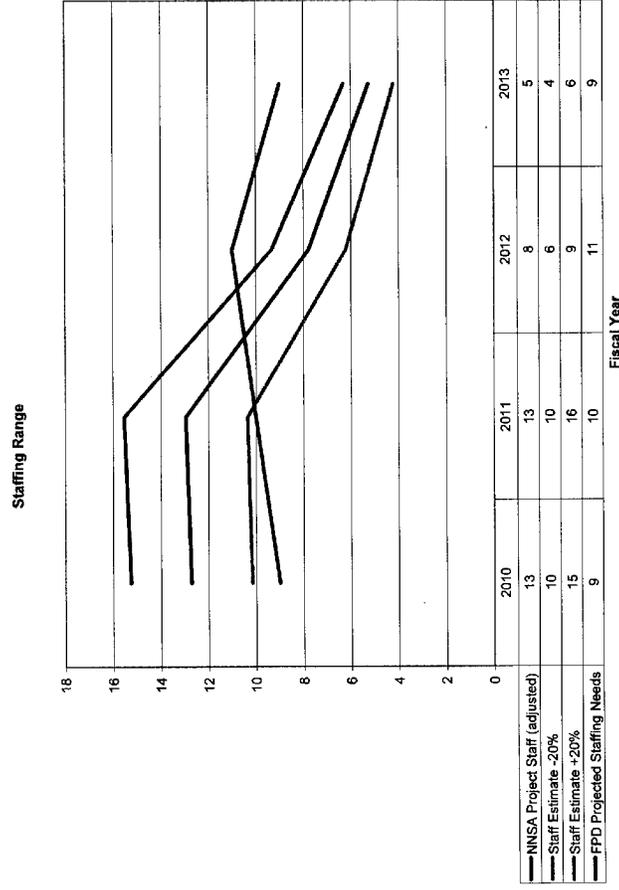
FTEs

Fiscal Year



Staffing Plan



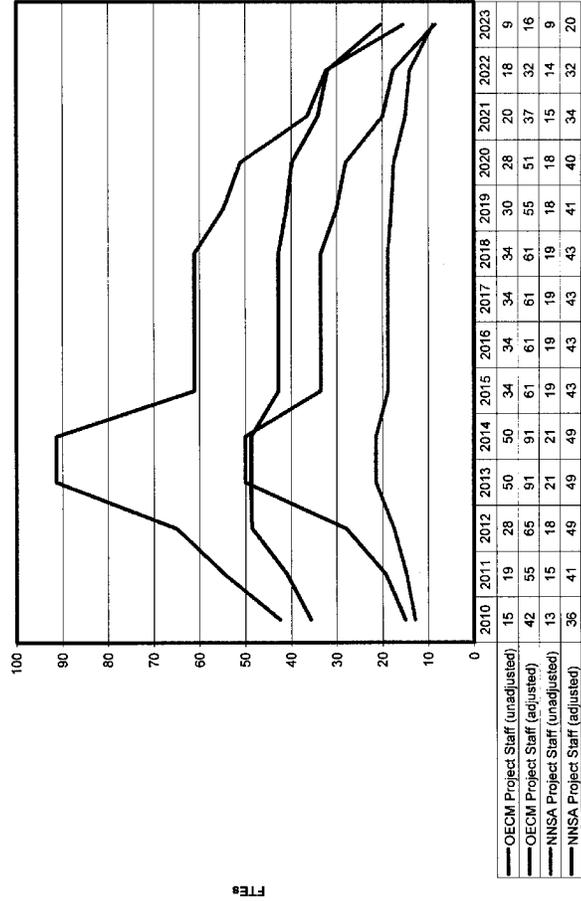




**PROJECT STAFFING REVIEW**  
**MFFF, WSB, PDCF, UPF, and CMRR**  
**APPENDIX C – PDCF STAFFING CHARTS**



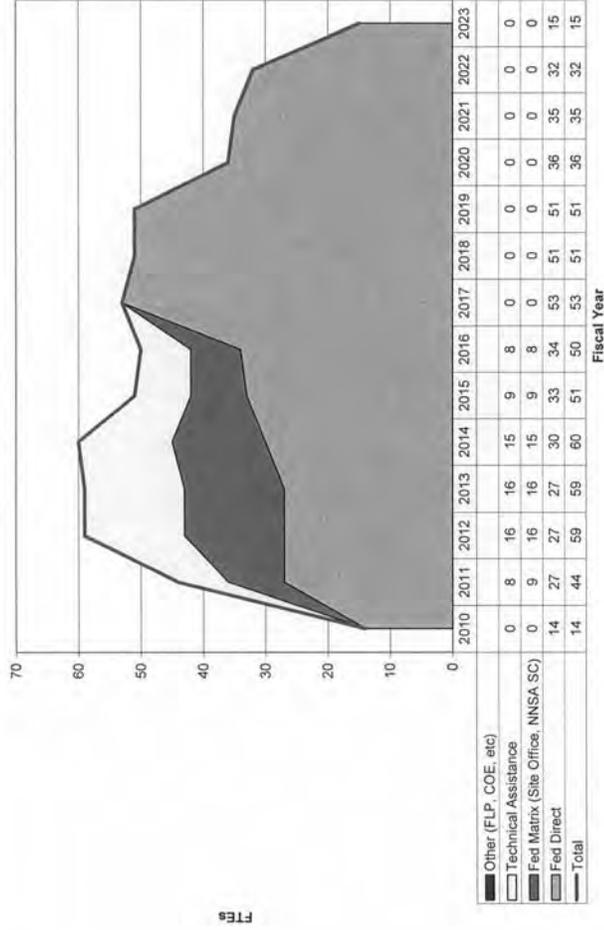
Unadjusted and Adjusted Staffing

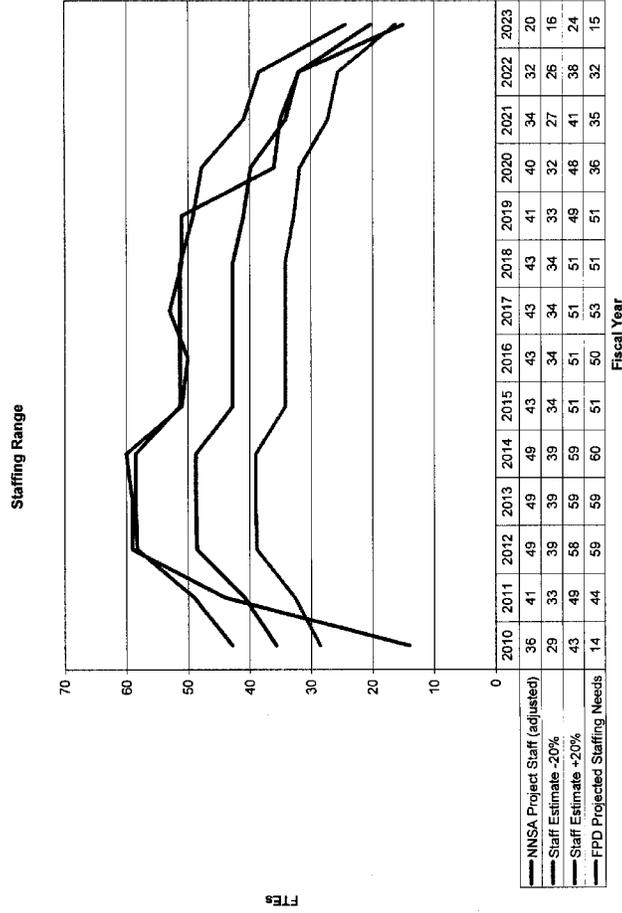


FTEs



Staffing Plan





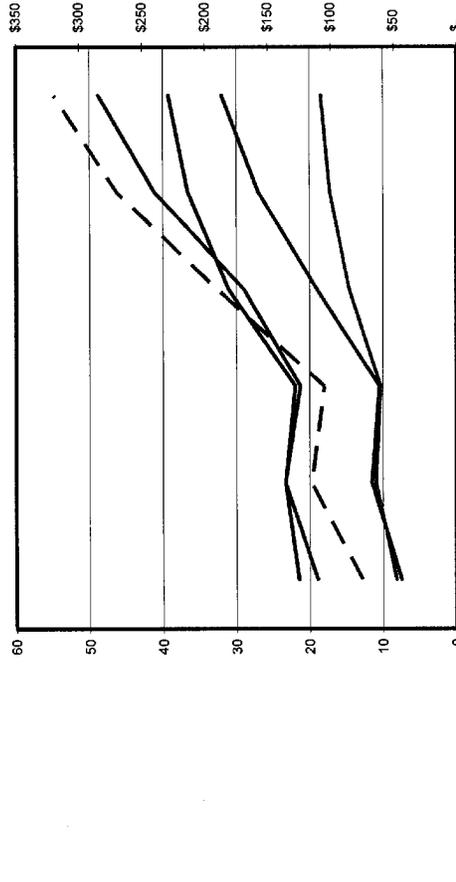


**PROJECT STAFFING REVIEW**  
**MFFF, WSB, PDCF, UPF, and CMRR**  
**APPENDIX D – UPF STAFFING CHARTS**



APPENDIX D – UJFF STAFFING GRAPHS

Unadjusted and Adjusted Staffing



FTEs

Fiscal Year

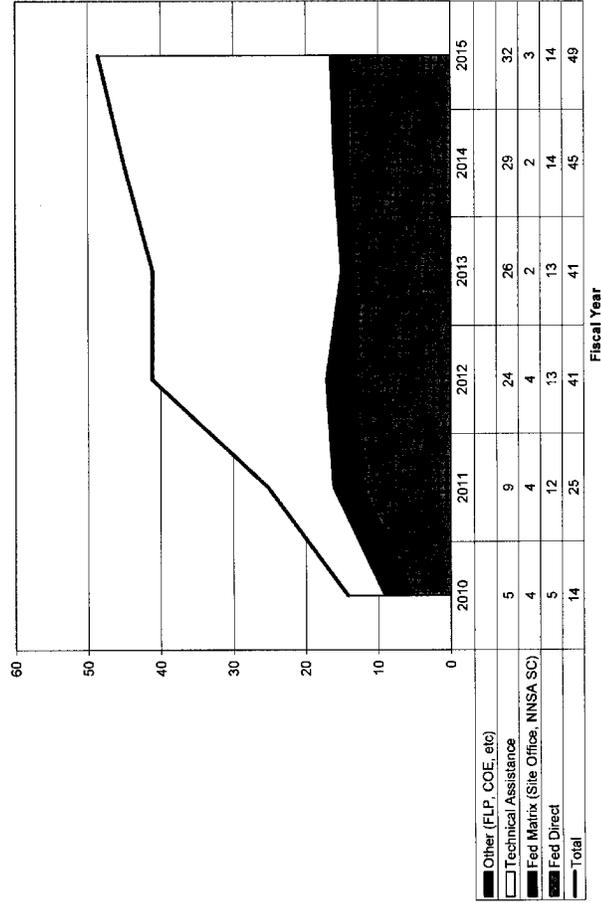
April 14, 2010

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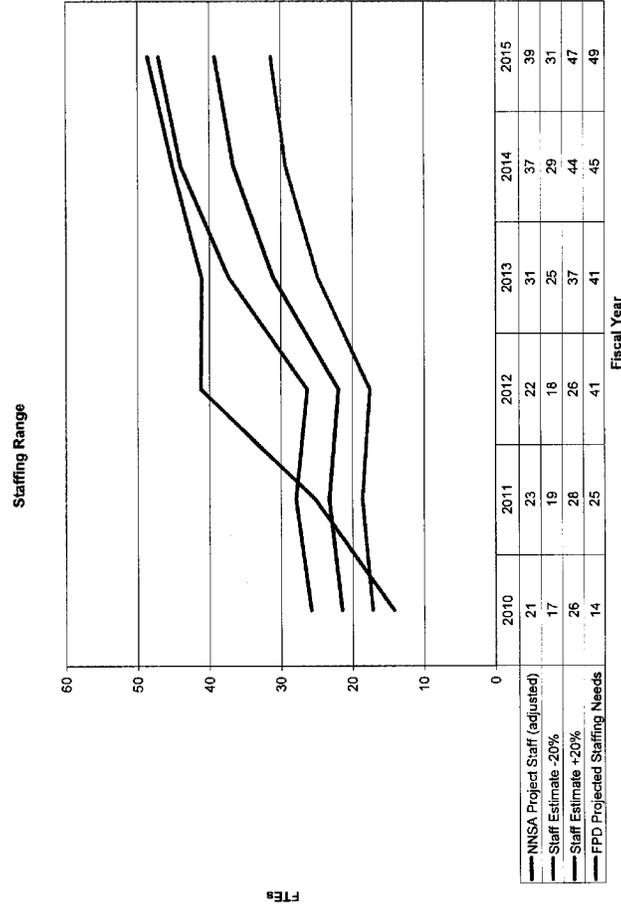
NNSA Project Staffing Review



Staffing Plan



FTEs

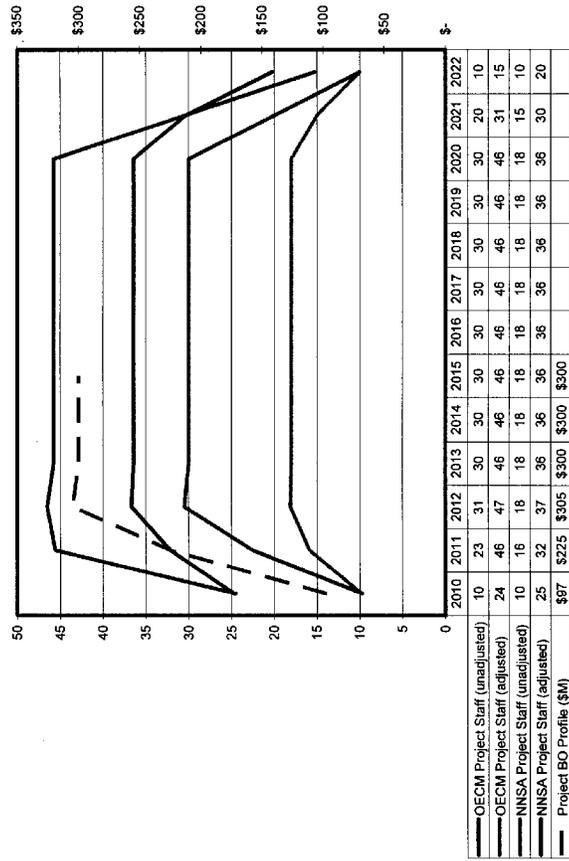




**PROJECT STAFFING REVIEW**  
**MFFF, WSB, PDCF, UPF, and CMRR**  
**APPENDIX E – CMRR STAFFING CHARTS**



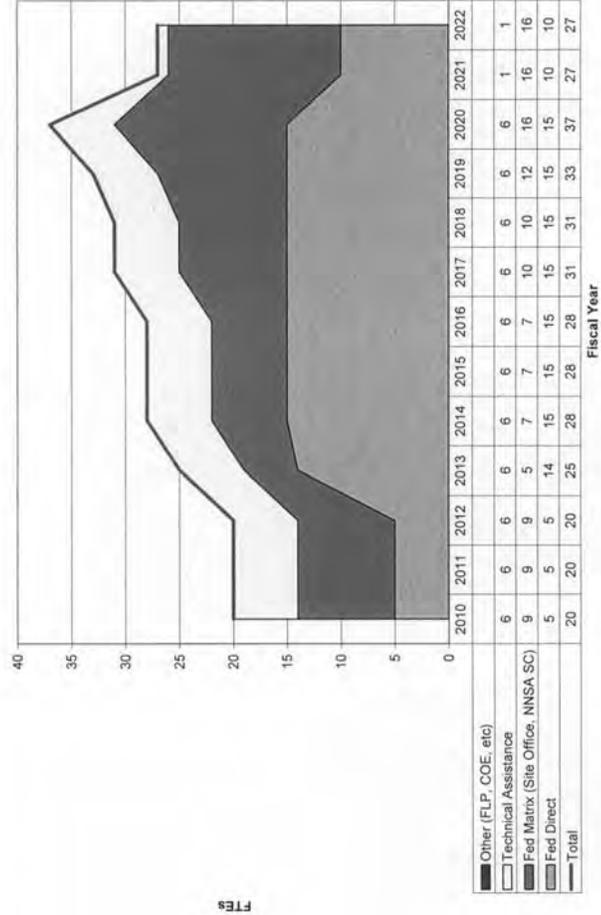
Unadjusted and Adjusted Staffing



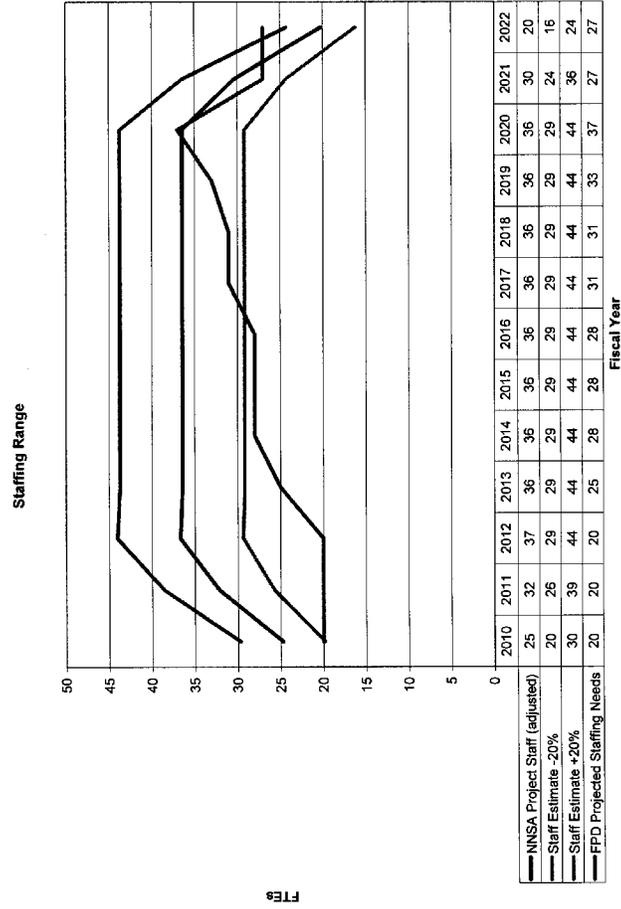
FTEs



Staffing Plan



FTEs





**PROJECT STAFFING REVIEW**  
**MFFF, WSB, PDCF, UPF, and CMRR**  
**APPENDIX F – REVIEW COMMITTEE BACKGROUND**



**CLIFTON R. HOLMAN, PMP**  
**ENVIRONMENTAL PROGRAMS DEPARTMENT**  
**U.S. Department of Energy**  
**Building: 401**  
**Albuquerque, New Mexico 87116**  
**Telephone: 505-845-4561**  
**Fax: 505-284-7362**  
**E-Mail: [cholman@doeal.gov](mailto:cholman@doeal.gov)**

**EDUCATION**

B.S., Management, University of Phoenix  
A.S., Architecture, New Mexico State University  
Certificate, Mechanical Design, New Mexico State University  
Minor, Psychology, emphasis in team dynamics

**EXPERIENCE SUMMARY**

Mr. Holman has twenty-five years of government experience developing, implementing, and managing technical programs essential to environmental protection and national security. Mr. Holman's experience includes: solving project management, safety, transportation, quality, budget, and finance issues. He has broad experience in high-profile projects of national significance, which include in-depth knowledge of business models designed to solve programmatic problems and accelerate mission objectives both locally and abroad. He has a proven success in building trust through honesty and integrity with state and federal environmental regulatory agencies, key project stakeholders, and the public. Significant accomplishments include:

- Directed the initiative for planning and financing the opening of the world's first licensed, deep geologic disposal facility for transuranic waste;
- Led a team of highly-skilled professionals that determined the long-term compliance with the Resource Conservation and Recovery Act Part B Permit for the Waste Isolation Pilot Plant (WIPP);
- Negotiated with the State of Nevada for the Nevada Test Site compliance with the Federal Facility Compliance Act;
- Developed highly technical instrumentation and participated as a technical team member on rocket launches for the Strategic Defense Initiative and the National Aeronautical Space Administration;
- Developed the first integrated program for planning Type B packaging used to transport highly radioactive materials throughout the world for the National Nuclear Security Administration; and,
- Established the Department of Energy economic development infrastructure model used to stimulate the economic growth of Southeast New Mexico.

Mr. Holman managed and implemented the technical direction of the planning, programming, and financial control systems for the DOE Carlsbad Field Office's \$200



million annual budget. Mr. Holman was responsible for establishing WIPP program baselines. He also served as a voting member on the Source Evaluation Board for the WIPP Management & Operating solicitation.

Mr. Holman served on a DOE delegation to Russia that finalized negotiations for transferring environmental technology resulting in a signed U.S./Russian technology transfer agreement. While in Russia, the delegation entered into negotiations for an agreement to assist Russia with the deep, geologic disposal of highly radioactive waste.

Mr. Holman was a mechanical designer at the Los Alamos National Laboratory for classified R&D experimental programs. He produced radiographic techniques and images using 40 KeV to 2 MeV x-rays, Cobalt 60, Iridium 192, and Cesium 137 sources. He served as an experimentation liaison for LANL during continental and intercontinental rocket experiments. Mr. Holman served as scientific support for experiments in the United Kingdom for the Ministry of Defense.

**CERTIFICATIONS/SPECIAL QUALIFICATIONS**

Project Management Professional - Project Management Institute  
U. S. Department of Energy "Q" security clearance



**JOHN R. PHILLIPS, PMP**  
**PROJECT MANAGEMENT CONSULTANT**  
2193 83<sup>rd</sup> Av NE  
Warwick, ND 58381  
(701) 947-5381  
(701) 213-3417 (cell)  
[jhn.phillips@yahoo.com](mailto:jhn.phillips@yahoo.com)

**EDUCATION**

MS Industrial Engineering, University of Florida  
BS, Mathematics, Florida State University

**EXPERIENCE SUMMARY**

Mr. Phillips has over thirty years of engineering, construction, and project management experience in the U. S. Department of Energy, Department of Defense, and as a private project management consultant. He has hands-on experience successfully managing complex one-of-a-kind nuclear facility projects, as well as infrastructure projects such as office buildings, waste water treatment, and domestic water plants. He has extensive experience in all phases of project management, from early project planning to start-up and turnover to operations. He has successfully used earned value management, resource loaded schedules, risk management, change control, and other proven project management tools. As a private consultant he has provided independent reviews of projects, including independent cost and schedule assessments, project planning assessments, and reviews of earned value management systems for the U. S. Department of Energy and the National Oceanic and Atmospheric Administration. He has participated on several Defense Contract Management Agency led EVMS certification Review Committees for Department of Energy projects.

As the Savannah River Site project management program manager, Mr. Phillips led improvements in project management across the site. Risk management was strengthened. A Federal Project Director training and qualification program was implemented. Greater emphasis was placed on Integrated Project Teams. Technology development and technical management were strengthened. He assisted the U. S. Department of Energy's Office of Engineering and Construction Management in the development of a Project Management Career Development Program.

Mr. Phillips served four years as an industrial engineer at the Charleston Naval Shipyard assessing nuclear submarine overhaul work quality.

**CERTIFICATIONS/SPECIAL QUALIFICATIONS**

Project Management Professional - Project Management Institute  
Nuclear Safety Systems - U. S. Dept. of Energy technical qualification  
U. S. Department of Energy "Q" security clearance

**RALPH ERICKSON**  
**Navarro**

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Herndon, VA 20170  
240-481-5140  
[ralpherickson1948@verizon.net](mailto:ralpherickson1948@verizon.net)

**EDUCATION**

MS Mechanical Engineering, University of South Carolina  
BS Mechanical Engineer, California State Polytechnic University  
Industrial College of the Armed Forces, National Defense University  
Federal Executive Institute

**EXPERIENCE SUMMARY**

Ralph Erickson is one of a handful of highly experienced and qualified individuals with hands on training in America's national nuclear security responsibilities. He has more than 30 years of technical and leadership experience spanning the Atomic Energy Commission (AEC), the Energy Research and Development Administration (ERDA), the Department of Energy (DOE), and the National Nuclear Security Administration (NNSA). His unique strengths in strategic planning, project and contract management, independent assessment, and regulatory compliance have been demonstrated in both field and headquarters assignments. He is one of the very few individuals to be awarded both the Secretary of Energy's Gold Medal and the National Nuclear Security Administrator's Gold Medal in recognition of his superior achievements and contributions to the nations Nuclear Weapons Program.

Mr. Erickson served as the Energy Account Manager for Northrop Grumman. He was responsible for establishing a new Energy business unit, identifying potential market opportunities, and extending and developing cross-corporate alliances. The Energy unit pursued activities to maximize Northrop Grumman's contribution to America's energy future. He served as the Vice President of National Security for Longenecker and Associates – an international consulting firm providing strategic and issue specific advise and guidance to major defense and energy related companies. Mr. Erickson served as the Manager of the DOE NNSA site office at Los Alamos, New Mexico where as Contracting Officer, he was responsible for the administration and direction of the \$2 billion contract with the University of California to operate the Los Alamos National Laboratory, including all aspects of the safety, security, and operational matters to ensure compliance with all statutes and regulations.

At DOE Headquarters, Mr. Erickson served as the NNSA the Associate Administrator for Facilities and Operations. In this position he was responsible for safety, security, infrastructure and facilities for all NNSA field locations, and he provided management leadership and oversight guidance to the NNSA field organizations to assure that resources were provided to accomplish planned and assigned missions. He was also the NNSA Principal Deputy Assistant Administrator for Defense Programs and Chief



Operating Officer in which he was responsible for the day-to-day oversight, guidance, and leadership of the nation's nuclear weapons research, development and production facilities.

In earlier assignments at DOE, Mr. Erickson served as the Director of the Office of Eastern Operations in Environmental Management, where he was responsible for overall operation of the West Valley Demonstration Project and the High Level Waste program at the Savannah River Site. As a leader and hands on project manager Mr. Erickson demonstrated his ability through such successful major projects as the startup of the Defense Waste Processing Facility, the restart of the L-Reactor, and the creation of the High Level Waste Operations Plan to ensure a systems approach to all High Level Waste activities at the Savannah River Site.

Mr. Erickson distinguished career spans three decades of acclaimed honor, and includes:

- U.S. Department of Energy – NNSA – Los Alamos Site Office – Manager.
- U.S. Department of Energy – NNSA Headquarters – Associate Administrator for Facilities and Operations.
- U.S. Department of Energy – NNSA – Principal Deputy Assistant Administrator for Defense Programs and Chief Operating Officer.
- U.S. Department of Energy – Headquarters – Director of Office of Eastern Operations. Responsible for overall operation of the West Valley Demonstration Project and the High Level Waste program at the Savannah River Site.
- Virginia Tech – Director of the Information Systems Laboratory.
- U.S. Department of Energy – Headquarters – Acting Director of Office of Weapons Production.
- Department of Energy – Headquarters – Chief of Reactor Branch.
- Served at two major field locations in position of increasing responsibility in the areas of facility construction, tritium operations, reactor operations and nuclear waste management.

#### **CERTIFICATIONS/SPECIAL QUALIFICATIONS**

U. S. Department of Energy "Q" security clearance



**JOHN SCANGO**  
**TechSource**  
**3535 Hamlet Place**  
**Chevy Chase, Maryland 20815**  
**Telephone: (301) 652-7485**  
**Guyscango@verizon.net**

#### **EDUCATION**

BS Mechanical Engineering, Carnegie Mellon University

#### **EXPERIENCE SUMMARY**

An experienced upper management supervisor in both private industry and government with a comprehensive 'hands-on' background in planning, design, construction, and operation of large programs and complex facilities. Specific proficiency in program/project management and cost/schedule analysis.

Mr. Scango provided consultant expertise in tasks including DOE Rocky Flats nuclear waste cleanup and Government Cost Estimate, Strategic Petroleum Reserve drawdown readiness, Los Alamos Accelerator Production of Tritium cost risk, Oak Ridge Spallation Neutron Source EIR, BNL Research Reactor Decommissioning, Hanford Spent Nuclear Fuel Project, Idaho National Laboratory waste cleanup, SNL/LLNL Computer complex, Savannah River vitrification and waste cleanup, OECM ICE Procedure. He was responsible for liaison between the Office Of Civilian Radioactive Waste headquarters and the \$7 B Yucca Mountain nuclear waste repository project office including assisting in identifying and communicating baseline CCB changes and costs/schedule issues. Interfaced with all levels of HQ, field, and contractor staff. Managed the development and approval of an OCRWM multi-year, tiered baseline, which integrated all parts of the program. Assessed monthly status reports of the project from an upper management perspective and briefed the Director on trends and issues. Led peer reviews of budgets, cost estimates and schedules. Developed report for tracking budget to funds committed and spent.

At the U.S. Department of Energy, Mr. Scango served as the Deputy, and later Director, for Infrastructure Acquisition in the Office Of Field Management served as direct link between the Secretary and Field Offices for oversight of progress of 52 Major Systems including 25 involving environmental cleanup. Managed ESAAB process and refocused the Secretarial oversight of these Systems by delegating design/construction decisions. Managed Independent Cost Estimates on 40 Programs including the Nuclear Waste Stockpile and the \$5.3 B Environmental Cleanup Program. At Secretary's direction organized and led a team of 75 experts in a validation of the \$8.4 B Superconducting Super Collider cost estimate at the site.

#### **CERTIFICATION/PROFESSIONAL AFFILIATIONS**

Registered Professional Engineer  
 U. S. Department of Energy "Q" security clearance



**DALE C. OLIFF, PMP**  
**TECH SOURCE CONSULTANT**  
17325 Blossom View Drive  
Olney, MD 20832  
Telephone: (301) 774-7474  
CELL: 301-467-1029  
E-mail: oliffsdad@comcast.net

**Education**

B.S., Economics, University of Maryland  
M.B.A., Finance, University of Maryland

**Experience Summary**

Consultant with over 25 years of experience in project management, principal experience in the areas of: project controls and reporting; project requirements and mission need proposals, project reviews; cost and schedule analysis and trending; and project management training and process development.

In over 16 years at the Department of Energy, Mr. Oliff led teams of reviewers for evaluation of Departmental projects (NNSA Defense Programs, Environmental Restoration and Waste Management, Energy Research, etc.), performing detailed cost, schedule and scope reviews of projects for the benefit of DOE sites and HQ. He also led Process Improvement Teams for Departmental project management issues and areas of concern, such as project reporting, cost estimating, and baseline management.

Other NNSA experience included providing oversight, guidance, and technical expertise in the execution of the National Nuclear Security Administration ESAAB Equivalent process. Prepared and delivered project management training workshops and workshop topics for NNSA federal project managers and M&O site personnel.

Mr. Oliff also developed, and maintained the schedule for the information technology development project for the Consumer Price Index Revision Project from 1984-1989.

Current NNSA support includes providing technical Project Management expertise to NNSA's Defense Nuclear Security program in the review, planning, programming, and executing the following efforts: Security Line Item Construction Projects; DNS Security Infrastructure Program; and Argus Enterprise-wide Security System project.

**Certifications/Special Qualifications**

Project Management Professional - Project Management Institute  
U. S. Department of Energy "Q" security clearance



**PROJECT STAFFING REVIEW  
MFFF, WSB, PDCF, UPF, and CMRR  
APPENDIX G – INTERVIEWS**

**PERSONNEL INTERVIEWED:***MOX Fuel Fabrication Facility:*

1. Clay Ramsey, Division Manager, NA-265, MFFF FPD
2. Sam Glenn, Deputy FPD
3. Lawrence Tam, Senior Engineer and Project Controls Lead
4. Kevin Hall, NNSA Site Office Deputy Manager

*Waste Solidification Building:*

1. Tom Cantey, Division Manager, NA-266, WSB FPD
2. Lisa McGuire, WSB Staff Engineer

*Pit Disassembly and Conversion Facility:*

1. Scott Cannon, PDCF FPD
2. Michelle Ewart, Deputy FPD

*NA-26 SRS Project Integration:*

1. Bill Clark, Division Manager, NA-262

*Uranium Processing Facility:*

1. Harry Peters, UPF FPD
2. Dale Christenson, UPF Deputy FPD
3. Teresa Robbins, UPF Deputy FPD
4. Jim LaForest, YSO FPD (OECM Model Integration)

*Chemistry and Metallurgy Research Building Replacement:*

1. Herman LeDoux, CMRR FPD
2. Steve Fong, CMRR Staff Engineer
3. Ivan Trujillo, CMRR Staff Engineer
4. Roger Snyder, LASO Deputy Manager

Senator BEN NELSON. One of the concerns about the treaty is whether we are going to be in a position to be able to do everything we need to do, as well as everything else that's required as part of the overall operations of the facilities?

Mr. D'AGOSTINO. Right.

Senator BEN NELSON. Is there any concern on your part about your ability to build these two facilities simultaneously?

Mr. D'AGOSTINO. No. They're in two different geographic locations. The key will be sticking to our principles, our project management principles; making sure we spend more time up front on the design; working with the DNFSB; ensuring that we have the safety built into these designs; and the thinking is done upfront, instead of trying to backfit features in after the design is starting to lock itself down. So, I think we have—the DNFSB and the NNSA go back and forth on these things, and appropriately so. But, the good news is, we're having fairly significant amount of dialogue on these facilities with the DNFSB. I wouldn't have it any other way. I think it's very important to get that independent input.

Senator BEN NELSON. Congress has required your agency to have a net reduction in square feet at each site. Now, in tearing down some of the old excess facilities and to budget for the decommissioning and demolition (D&D) for each old building that a new one would replace, are you in a position to where you think that you're going to have a net reduction in square footage, but at the same time be able to handle the ongoing operations? Apparently you've not funded the D&D processes in recent budgets.

So, two questions. One, are you going to be able to get there with the reduction in square feet, but still have enough to do what needs to be done? How are you going to be able to fund the D&D costs?

Mr. D'AGOSTINO. Okay. Yes, we will be able to have square-foot reductions. Early on, when we looked about the shift from going from an old Cold War nuclear weapons complex to a 21st century national security enterprise, we felt that we could take 9 million square feet out of the enterprise. That number probably doesn't mean anything, except if I put it into context. We have 36 million square feet of space, and we believe we can take 9 million square feet down as we consolidate our functions, which we want to do with this plutonium and uranium, as we get into smaller more modern facilities. We believe we can take it down to 9 million square feet.

Another element, which is not a matter of taking square—saying you've moved out of the old buildings, or the old buildings have to come down. We're working with Dr. Triay. At Y-12, for example, we're doing a consolidation of highly-enriched uranium, and we've completed the movement of all the highly-enriched uranium that was spread out in that Y-12 valley into this new facility that we've just built, this highly-enriched uranium materials facility. That will allow us, ultimately, to take that 150 acres of highly secure space, shift the fence to—only have 75 acres of space that we're protecting, and all that work that's outside now is available for the Environmental Management (EM) organization. Senator Sessions talked about this AARA money, that \$6 billion. That money will be used to take down those facilities.

Senator BEN NELSON. I see.

Mr. D'AGOSTINO. We don't have, at this point, every single square foot being taken down. We don't have the details of that plan yet. But, for the most part, we're working the EM organization to help us out on that.

Senator BEN NELSON. As the new facilities are being built, is your budget adequate for facilities maintenance? In other words, so we don't end up with significant deferred maintenance that's not covered within a budget, but obviously it's a cost that will come due at some point in the future, and usually when there's no money available to take care of it. Are you planning for that, budgetwise, as well?

Mr. D'AGOSTINO. In an ideal world, you'd always want to do more maintenance. What we're trying to do is balance the tradeoff between taking facilities down and stopping maintenance; anticipating which facilities, and stopping maintenance on those facilities, and reallocating the resources to the fewer sets of facilities that we have right now.

I have a separate office that looks into this. The numbers vary from site to site. I'm comfortable with fiscal year 2011. This is a challenge that General Harencak is working on at the Pantex plant, for example, right now. We're trying to solve a small facilities maintenance problem there. But, at the same time, we feel that overall in fiscal year 2011, we're okay. I'll have to get back to you with an answer on the out years.

Senator BEN NELSON. Okay. Thank you.

[The information referred to follows:]

During the construction of replacement facilities, National Nuclear Security Administration balances the amount of maintenance and operational funding it provides for an existing capability until the replacement becomes available. This balance considers the inherent risks of meeting the mission requirements as well as the safety of continued operations in existing facilities, while attempting to minimize unnecessary expenses.

The Readiness in Technical Base and Facilities (RTBF) program provides the funding necessary to maintain the operations, and to reduce the risk of their continued operations. This RTBF funding is provided to the weapon sites in three categories; namely, operations, risk reduction, and transformation. All sites are provided RTBF funding in each of these categories, however the risk reduction category continues to be a priority at Y-12 and Los Alamos National Laboratory in order to provide for safe and compliant operations of the existing facilities, while Uranium Processing Facility (UPF) and Chemical and Metallurgical Research Replacement (CMRR) are constructed. RTBF support is critical to the sites' ability to manage risk in the hazardous Uranium and Plutonium facilities.

Support for risk reduction is included in the Future Years Nuclear Security Plan targets and in the case of HEU and Pu facilities, additional funding through line item projects is also provided to further reduce the risk, namely 9212 NFRR and TA-55 Risk Reduction. It is vital that support for RTBF operations, risk reduction, and line item projects continues until the startup and operation of UPF and CMRR is complete.

Senator BEN NELSON. The NPR states that the United States will "study options for ensuring the safety, security, and reliability of nuclear warheads on a case-by-case basis." Have you established criteria that will be used to evaluate each warhead, on a case-by-case basis, to ensure the safety, security, and reliability of those nuclear warheads?

Mr. D'AGOSTINO. Sir, we'll take each warhead one at a time. The criteria we use is our surveillance data that we get out of taking the warheads apart and looking at them and finding out what com-

ponents need to be replaced. When there's the right subset of work that has to be done, the decision gets made. We have pretty good sense about how the next 10 years look in this area. It's not like there are go/no-go points on each of these particular points, but, essentially, it's a conglomeration of, "We know when you're going to need to work on the organic materials in this warhead, and we're going to have to replace the neutron generator by this date. How about if we combine these two together and work on that as a joint life extension." So, it's a little dynamic from that standpoint, but the next 10 years worth of work is fairly well clear. Finish the W76 production; work on the B61, the neutron generators, the power supplies, and the like; work on the radar; work on the nuclear explosive package to get the safety and security in it; and then we know we're going to have to touch the W78, for reasons that are better off discussed in either a closed session or in a classified report for the record.

Senator BEN NELSON. In that regard, some warheads, as I understand it, don't have all the safety features that were identified by the Drell panel back in the 1990s. Is there a plan to incorporate, let's say, all of the safety features in each warhead and weapon? Will this require any new pit designs or existing pits to be remanufactured or reused?

Mr. D'AGOSTINO. Let me start with saying that our warheads are safe and secure now. As you accurately said, depending on which warhead we're talking about, if it's one of our newer warhead designs and we've had the opportunity to put more modern safety and security in it, we've done so.

What we hope to do, particularly with the B61 warhead, is make adjustments that will allow us to make sure we continue to use insensitive high explosives, and make sure that we put the right kind of 21st century security into those warheads. Some of them may require a modification to a pit; because we have a number of pits available, some of them may allow us to reuse pits that we've had before.

What the NPR allows us to do, which is very important for our lab directors and our scientific workforce, is, it allows us to study the full range of options, whether it's refurbish the existing one, reuse something that we've used before, or replace a component, because we think that's the best way to get 21st century safety and security—we have the flexibility to study all of those and present to the President and Congress, and get authorization from the President and Congress, to move down any one of those particular tracks.

Senator BEN NELSON. There's always the question of having adequately trained and skilled staff. Can you give us some idea of how that is working for DOE? Are you encountering difficulties? If so, are you able to overcome those difficulties so that we keep adequate skilled staff?

Mr. D'AGOSTINO. We've come a long way in a year, Mr. Chairman. A year ago, there was a lot of uncertainty within my organization as to what the future held. In fact, you can go back further than a year, because there was a general view that we did not have a bipartisan consensus on the deterrent. We, of course, have a lot

of very smart, capable folks that had plenty of options. In many cases, they took those options and left the organization.

But, there is a solid group of dedicated people left. They're very excited about the plan that the President has laid out, because they believe that it's not only the right plan, but they believe that's a plan that can be sustained over time. That's the most important thing, is clarity in the work that's laid out before us. Frankly, I believe America is safer now, with clarity in the NPR, than we were before, because our workforce believes that the country cares about this.

Senator BEN NELSON. Okay.

Mr. D'AGOSTINO. Not just the stockpile, sir, but also the non-proliferation and counterterrorism work and the like.

Senator BEN NELSON. There is something about clarity, isn't there?

Mr. D'AGOSTINO. Yes, sir.

Senator BEN NELSON. Is there any question I haven't asked you that I should? [Laughter.]

Mr. D'AGOSTINO. I felt I've answered a lot of questions, but— [Laughter.]

—I'll be glad to take some more for the record, if that would help.

Senator BEN NELSON. Let me check and see if we—

Mr. D'AGOSTINO. Yes.

Senator BEN NELSON. Oh, this is the toughest one, I guess. [Laughter.]

The NPR states that the United States will not develop new nuclear warheads, and that the LEPs will not support new military missions. In this context, what is your understanding of the word "new"? How does this fit with the statutory definition of "new"? There are some differences there, so perhaps you can help us understand that.

Mr. D'AGOSTINO. In my view, new nuclear warheads are warheads that are not based on previously-tested designs, or are warheads that provide a new military capability; for example, an enhanced electromagnetic pulse warhead, or a neutron bomb, or what has been euphemistically thrown around, the term "bunker-buster," or a warhead that's designed to defeat chemical or biological agents. Those are new military capabilities. Our approach is to be very consistent with the NDAA 2010, which talked about the SMP, which said, "Extend the life of existing warheads; ensure their safety, security, and reliability; to ensure that the stockpile can be extended without underground testing; to ensure that it provides an opportunity to reduce the size of the stockpile or reduce the numbers of different types of warheads; and to ensure that we prevent an accidental detonation or deliberate unauthorized use of a warhead," all within the current mission functions of the existing stockpile.

This is very consistent, frankly, I believe, with the language of the 2003 NDAA, and what we looked at is to be new military capabilities to come to the front. It's my view that there was a desire on the part of Congress that you wanted to be aware of any work that was going on to enhance military capabilities. But, the language is very clear; it did not apply to life extensions.

So, the approach we've laid out is a life extension approach, consistent with the SMP, which does not bring in new military capabilities, and it ensures us confidence of using the underground test data.

Senator BEN NELSON. So, it's really tied to additional missions, or something that changes significantly what the prior mission would have been with existing weapons, is that fair to say?

Mr. D'AGOSTINO. Yes. That's right. I would add from a technical standpoint, that I have the underground test bar that I want to make sure I cross over each time. It also includes designs that are not based on previously tested designs. So, it would be both for me, but, at the bare minimum, for sure, the mission piece.

Senator BEN NELSON. "New" is more tied to change than mission or design or capabilities, is that accurate, as well? If you expand a capability, would that create something new?

Mr. D'AGOSTINO. For example, taking a warhead that we have, that might currently be at X kilotons, and now making it 2X or 3X. I don't want to put words in General Chilton's mouth, but he and I testified earlier this morning, and he described it from that standpoint, that the stockpile he has right now is what he needs to meet the current and expected future mission requirements. I believe, of course, he would be in a position next week to be able to describe that in a little bit more detail.

Senator BEN NELSON. Sure. That would be an appropriate place for us to bring it up again.

Mr. D'AGOSTINO. Yes, sir.

Senator BEN NELSON. I thank you very much for your patience and your testimony and responding to the questions. Obviously, the whole area of the treaty will be discussed even in more detail, and there may be different ideas, it appears, about how to pursue this. I thank you for enlightening us with your answers today, and I look forward to seeing you next week.

Mr. D'AGOSTINO. Thank you, Mr. Chairman.

Senator BEN NELSON. Thank you.

The hearing is adjourned.

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR JEFF BINGAMAN

B-61

1. Senator BINGAMAN. Mr. D'Agostino, in response to the Nuclear Posture Review (NPR), the National Nuclear Security Administration (NNSA) is proposing to undertake a life extension of the B-61 gravity bomb. My understanding is that for this year the effort will examine principally the non-nuclear components. Do you anticipate looking at the nuclear warhead and are the cost estimates reflective of that?

Mr. D'AGOSTINO. Yes. The fiscal year 2011 budget request for the B61 addresses the necessary funding to develop and assess nuclear and non-nuclear life extension options and pursue technology maturation initiatives that enable a first production unit date in fiscal year 2017. The nuclear warhead scope is a critical element of the fiscal year 2011 study effort because it allows the development of life extension options to meet military requirements including extending the service life, implementation of enhanced safety features, and consolidation of four B61 weapon-types (B61-3, -4, -7, and -10) into a single weapon-type.

While the fiscal year 2010 B61 study scope is currently limited to non-nuclear options, we have requested funding authorization to expand the study to include nuclear life extension options. This request is consistent with the planning and requirements contained in the fiscal year 2011 B61 budget request.

2. Senator BINGAMAN. Mr. D'Agostino, you list out-year cost estimates of the B-61 gravity bomb totaling approximately \$1.68 billion. Does that estimate include only the weapons labs or the cost to assemble the refurbished weapon?

Mr. D'AGOSTINO. The B61 funding profile contained in the budget request includes only engineering and production development activities through fiscal year 2015 at the national laboratories and production plants. War reserve production activities at the plants will not begin until fiscal year 2016 and will continue through fiscal year 2021. Total program costs are being developed as part of the B61 Phase 6.2/2A Study and will be reported to Congress as part of the Nuclear Weapon Council authorization of Phase 6.3 in fiscal year 2012.

W-78

3. Senator BINGAMAN. Mr. D'Agostino, for fiscal year 2011 you are proposing to initiate a study on the Minuteman III W-78 warhead. Will it be a life extension program (LEP) of the existing warhead or will it consider different designs within the same military performance envelope?

Mr. D'AGOSTINO. In fiscal year 2011, the NNSA and the Department of Defense (DOD) will initiate a W78 Life Extension Phase 6.1 Concept Assessment Study. This study will carefully consider all options and will identify safety, security, and use control requirements as well as military priorities. As recommended in the NPR, this study will consider the possibility of using the resulting warhead on multiple platforms in order to reduce the number of warhead types in the nuclear weapons stockpile.

#### AGING FACILITIES

4. Senator BINGAMAN. Mr. D'Agostino, do you support replacing the aging facilities for the NNSA service center at Kirtland Air Force Base that houses over 1,000 NNSA employees? If so, how?

Mr. D'AGOSTINO. Requirements for the NNSA service center and other DOE staff located in Albuquerque have been under consideration for several years. At present, NNSA is working to finalize requirements and assess options for best meeting them. These requirements encompass, for example, the number of potential occupants for the space, and any special capabilities or requirements needed for the space. Acquisition approaches may be considered, and these may include line item construction by NNSA, construction by GSA and lease by NNSA, or construction by a third party and lease by NNSA.

For fiscal year 2011, you will note on page 34 of the fiscal year 2011 budget request, Office of the Administrator—under the Other Related Expenses bullet, we highlight the increase for maintenance funding and additional local leased space to maintain the viability of the current NNSA service center complex.

5. Senator BINGAMAN. Mr. D'Agostino, the budget for the nonproliferation verification research and development account is flat if not declining from fiscal year 2011 to fiscal year 2015. This is a critical program to develop new nuclear material sensors and satellites to detect detonations. Can you explain why this is?

Mr. D'AGOSTINO. The increase in funding from fiscal year 2010 to fiscal year 2011 supports and focuses this programmatic activity on key administration nonproliferation and arms control priorities. For example, a new capability will be created at the Nevada Test Site for testing and evaluation of new technologies that will ultimately support U.S. capabilities to monitor international treaties and cooperative agreements, such as the Nuclear Nonproliferation Treaty (NPT) and the Fissile Material Cutoff Treaty.

Funding requirements for fiscal years 2012–2015 are being reevaluated as part of the fiscal years 2012–2016 budget process, which will consider the requirements for the new NTS capability. Any necessary revisions to the out-year budget requirements will be included in the fiscal year 2012 President's budget. Using the unique facilities and scientific skills of NNSA and the DOE national laboratories and plants, in partnership with industry and academia, the research and development program conducts research and development that supports nonproliferation mission requirements necessary to close technology gaps identified through close interaction with NNSA and other U.S. Government agencies and programs. This program meets unique challenges and plays an important role in the Federal Government by developing new technologies applicable to nonproliferation, homeland security, and national security needs.

The research and development program's contribution is two-fold. First, it includes research, development, production, and delivery of space- and ground-based sensors to detect nuclear detonations. Second, the program leads the nonproliferation community's long-term research and development efforts in advancing next generation detection capabilities to detect foreign nuclear materials and weapons production facilities and processes.

6. Senator BINGAMAN. Mr. D'Agostino, can you provide a total cost estimate for the construction of the three mixed oxide (MOX) facilities under the elimination of weapons grade plutonium program?

Mr. D'AGOSTINO. The Fissile Materials Disposition program is responsible for the construction of the facilities that will be used to dispose of surplus U.S. plutonium: (1) the MOX Fuel Fabrication Facility (MFFF); (2) the Waste Solidification Building (WSB); and (3) the Pit Disassembly and Conversion (PDC) Project. The MFFF and the WSB are baselined projects, with the MFFF scheduled to begin operations in October 2016 and the WSB scheduled to begin operations in September 2013 to support MFFF cold start-up. The PDC Project is not yet baselined and the out-year funding associated with PDC should be regarded as a planning estimate that will be refined and validated when the Project Performance Baseline is approved (Critical Decision-2).

Through fiscal year 2010, the total appropriated funding for all three construction projects is \$3.5 billion. The approved MFFF total project cost (TPC) through fiscal year 2016 is \$4.8 billion and the approved WSB TPC through fiscal year 2013 is \$344 million. The funding profile in the table below corresponds to the funding profile given in the fiscal year 2011 request for the three projects.

	Through Fiscal Year 2010	Fiscal Year					Future Funding	Total
		2011	2012	2013	2014	2015		
MOX OPC .....	179,298	30,000	97,035	246,669	230,697	91,603	5,999	881,301
WSB OPC .....	29,481	21,500	28,000	21,143				100,124
PDC OPC .....	335,586	112,999	30,141	44,992	41,143	35,441	TBD	TBD
<b>Total, OPC .....</b>	<b>544,365</b>	<b>164,499</b>	<b>155,176</b>	<b>312,804</b>	<b>271,840</b>	<b>127,044</b>	<b>TBD</b>	<b>TBD</b>
MOX TEC .....	2,518,827	475,788	385,172	322,802	109,661	125,773	37,805	3,975,828
WSB TEC .....	169,749	57,000	12,927	4,655				244,331
PDC TEC .....	302,491	80,000	158,000	200,000	200,000	157,000	TBD	TBD
<b>Total, TEC .....</b>	<b>2,991,067</b>	<b>612,788</b>	<b>556,099</b>	<b>527,457</b>	<b>309,661</b>	<b>282,773</b>	<b>TBD</b>	<b>TBD</b>
MOX TPC .....	2,698,125	505,788	482,207	569,471	340,358	217,376	43,804	4,857,129
WSB TPC .....	199,230	78,500	40,927	25,798				344,455
PDC TPC .....	63,8077	192,999	188,141	244,992	241,143	192,441	TBD	TBD
<b>Total, TPC .....</b>	<b>3,535,432</b>	<b>777,287</b>	<b>711,275</b>	<b>840,261</b>	<b>581,501</b>	<b>409,817</b>	<b>TBD</b>	<b>TBD</b>

OPC - Other Project Cost; TEC - Total Estimated Cost; TPC - Total Project Cost (OPC + TEC)

MOX and WSB funding profiles support their approved baselines; PDC are preliminary estimates in the out-years since the project is not baselined.

#### QUESTIONS SUBMITTED BY SENATOR JEFF SESSIONS

##### EXERCISING THE WORKFORCE WITH NEW DESIGNS

7. Senator SESSIONS. Mr. D'Agostino, Secretary of Defense Gates told the Air Force Association on September 16, 2009, that larger investments in modernizing our nuclear infrastructure are necessary, including LEPs for our nuclear warheads, "and in one or two cases probably new designs that will be safer and more reliable." New designs were deemed necessary by the Strategic Posture Commission not only to improve safety, security, and reliability of our warheads, but also to exercise the scientific workforce. Why are new designs important?

Mr. D'AGOSTINO. The laboratory directors and I agree that our nuclear arsenal can be maintained into the indefinite future through LEPs. To improve the safety, security, and reliability of our nuclear arsenal, the NNSA plans to upgrade limited life components (LLC) and materials, and incorporate more surety—safety, security, and use control—technology, whenever possible, through LEPs. LLC reaching their end-of-life will be upgraded with, hopefully, LLC that have longer expected lifetimes

to reduce the number of times someone needs to touch a weapon. Certain materials will be upgraded with more attainable materials. The full range of LEP approaches will be considered on a weapon-by-weapon basis. The NPR states, "In any decision to proceed to engineering development for warhead LEPs, the United States will give strong preference to options for refurbishment or reuse. Replacement of nuclear components would be undertaken only if critical Stockpile Management Program goals could not be otherwise met, and if specifically authorized by the President and [funding is] approved by Congress." In addition, active LEPs, such as the B61 LEP, further exercise the full spectrum of development work, from advanced and exploratory concepts through product realization, and develop the critical intuition, judgment, and confidence present only in experienced scientists and engineers who have applied their skills to real nuclear weapons design and development work. This work is essential to attracting and retaining the scientists and engineers necessary to sustain the Nation's nuclear deterrent.

8. Senator SESSIONS. Mr. D'Agostino, do new designs imply new military capabilities or new warheads which must be tested?

Mr. D'AGOSTINO. No. As stated in the NPR, LEPs will use only nuclear components based on previously tested designs, and will not support new military missions or provide for new military capabilities.

9. Senator SESSIONS. Mr. D'Agostino, is the replacement approach necessary for new designs, or can this be done through reuse?

Mr. D'AGOSTINO. The NPR directs that the full range of approaches be considered when studying weapon system life extension options. First, while we may develop a modification or alteration for an existing weapon, there will be no new nuclear component designs. If we retain a weapon's nuclear component designs, we consider that refurbishment. If we replace a weapon's current nuclear components with those originally designed for a different weapon system, we consider that reuse. If we replace a weapon's current nuclear components with nuclear components based on tested, but never fielded, designs, we consider that replacement. The full range of options will be considered during weapon LEPs. The intent of all life extension options is to maintain the current military characteristics while making the weapon safer, more secure, and more reliable.

#### RISKS OF AN AGING NUCLEAR STOCKPILE

10. Senator SESSIONS. Mr. D'Agostino, in June 2009, in response to a question for the record, you told this committee that: "We incur more risk each year as the stockpile ages, crucial skills erode, and historic underground test data becomes less relevant. The recent Perry-Schlesinger Report indicates that in order to keep a vital skills base we will need to evolve the legacy stockpile by demonstrating the capability to field modern warheads that have no new military capabilities. We have not fielded a modern warhead in 2 decades, and critical skills are deteriorating." Are you still of the view that we incur more risk each year as the stockpile ages?

Mr. D'AGOSTINO. The NPR and the President's budget for fiscal year 2011, which was formulated to begin executing against the NPR policy direction, address the concern to which I spoke last year. The NNSA Science, Technology, and Engineering (ST&E) capabilities must be strong to sustain the Nation's nuclear deterrent. As the stockpile decreases in size, the role of ST&E in deterrence increases in importance. Our capabilities enable us to annually assess the stockpile, to resolve significant finding investigations (discovered departures from design and/or manufacturing specifications), to extend nuclear weapon lifetimes, to assess other nations' nuclear capabilities, and to dismantle retired weapons. The renewed sense of urgency created by this administration, combined with the very challenging technical program, create an environment that attracts highly-trained and motivated personnel. The rejuvenation of our scientists and engineers can be achieved through vigorous engagement of ST&E capabilities with sustainable programs, including LEPs, and an increased level of investment. The NNSA path forward will serve to attract, maintain, and manage the necessary Federal and contractor workforce to sustain nuclear deterrence, as well as other nuclear and energy security missions. This path sustains capabilities that also contribute to broader energy and security concerns and supporting U.S. leadership in ST&E.

11. Senator SESSIONS. Mr. D'Agostino, how does the administration ameliorate this situation in its fiscal year 2011 budget request?

Mr. D'AGOSTINO. The Defense Programs fiscal year 2011 budget request increased investments in the nuclear infrastructure and a highly skilled workforce to ensure the long-term safety, security, and effectiveness of our nuclear arsenal. Specifically, the request includes an additional investment of \$320 million for stockpile activities such as LEPs, advanced certification and plutonium sustainment, and \$241 million for construction activities for the Chemistry and Metallurgy Research Replacement Facility, the Uranium Processing Facility, and High Explosive Pressing Facility. These amounts are in addition to funding that is traditionally considered to be within the base program. These additional funds will support skilled scientific, technical, and engineering workers who will work on the various stockpile and construction programs and who will enable Defense Programs to accomplish its mission and meet its deliverables to DOD.

12. Senator SESSIONS. Mr. D'Agostino, will the administration evolve the legacy stockpile by demonstrating the capability to field modern warheads that have no new military capabilities?

Mr. D'AGOSTINO. Yes, the United States will sustain a safe, secure, and effective nuclear stockpile through LEPs, a process that will provide no new military characteristics and will not require underground nuclear testing. The administration is fully committed to funding this stockpile sustainment effort. NNSA and their laboratories work with DOD to develop a preferred life extension approach which is then presented to the Nuclear Weapons Council. A full range of technical approaches will be considered for each warhead undergoing life extension, including incorporating safety and security enhancements.

[Whereupon, at 3:58 p.m., the subcommittee adjourned.]



**DEPARTMENT OF DEFENSE AUTHORIZATION  
FOR APPROPRIATIONS FOR FISCAL YEAR  
2011**

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**WEDNESDAY, APRIL 21, 2010**

U.S. SENATE,  
SUBCOMMITTEE ON STRATEGIC FORCES,  
COMMITTEE ON ARMED SERVICES,  
*Washington, DC.*

**ENVIRONMENTAL MANAGEMENT FUNDING AND FUNDING UNDER THE AMERICAN RECOVERY AND REINVESTMENT ACT**

The subcommittee met, pursuant to notice, at 2:42 p.m. in room SR-222, Russell Senate Office Building, Senator E. Benjamin Nelson (chairman of the subcommittee) presiding.

Committee members present: Senators E. Benjamin Nelson and Bingaman.

Majority staff member present: Madelyn R. Creedon, counsel.

Minority staff member present: Daniel A. Lerner, professional staff member.

Staff assistants present: Kevin A. Cronin and Breon N. Wells.

Committee members' assistants present: Ann Premer, assistant to Senator Ben Nelson; Jonathan Epstein, assistant to Senator Bingaman; and Lenwood Landrum, assistant to Senator Sessions.

**OPENING STATEMENT OF SENATOR E. BENJAMIN NELSON,  
CHAIRMAN**

Senator BEN NELSON. This subcommittee hearing will come to order. I apologize for the delay. Votes seem to get in the way of the rest of our work. But we're starting nevertheless.

I'm sorry my ranking member, Senator Vitter, is not going to be able to join us today. So I will fly solo here.

Good afternoon, Dr. Triay, and welcome. We're pleased to have you here. This afternoon the Subcommittee on Strategic Forces meets to discuss the Department of Energy's (DOE) Environmental Management (EM) program budget request for fiscal year 2011 and the progress that has been made in implementing the \$6 billion received under the American Recovery and Reinvestment Act.

With us we have Dr. Inèz Triay, the Assistant Secretary of Energy for Environmental Management.

Cleaning up the vast quantities of radioactive and hazardous waste and contamination which are the result of the Cold War nuclear weapons and materials production programs is an expensive

and daunting task. This cleanup effort has been ongoing for 20 years and will most probably require another 40 years to complete, ironically about the same length as the Cold War itself. This effort is hugely expensive and technically challenging, with over \$110 billion spent to date and approximately another \$250 billion or so left to go.

With President Obama's decision in the Nuclear Posture Review (NPR) to modernize the nuclear weapons complex, more facilities will fall to the Office of Environmental Management to clean up and tear down.

Dr. Triay, you have a difficult job with many complex challenges facing you, not the least of which is the management, treatment, and disposition of the highly radioactive waste in the tanks at the DOE's Hanford, Savannah River, and Idaho facilities. Construction of the waste treatment plant at Hanford to deal with the 55 million gallons of waste stored at that site continues to be difficult as there are many unresolved technical and safety issues associated with the construction of the facility.

The additional funds in the budget request dedicated to accelerating the design of the plant are certainly needed. But this committee wants to ensure that the technical and operational safety issues are resolved so that additional redesign is not needed again at some time in the future. This plan has been plagued by repeated changes in requirements and design, which has resulted in high concurrency in design and construction, all of which is factored into the increased cost of the project over the years.

I recognize that the problems with this facility long predate your tenure as Assistant Secretary, Dr. Triay. But as you know all too well, you get to fix them. Last year, shortly after your confirmation this subcommittee held a hearing on your plans to implement the \$6 billion in Recovery Act funding. According to the DOE Inspector General, implementation of this effort is now behind schedule.

On the other hand, it's more important that these funds be spent wisely rather than quickly to really accelerate the cleanup efforts and to reduce overall program costs. If these funds help to substantially reduce the projected \$250 billion or more necessary in future cleanup costs, then this money is being well spent.

We look forward to your report on the projects and the progress of this effort as well. Obviously, there's a lot to discuss, so I want to keep my opening remarks short.

Dr. Triay, your prepared statement will be included in the record and you may begin.

**STATEMENT OF HON. INÈS R. TRIAY, ASSISTANT SECRETARY  
FOR ENVIRONMENTAL MANAGEMENT, DEPARTMENT OF EN-  
ERGY**

Dr. TRIAY. Thank you very much, Chairman Nelson. Good afternoon to you and the members of the subcommittee, Senator Bingaman. I am pleased to be here today and to address your questions regarding the Office of EM's fiscal year 2011 budget request.

EM's mission is to complete the legacy environmental cleanup left by the Cold War in a safe, secure, and compliant manner. I am very pleased that we are able to present to Congress a budget that positions the program to be fully compliant with our regulatory

commitments and supports reducing the risks associated with one of our highest environmental risk activities, tank waste, as well as achieve footprint reduction across the legacy cleanup complex. My goal remains to complete quality cleanup work safely, on schedule, and within cost, in order to deliver demonstrated value to the American taxpayer.

EM cleanup objectives will continue to be advanced in fiscal year 2011 by the infusion of \$6 billion from the American Recovery and Reinvestment Act of 2009. Through April 2010, the Office of Environmental Management has obligated \$5.6 billion and spent \$1.7 billion respectively leading to thousands of jobs created and/or saved at our sites.

In fiscal year 2011, EM will continue to draw on the \$6 billion of Recovery Act funds to advance key cleanup goals. Recovery Act funds allow EM to meet all of our regulatory compliance requirements in fiscal year 2011. This funding has also allowed EM to leverage base program dollars, enabling the reduction of our operating footprint from 900 square miles to approximately 540 square miles by the end of fiscal year 2011. This is a 40 percent reduction which will position the program to advance forward the ultimate goal of a 90 percent reduction by the end of fiscal year 2015.

We are also able to accelerate the legacy cleanup at Brookhaven National Laboratory and the Separations Process Research Unit in New York, and the Stanford Linear Accelerator Center in California into fiscal year 2011 with Recovery Act funding.

This budget request strikes a balance between maintaining support for EM's core commitments and programs, while strengthening investments in activities needed to ensure the long-term success of our cleanup mission. This budget request significantly increases EM's investments in science and technology areas that are critical to our long-term success.

Specifically, this request targets \$60 million in funding to Hanford's Office of River Protection to use in developing and deploying new technologies for treating tank waste. This funding is needed to address near-term technical risks that have been identified, but is also needed to leverage and bring forward new technologies that could help us mitigate the life cycle cleanup of these wastes.

EM will also continue to strengthen and deploy groundwater and decontamination and decommissioning cleanup technologies. Specifically, we will continue the development of an integrated high-performance computer modeling capability for waste degradation and contaminant release. This state-of-the-art scientific tool will enable robust and standardized assessments of performance and risk for cleanup and closure activities. This tool will also help us better estimate cleanup time and cost and reduce uncertainties.

The request also provides an additional \$50 million to accelerate the Waste Treatment and Immobilization Plant at Hanford, boosting the budget for the plant to \$740 million in fiscal year 2011. The additional funding will be used to accelerate completion of the design for the Waste Treatment and Immobilization Plant. Prior to design completion, it is critical that technical issues are addressed and incorporated in a timely manner. Our intent is to mitigate these risks early and get the design matured to 90 or 100 percent.

The fiscal year 2011 request makes a significant investment in the decontamination and the decommissioning of the Portsmouth Gaseous Diffusion Plant located in Ohio. This investment enables EM to accelerate the cleanup of the Portsmouth site by 15 to 20 years, leading to a significant reduction in the duration and cost of the cleanup.

Now that I have given an overview of our fiscal year budget request, I would like to take a few moments to discuss some of the areas I will be focusing on as the program moves forward. EM continues to adhere to a Safety First culture that integrates environment, safety, and health requirements and controls into all work activities. Our first priority continues to be the health and safety of our employees and the communities surrounding our cleanup sites. It is my duty to ensure that our workers go home as healthy as they came to work.

Under my leadership, the program has embarked upon a Journey to Excellence. We have developed a new business model which provides a solid management base for EM to become an excellent high-performing organization. This implementation is key to performing our cleanup mission effectively and efficiently. A key component in this process is the alignment and understanding of headquarters and field operational roles and responsibilities. Toward that end, our management's attention will continue to focus on improving project performance, aligning project and contract management, streamlining the acquisition process, and continuing our very strong performance in awarding cleanup work to small businesses.

We will continue to conduct construction project reviews. These reviews examine all aspects of a construction project, including project management, technology, and engineering. These reviews assess the progress of each of our major projects and determine their overall health and ability to meet cost and schedule goals. These reviews are scheduled approximately every 6 to 9 months and are conducted to provide EM leadership the ability to proactively reduce project risk so that issues and solutions can be identified early, rather than react once problems are realized.

With these improvements, we are confident that the EM program can succeed in its mission. Chairman Nelson and members of the subcommittee, I look forward to addressing your questions.

[The prepared statement of Dr. Triay follows:]

PREPARED STATEMENT BY DR. INÉS TRIAY

Good afternoon, Chairman Nelson, Ranking Member Vitter, and members of the subcommittee. I am pleased to be here today to answer your questions on the President's fiscal year 2011 budget request for the Department of Energy's (DOE) Office of Environmental Management (EM).

PROGRAM STATUS

In fiscal year 2011, EM will continue to build on over 20 years of cleanup progress and will focus on investments to sustain risk reduction and strengthen technology. EM has made substantial progress in nearly every area of nuclear waste cleanup, including stabilizing and consolidating high-risk material such as tank waste and surplus special nuclear material (SNM). Progress also includes the near completion of transferring spent nuclear fuel (SNF) from wet to dry storage and disposing of large quantities of transuranic (TRU) waste, low-level waste (LLW), and mixed low-level waste (MLLW). Much work remains but demonstrable progress has been made.

EM will continue to seek ways to maximize reduction of environmental, safety, and health risks in a safe, secure, compliant, and cost-effective manner. The current

EM life-cycle cost (LCC) estimate range, which covers the period of 1997 through completion, is \$275 to \$329 billion. This includes \$82 billion in actual costs from 1997 through 2009, and an additional estimate of \$193 to \$247 billion to complete EM's remaining mission.

EM is analyzing its project plans to further optimize the program. This strategic planning effort will concentrate on the technical, programmatic, and performance challenges facing the cleanup projects. It is focused on footprint reduction and near-term completions to reduce monitoring and maintenance costs and on alternative approaches to disposition tank waste and surplus SNM and SNF.

EM cleanup objectives will continue to be advanced in fiscal year 2011 by the infusion of \$6 billion from the American Recovery and Reinvestment Act of 2009 (Recovery Act). Through April 2010, EM has obligated \$5.6 billion and spent \$1.7 billion, respectively leading to thousands of jobs created and/or saved at the EM sites. The Recovery Act funding is being used to further drive the EM footprint reduction of 40 percent by September 2011, removal of 2 million tons of mill tailings at the Moab site, accelerate by 7 years the disposition of legacy TRU waste inventories at 11 sites, and build out the infrastructure needed to support high-level waste processing operations. EM will use Recovery Act funding to accelerate legacy cleanup completion at three small sites: the Brookhaven National Laboratory and Separations Process Research Unit in New York; and the Stanford Linear Accelerator Center in California. EM will continue to build on its success in utilizing small businesses to advance its cleanup objectives. In fiscal year 2009, EM obligated \$697 million of Recovery Act funding and \$1.6 billion of base program funding for a total of \$2.3 billion awarded to small businesses.

#### PROGRAM STRATEGIES

EM continues to adhere to a "Safety First" culture that integrates environment, safety, and health requirements and controls into all work activities. EM's goal is to keep our employees, the public, our stakeholders, and the States where cleanup sites are located safe from radioactive and hazardous materials contamination. EM plans to continue improving safety performance by further integrating safety into all work activities and by incorporating requirements and controls into every project, with the goal of achieving zero accidents or incidents.

EM's vision is to complete quality work safely, on schedule, and within cost in order to deliver demonstrated value to the American taxpayer. EM is introducing a new Business Model/Approach to achieve this vision. In addition to the safety performance goal, mentioned above, EM's new approach includes improving Project Management through restructuring the project portfolio, adapting the Office of Science construction project review model to EM projects, establishing performance metrics for EM operating projects, aligning project and contract management, and streamlining the acquisition process. EM is aligning Headquarters and Field Operations in order to streamline decisionmaking and improve efficiency. We plan to utilize science and technology to optimize the efficiency of tank waste, surplus SNM, SNF, and groundwater treatment and disposition. Through these changes, EM plans to achieve excellence in management and leadership with the objective of making EM the employer of choice in the Federal Government.

EM will continue to conduct construction project reviews. These reviews examine all aspects of a construction project, including project management, technology, design, engineering, safety, environment, security, and quality assurance. The process relies on expert knowledge and experience of world-class engineers, scientists, and managers sourced from Federal staff, DOE contractors, engineering firms, national laboratories, and the academic community. These reviews assess the progress of each of its major projects and determine their overall health and ability to meet cost and schedule goals. Scheduled approximately every 6 to 9 months, these reviews are intended to reduce the risk of project failure by identifying existing and potential concerns in a timely manner. In fiscal year 2009, all five major construction projects were reviewed with the findings ranging from technical to financial. In fiscal year 2010, EM plans to conduct up to 10 reviews of its major projects and other capital asset projects, as needed, to follow up on previous findings and continue to assess the ability of the project to meet its scope, schedule, and cost objectives. As such, these reviews will provide EM leadership an "early warning" of possible problems so that corrections can be made.

#### HIGHLIGHTS OF FISCAL YEAR 2011 REQUEST

EM's overarching goal is to complete the cleanup of the legacy of the Cold War in a safe, secure, and compliant manner, on schedule and within budget. EM will continue to pursue its cleanup objectives and regulatory commitments, overlaying

risk reduction and best business practices. In fiscal year 2011, EM is well positioned to meet its regulatory compliance milestones.

In fiscal year 2011, EM intends to reduce its operation footprint from 900 square miles to approximately 540 square miles, a 40 percent reduction, with the goal of achieving a 90 percent reduction by 2015. In fiscal year 2011, EM will also complete the legacy cleanup at Brookhaven National Laboratory and the Separations Process Research Unit in New York, and at the General Electric Vallecitos Nuclear Center and Stanford Linear Accelerator Center in California.

EM's cleanup priorities have not changed and we remain committed to:

- Activities to maintain safe, secure, and compliant operations within the EM complex
- Radioactive tank waste stabilization, treatment, and disposal
- SNF storage, receipt, and disposition
- SNM consolidation, processing, and disposition
- High priority groundwater remediation
- TRU waste and MLLW/LLW disposition
- Soil and groundwater remediation
- Excess facilities decontamination and decommissioning (D&D)

EM's fiscal year 2011 budget request funds radioactive liquid tank waste activities that are a large part of the cleanup challenge EM faces at its Hanford, Savannah River, and Idaho sites allowing the program to progress on its tank waste retrieval commitments and fund construction on tank waste treatment facilities. The request also targets \$60 million in funding for Hanford's Office of River Protection to invest in developing technology that can be inserted into the project's schedule that can yield significant cost savings and reduce the period of execution. Specifically, this funding will be utilized to solve near-term technical risks that have been identified and used to leverage and bring forth new technologies by focusing on such critical areas as: waste chemistry issues associated with characterization and separation; and advanced retrieval technologies. EM will continue to coordinate with the DOE Office of Science, national laboratories, and other Federal and private organizations to address technology gaps in tank waste processing technologies.

The request also provides an additional \$50 million to accelerate completion of the design of the Waste Treatment and Immobilization Plant (WTP) at Hanford—boosting the budget for the plant in fiscal year 2011 to \$740 million. This funding will enable the acceleration of design and focus on mitigating project risks early and getting the design matured to 90 or 100 percent as quickly as possible.

EM will also continue to strengthen and deploy groundwater and D&D cleanup technologies as they are vital to the long-term success of our mission. Specifically, EM will continue the development of an integrated, high-performance computer modeling capability for waste degradation and contaminant release. This state-of-the-art scientific tool will enable robust and standardized assessments of performance and risk for EM cleanup and closure activities. This tool will also help EM better estimate cleanup time and costs, and reduce uncertainties and risks associated with subsurface contaminant behavior and transport processes.

#### FISCAL YEAR 2011 BUDGET REQUEST

The Department's fiscal year 2011 budget request for EM is \$6.05 billion, of which \$5.59 billion is for defense environmental cleanup activities. Examples of planned activities and milestones for fiscal year 2011 by site-specific categories are:

#### IDAHO

[Dollars in thousands]

Fiscal Year 2009 Appropriation	Fiscal Year 2009 Recovery Act	Fiscal Year 2010 Request	Fiscal Year 2010 Appropriation	Fiscal Year 2011 Request
\$489,239	\$467,875	\$411,168	\$469,168	\$412,000

- Complete construction and readiness testing in preparation for startup of operations of the Sodium Bearing Waste Facility.

The Sodium Bearing Waste Treatment Project supports DOE's EM mission of safely storing and treating liquid radioactive wastes. This project will treat approximately 900,000 gallons of sodium bearing waste stored in tanks that are 35 to 45 years old. The treatment of this waste will enable EM to meet the Notice of Non-compliance-Consent Order Modification to cease use of the Tank Farm Facility by

December 31, 2012. In fiscal year 2011, the Sodium Bearing Waste facility construction and readiness testing will be complete.

- Ship CH-TRU waste to the Waste Isolation Pilot Plant (WIPP), and dispose of MLLW and LLW, as required in the 1995 Idaho Settlement Agreement.

During fiscal year 2011, 5,700 cubic meters of CH-TRU waste will be shipped to WIPP for disposal. In addition, 2,050 cubic meters of MLLW/LLW will be shipped for disposal by September 2011.

#### LOS ALAMOS NATIONAL LABORATORY

[Dollars in thousands]

Fiscal Year 2009 Appropriation	Fiscal Year 2009 Recovery Act	Fiscal Year 2010 Request	Fiscal Year 2010 Appropriation	Fiscal Year 2011 Request
\$226,082	\$211,775	\$191,938	\$199,438	\$200,000

- Continue characterization and certification of TRU waste for shipment to WIPP.

The Solid Waste Stabilization and Disposition Project is comprised of the treatment, storage, and disposal of legacy TRU waste and MLLW generated between 1970 and 1999 at Los Alamos National Laboratory (LANL). The end-state of this project is the safe disposal of legacy waste at LANL. In fiscal year 2011, LANL plans to package 2,000 drum equivalents of TRU waste for disposition, support of up to 3 shipments a week to WIPP, and disposition up to 300 cubic meters of LLW.

- Maintain soil and water remediation.

The LANL Soil and Water Remediation Project scope includes identification, investigation, and remediation of chemical and/or radiological contamination attributable to past Laboratory operations and practices. The remaining scope of the project includes characterization, monitoring, and protection of the surface and ground water at the Laboratory and approximately 860 Potential Release Sites left to be investigated, remediated or closed by evaluation and assessment of human health and ecological risks. In fiscal year 2011, activities include completion of characterization activities for Upper Canada del Buey, Two Mile, and Canyon de Valle Aggregate Areas.

#### OAK RIDGE

[Dollars in thousands]

Fiscal Year 2009 Appropriation	Fiscal Year 2009 Recovery Act	Fiscal Year 2010 Request	Fiscal Year 2010 Appropriation	Fiscal Year 2011 Request
\$498,688	\$755,110	\$411,168	\$436,168	\$450,000

- Continue design for construction of annex and Building 3019 modifications for the Uranium-233 (U-233) down-blending process.

The Oak Ridge National Laboratory maintains the Department's inventory of U-233 which is currently stored in Building 3019. The fiscal year 2011 funding request will support the completion of 90 percent design for construction of annex and building 3019 modifications in preparation for future disposal. Benefits include reducing safeguards and security requirements and eliminating long-term worker safety and criticality concerns.

#### RICHLAND

[Dollars in thousands]

Fiscal Year 2009 Appropriation	Fiscal Year 2009 Recovery Act	Fiscal Year 2010 Request	Fiscal Year 2010 Appropriation	Fiscal Year 2011 Request
\$1,057,496	\$1,634,500	\$993,503	\$1,080,503	\$1,041,822

- Continue remediation and facility D&D within the River Corridor.

In fiscal year 2011, cleanup activities in the River Corridor include: complete excavation of 3 of 5 100-H burial grounds; complete 22 interim remedial actions at the 100 B/C Area; complete disposition of 8 facilities; and initiate interim safe stor-

age of the 105-KE Reactor and D4 100K Area facilities. These efforts will assist in reducing the Richland site footprint by up to 40 percent in 2011.

- Maintain base operations to treat and dispose of LLW, MLLW, and TRU waste, as well as, ship CH-TRU waste to WIPP for disposal.

In fiscal year 2011, activities include: provide core management and base operations to store, treat, and disposition LLW, MLLW, and TRU waste at the Central Waste Complex and manage off-site commercial MLLW waste treatment/disposal contracts; provide base operations of disposal trenches for Hanford's MLLW; provide the base operations necessary to store and treat MLLW and TRU waste at the T Plant Complex; and to ship up to 1,825 cubic meters of CH-TRU waste.

#### RIVER PROTECTION

[Dollars in thousands]

Fiscal Year 2009 Appropriation	Fiscal Year 2009 Recovery Act	Fiscal Year 2010 Request	Fiscal Year 2010 Appropriation	Fiscal Year 2011 Request
\$1,009,043	\$326,035	\$1,098,000	\$1,098,000	\$1,158,178

- Manage the tank farms in a safe and compliant manner until closure.

The radioactive waste stored in the Hanford tanks was produced as part of the Nation's defense program. In order to protect the Columbia River, the waste must be removed and processed to a form suitable for disposal and the tanks stabilized. To accomplish these goals, in fiscal year 2011, activities include: complete two 242-A Evaporator Campaigns for space management; complete retrieval of two C-Farm Single-Shell Tanks; complete removal of six hose-in-hose transfer lines; initiate C-200 Closure Demonstration Project; and continue to perform single-shell tank integrity evaluations.

- Continue construction of the WTP complex.

WTP is critical to the completion of the Hanford tank waste program by providing the primary treatment capability to immobilize (vitrify) the radioactive tank waste at the Hanford Site. The WTP complex includes five major facilities: Pretreatment Facility, High-Level Waste Facility, Low-Activity Waste Facility, Analytical Laboratory, and the Balance of Facilities. In fiscal year 2011, activities include: complete vessel upgrades for three spent resin collection and dewatering vessels to incorporate revised seismic assessment criteria at the Pretreatment Facility; complete civil engineering design (Title II) and Architectural design at the High-Level Waste Facility; complete 80 percent of bulk process piping installation and 65 percent of bulk conduit installation at the Low-Activity Waste Facility; complete 90 percent of bulk piping installation at the Analytical Laboratory; and accept delivery of the Anhydrous Ammonia System at the Balance of Facilities.

#### SAVANNAH RIVER SITE

[Dollars in thousands]

Fiscal Year 2009 Appropriation	Fiscal Year 2009 Recovery Act	Fiscal Year 2010 Request	Fiscal Year 2010 Appropriation	Fiscal Year 2011 Request
\$1,361,479	\$1,615,400	\$1,342,013	\$1,342,013	\$1,349,863

- Continue consolidation and disposition of SNM.

The receipt, storage, and disposition of materials at SRS allows for de-inventory and shutdown of facilities at other DOE complex sites, providing substantial risk reduction and significant mortgage reduction savings to the Department. In fiscal year 2011, activities include: SRS continue to receive weapons grade surplus non-pit plutonium from LANL and Lawrence Livermore National Laboratory; develop a program to reduce the risk to personnel and the environment by reducing the residual plutonium-238 contamination in the F Area Materials Storage Facility (235-F); continue processing nuclear materials as well as purchase of cold chemicals and other materials for operations of H Canyon and HB Line; support L to H shipments to H Canyon; and perform H Canyon/HB Line infrastructure upgrades.

- Reduce radioactive liquid waste.

The mission of the tank waste program at SRS is to safely and efficiently treat, stabilize, and dispose of approximately 37 million gallons of legacy radioactive waste currently stored in 49 underground storage tanks. In fiscal year 2011, activities in-

clude: continue operation of interim salt processing facilities; support H Canyon receipts of newly generated waste; continue operation of the Defense Waste Processing Facility and complete 297 canisters of glass waste; continue construction of the Salt Waste Processing Facility; continue saltstone production and disposal operations as well as vault construction; and support Tank 48 Return to Service Project.

#### WASTE ISOLATION PILOT PLANT

[Dollars in thousands]

Fiscal Year 2009 Appropriation	Fiscal Year 2009 Recovery Act	Fiscal Year 2010 Request	Fiscal Year 2010 Appropriation	Fiscal Year 2011 Request
\$236,785	\$172,375	\$224,981	\$234,981	\$225,000

- Operate WIPP in a safe and compliant manner and dispose of CH and remote-handled (RH) TRU waste from 27 DOE sites.

WIPP in Carlsbad, NM, is the Nation's only mined geologic repository for the permanent disposal of defense-generated TRU waste. In fiscal year 2011, the budget request supports maintaining an average shipping capability of 21 CH and 5 RH-TRU waste shipments per week. In addition WIPP will increase characterization efforts at TRU waste generator sites to increase inventory of shippable waste and increase WIPP's efficiency.

#### CONCLUSION

Chairman Nelson, Ranking Member Vitter, and members of the subcommittee, I am honored to be here today representing the Office of Environmental Management. My program continues to pursue its cleanup objectives within the overall framework of achieving the greatest risk reduction benefit per radioactive content and overlaying regulatory compliance commitments and best business practices to maximize cleanup progress. We do that by continuing to address our highest priority cleanup activities in fiscal year 2011 while using Recovery Act funding to continue making progress on the twin goals of life-cycle cost management and footprint reduction. We are also integrating other equally important strategies into the cleanup activities so that we may complete quality work safely, on schedule and within cost thereby delivering demonstrated value to the American taxpayer.

I am pleased to answer any questions you may have.

Senator BEN NELSON. Thank you.

I apologize for overlooking my colleague Senator Bingaman and giving him an opportunity to make an opening statement.

Senator BINGAMAN. I was just here to ask questions, Mr. Chairman.

Senator BEN NELSON. As a matter of seeking forgiveness, let me ask you to start with the questions.

Senator BINGAMAN. Thank you. I'm glad to be here and I welcome Dr. Inèz Triay. She's someone we claim in New Mexico. She got started at Los Alamos National Laboratory (LANL) as a scientist and then worked as field director for DOE down at Carlsbad at the Waste Isolation Pilot Plant (WIPP) there. So she has a lot of friends and strong admirers in New Mexico.

Let me just ask a few questions, first about Los Alamos and then about the WIPP project, if I could. We have this consent order that's resulted from litigation with the State of New Mexico there in Los Alamos with regard to environmental cleanup. What is the annual budget that's needed in your view to meet the milestones that are set out in that consent order? Is what we have in this budget adequate to do that? Do we need to add additional money? What's your thought on that?

Dr. TRIAY. The LANL cleanup program obtained about \$211 million of Recovery Act funds, and in addition the President has requested about \$200 million for 2011. We are poised to meet all of

our compliance milestones in 2011, and in addition Secretary Chu has called for a 45-day review, Senator Bingaman, of how we are delivering the cleanup work at Los Alamos. The National Nuclear Security Administration (NNSA) Act mandates that we essentially have no one from DOE directing NNSA officials or contractors. So we believe that there are opportunities for becoming more efficient and more effective when we do this 45-day review.

We intend to brief you, your office, thoroughly on this. We know that you're extremely interested in finding those efficiencies and at the same time making sure that we have all the resources that are needed at Los Alamos in order to meet those compliance milestones. So we will be looking forward to that interaction in about 45 days from now.

Senator BINGAMAN. On this issue of NNSA's authority and your efforts to accomplish the requirements that you have for EM there, would it make more sense to have a separate EM contract for the cleanup work at Los Alamos, instead of having to go through the NNSA to try to get them to get this done?

Dr. TRIAY. In this 45-day review that Secretary Chu has called for, one of the things that is going to be looked at is exactly that type of question. So we are going to be looking at all options when it comes to how to effectively streamline the operation.

I offer, however, that for the Recovery Act we are performing cleanup with the construct that we have now, with the NNSA contractor in charge of the cleanup, and we have been able to within the Recovery Act construct be very efficient when it comes to the cleanup of Technical Area-21, the old plutonium facility at Los Alamos that is right there at the center of the main town of Los Alamos.

So we are going to take those lessons learned. We are going to take the lessons that we have learned over the many years that we have been working between NNSA and EM as fully partnered and we are going to come up with recommendations to the Secretary that are shared between EM and NNSA and fully brief you on the deliberations, as well as the recommendations.

Senator BINGAMAN. There has been a lot of interest and concern there in northern New Mexico about this issue of possible contamination of water. I gather your office has been working with the Buckman Diversion that the City of Santa Fe is part of to put proper monitoring in place on that issue. Could you describe that briefly?

Dr. TRIAY. Yes. The NNSA is crafting a memo of agreement and the EM Office is fully participating. We believe that the early detection of contaminants is essential with respect to this particular diversion project. We are very committed to working hand in glove with NNSA and with the State of New Mexico. We understand the huge importance of this effort and we believe that early detection is the way to press forward. So we're very committed to finishing that memo of agreement and moving forward with the funding necessary for that early detection.

Senator BINGAMAN. I had a few questions on the WIPP project. Should I do those now as well?

Senator BEN NELSON. Sure.

Senator BINGAMAN. My understanding is that the WIPP operations in fiscal year 2011 have asked for an additional \$7 million to maintain current disposal operations. That's a figure I was given. Do you have any estimates as to what is required in order to maintain current operations there? I know they're proceeding with the disposal of waste at WIPP at a faster rate than was originally thought or planned for. I'd just be interested in any thoughts you have as to whether they're able to maintain that rate under the budget you've proposed?

Dr. TRIAY. The WIPP project obtained Recovery Act funds, I believe \$172 million, in addition to the President's request for fiscal year 2011. I think that, with respect to the throughput of waste, we are going to be able to meet all of the needs of the complex and be able to meet our compliance milestones, which are not for the WIPP, but that plant allows places like Idaho National Laboratory, like Savannah River Site, to meet the compliance milestones that they have.

As always, we work very closely with our WIPP to try to integrate all of the needs of the complex and what are the throughputs that we can actually achieve. Because you are so knowledgeable on the WIPP operation, by increasing the throughput we get to economies of scale at the WIPP site. The more throughput of waste we have into the WIPP, the less the cost per unit per cubic meters disposed of becomes. So we are always coming up with strategic initiatives to try to increase that throughput. But between the Recovery Act and the President's request, we believe that all of the compliance milestones in the complex can be appropriately addressed in the area of transuranic wastes.

Senator BINGAMAN. Let me ask one other question on WIPP. I understand that there's been some detection of rising levels of carbon tetra chloride from the waste drums that are disposed of at WIPP. I was wondering if you've reached a determination as to whether that poses any hazard, if there are measures being taken to compensate for that or deal with that problem?

Dr. TRIAY. I'm happy to discuss this. We have been working with the New Mexico Environment Department and some of the levels of the organics, which are carbon tetrachloride, are elevated as a result of the waste that comes from Idaho. What we have done is we have instituted three measures. One of them is exactly as you described, which is to take measurements before the workers enter the different areas in the repository where there could be elevated organic levels.

The other two measures involve mitigation. One of them deals with filtering of the actual waste, installing filters in the containers that have the actual waste that comes from Idaho, to ensure that in moving forward we don't continue to increase the levels of organics in the repository.

The third one is that we have actually installed a filtration unit in the repository itself. We have been working with the New Mexico Environment Department because recently the Environmental Protection Agency changed some of the risk factors associated with carbon tetrachloride. Having said that, we are completely committed, Senator Bingaman, to make sure that these levels of organics do not pose any threat to our workers or to the public or

the environment. So we are working very closely with the New Mexico Environment Department and we expect that these mitigations that we have put in place will actually address any potential issues.

Senator BINGAMAN. Thank you very much. Mr. Chairman, thank you very much.

Senator BEN NELSON. Thank you, Senator.

EM received \$6 billion from the Recovery Act funding, as I mentioned in my opening remarks. As you indicate in your testimony, \$1.7 billion has been spent. My understanding is that you'll have until the end of 2011 to spend these funds. I assume there's a plan. Will you tell us what the plan is and will all the funds be necessary in the cleanup, or is it possible some of them might be returned to the Treasury?

Dr. TRIAY. We have a substantial amount of work that has been designated for the Recovery Act. We believe that we are on track for our internal goal of spending the Recovery Act dollars by the end of 2011. We funded all of our projects to 80 percent confidence.

We intend to reduce the footprint of the entire EM complex by 40 percent by 2011. At the end of the day, the EM program that essentially involves the cleanup of 50 years of nuclear weapons production is a huge liability to the Federal Government and to your efforts. We believe that the investment of the Recovery Act is going to reduce that ultimate liability.

For instance, with the Recovery Act we have identified \$4 billion of reductions in life-cycle costs. In addition to that, we have identified over \$3 billion of cost avoidance moving forward. So the return on investment of the Recovery Act if you look at the amount of money that has been invested versus the amount of money that could be saved and avoided in terms of expenditures moving forward is on the order of 120 percent return on investment.

We have been able to train workers and get them to work fast. We have 5,600 workers that are direct contractors. We have sub-contractors from those prime contractors to DOE, and overall we have 9,200 workers. In the Recovery Act, we are going to be able to dramatically reduce the decontamination and decommissioning activities moving forward in this program, clean up soils and groundwaters, be able to dispose of transuranic and low-level waste, and ultimately reduce the contaminated areas of the EM cleanup dramatically by 2011.

So I would submit that, based on the rate of expenditure, based on the amount of jobs that have been created and the amount of progress that we have already made and intend to make, this is a very good investment for the taxpayer.

Senator BEN NELSON. Thank you.

The goal of the stimulus funding was to accelerate the cleanup by dealing with the so-called shovel-ready projects that had not already been funded. In addition, it was to provide for jobs, and what I hear you saying is 9,200 workers. Last year I think the testimony was that you expected that there might be in the order of 13,000 contractors' jobs. Is that 9,200 the top number or is there still a possibility that there might be more with the expenditures in 2011?

Dr. TRIAY. The way these jobs are counted, we count the actual employees that are working directly in prime contracts to DOE.

Those in turn hire other subcontractors, and if you add those 2, that's the 9,200.

In addition to that, the EM program utilizes a lot of materials, for instance the containers that we use for shipping waste to the WIPP that are manufactured in Carlsbad, NM. When you actually look at all of the individuals that have benefited from being part of the Recovery Act, our count is 16,000 employees that have been part of these efforts, which then would include vendors such as the individuals that are manufacturing the containers that we use to ship the waste to WIPP, individuals that are providing the cement for some of the activities that are going on in South Carolina in terms of decontaminating, decommissioning, and dealing with reactors in South Carolina.

When you count all of that, we have been able to substantiate 16,000 individuals actually benefiting from the Recovery Act. I would like to point out, if you allow me, that when we talk about subcontractors or vendors, the Recovery Act in the EM program truly has been a success story when it comes to small business. In 2009, between the base program and the Recovery Act, as well as the small businesses, the small business awards that came from our prime contractors, we awarded \$2.5 billion to small businesses in fiscal year 2009.

We counted what that meant. It's that over 20 percent of the dollars spent in 2009 went indeed to small businesses and were spent by small businesses. So I just point out that in terms of economic stimulus, I believe that we have good facts to show for the \$1.7 billion that we have spent.

Senator BEN NELSON. Very good.

The original estimate was that about 60 percent of the funding would go to the Savannah River and Hanford sites. Is this still the plan?

Dr. TRIAY. Yes. Hanford receives \$1.9 billion and Savannah River \$1.6 billion, respectively.

Senator BEN NELSON. Are there any issues, technical or otherwise, that might interfere with Hanford or Savannah?

Dr. TRIAY. The work at Hanford and Savannah River overall is going extremely well. At Hanford we have committed to a goal of 40 percent reduction and a dramatic reduction of the facilities that are contaminated with radioactivity, waste disposal, as well as soils and groundwater decontamination. If anything, our internal goals now surpass that 40 percent footprint reduction.

At Savannah River, there is the same type of commitment to footprint reduction. Actually, at the beginning, we had some problems with the Savannah River Site, but the Recovery Act portfolio has been turned around and right now our internal goal for Savannah River footprint reduction is well over 60 percent, even though the official commitment is 40 percent footprint reduction by 2011. We think that we can do better than that.

At Savannah River, as a matter of fact, one of the main activities that we think that we can accomplish is the reduction of the amount of transuranic wastes that we have stored at the facility. We are going to be able to dispose of most of the transuranic waste from this large site, Savannah River, at the WIPP by the end of 2011.

Senator BEN NELSON. The National Defense Authorization Act for Fiscal Year 2010 directed the Government Accountability Office (GAO) to report periodically on the Recovery Act cleanup efforts. These briefings will be provided every 120 days, with the next one due at the end of April. The last one was at the end of December 2009. Each site was to have a Recovery Act coordinator to monitor execution of the projects. In December, according to the GAO, Savannah River did not have one of these site coordinators. Do you know whether they do now?

Dr. TRIAY. Yes, they do. What was done at Savannah River Site, instead of having a site coordinator, was that Headquarters deployed one of our senior executives to the Savannah River Site in order to address the project management issues that were encountered in the Savannah River Site Recovery Act portfolio at the beginning of the program. Now those project management issues have been addressed. We have implemented all of the corrective actions that the Office of Engineering and Construction Management oversees with respect to project management in the Recovery Act projects. One of the Federal project directors at the site, certified at the highest level of certification, has taken over the Recovery Act projects, and in addition to that we have been able to deploy a site coordinator to the Savannah River Site.

Senator BEN NELSON. GAO also reported that these Recovery Act projects were going to be defined as either capital or non-capital assets. What's the definition for each type of project, beyond a capital asset being a project above \$20 million?

Dr. TRIAY. What we noticed in the EM program was that we had whole entire programs, projects, and that we needed to restructure the portfolio, which in fact was something that Deputy Secretary Poneman encouraged in his last memo on project management to all of the departmental elements.

The capital projects are essentially construction projects when we actually are building a particular facility. Cleanup projects are projects where we are not building a particular facility, but instead we're performing cleanup operations that then in turn modify the status of a particular facility. For instance, removing fixtures from a facility that is contaminated and sending that contaminated material to a landfill, as well as ultimately demolishing the facility. Essentially, it goes to the amount of assets that DOE has. For that reason, even though we're not building anything, we actually still count that as part of the project management portfolio that is part of DOE Order 413.

Senator BEN NELSON. In their December review, GAO identified some potential issues that could impact success. I'd like to go through each of these issues and see if any of these have been in fact a problem. Number one, do sites have sufficient personnel to manage and oversee contracts for Recovery Act projects? I guess part of the answer would be when you're ahead of schedule, doing better than you thought, that would be the case. But overall do the sites have adequate personnel?

Dr. TRIAY. We always struggle with the amount of Federal staff and to achieve that right balance when it comes to the amount of staffing. Some years ago, as a result of a National Academy of Public Administration report, the EM Office increased the Federal staff

significantly, by about 300 Federal employees. So we think that we are poised to move forward with the Recovery Act as well as the base activities. Like you point out, our Recovery Act work is going very well, but we have added coordinators to all of the sites and those coordinators are trying to streamline the decisionmaking, the communications, between the site and headquarters. We think that that is probably a model that allows us to operate with less Federal staff moving forward.

Senator BEN NELSON. With the influx of newly hired workers there, is it possible to sufficiently train them to work safely in hazardous environments?

Dr. TRIAY. We have chosen the portfolio of the Recovery Act carefully to choose the type of activities where we have proven technologies with an established regulatory framework and a track record of training workers that come from construction, the construction field, training workers that come from different trades, into being able to work in the field of nuclear activities and in facilities that are heavily contaminated with radioactivity.

Our safety record continues to be extremely solid and very robust. We have been actually encouraged by the interest that the existing workers have taken to train the new workers that are coming in to work on Recovery Act. So we have proven that the training, the work control, the integrated safety management approaches that we use in the EM program allow for an influx of workers and to maintain our safety record.

Senator BEN NELSON. Now, can the existing disposal sites accommodate the newly created waste from Recovery Act projects, such as the demolitions and what have you?

Dr. TRIAY. Absolutely. We have one Federal facility for low-level waste and that is the Nevada Test Site, and we have two commercial facilities for low-level waste. We heavily use Energy Solutions in Utah and what Energy Solutions tells me is that they can get better economies of scale if we actually send even more waste than what we're sending now.

So I believe that the commercial facilities as well as the Federal facilities are adequate, and have adequate capacity to deal with the amount of waste that we have identified for disposal.

With respect to the WIPP, I think that you heard Senator Bingaman asking me whether we even needed more resources to try to maintain the amount of throughput that we have achieved in 2010 with the Recovery Act. So this is not a matter of lack of capability at the WIPP, which is for transuranic wastes, or for the facilities that are utilized for disposal of low-level waste.

Senator BEN NELSON. Are you encountering any challenges with local or State environmental regulatory agreements that might delay complete projects? I heard Senator Bingaman ask about the lawsuit. Will this involve delay or in some way impede your progress?

Dr. TRIAY. The case that Senator Bingaman was referring to actually was resolved. There was potential litigation, and we resolved that lawsuit with the fence-to-fence cleanup compliance order at LANL. We actually have worked collaboratively with the regulators. Our regulators meet with us often, not only at the site level, but also at the headquarters level. They have been cooperative.

They are extremely interested in facilitating our Recovery Act activities.

The portfolio itself was chosen for activities that have a well-established regulatory framework under the compliance agreements that were already part of the EM program and that have been negotiated and that had clear milestones. So I believe that the regulatory framework for the Recovery Act activities allows us to complete all the work in the portfolio, and we even have projects if some of the projects that we are moving forward with have some of the contingencies associated with them available for further effort. Even those projects also have a well-established regulatory framework that we can use to move forward.

Senator BEN NELSON. In the January 2009 report to Congress, the cost to complete the balance of DOE's cleanup program based on projects that had been identified by that time was somewhere between \$250 to \$300 billion. Since that time, President Obama has issued the NPR, wherein he's committed to modernizing the nuclear weapons complex, the last two and the hardest, most expensive and complicated of the old facilities, and building some new facilities as well.

In addition, we note that the fiscal year 2010 budget request doesn't include any out-years funding. So really the question I have is, is that \$250 billion number inclusive of what has been proposed in the latest budget, or are we looking at \$250 to \$300 billion for what was known in 2009 and everything being discussed in 2010 or in the President's comments about replacement, was that on top of the number?

Dr. TRIAY. About a year and a half ago, the EM program sent a report to Congress on excess facilities that had already been identified that were not currently part of the EM portfolio. The Recovery Act has allowed us to move forward with the decontamination and decommissioning of some of those excess facilities. But the price tag associated with those excess facilities was on the order of \$5 to \$9 billion, and that was not fully included in the life-cycle costs of the EM program because those were not facilities that were officially part of the EM portfolio.

The Recovery Act has allowed a lot of the work that needs to occur on those excess facilities, and maybe some of the work at Y-12 National Security Complex in Oak Ridge, at LANL, and other places to move forward. But the bottom line is that the excess facilities as a result of the future needs of the complex is indeed a number that always appears to be in some amount of flux, because the weapons complex moves forward identifying different facilities that now need to be part of the EM portfolio. That happens in a very interactive manner.

But I think we have a good handle on the amount of effort that those excess facilities will require moving forward, and we have shared that with Congress in our report. In addition to that, we've worked very closely with NNSA to try to identify what else they might need in terms of excess facilities as we move forward with our portfolio in EM.

Senator BEN NELSON. But at the end of the day, is it still going to be in the range of \$250 billion or \$300 billion, with all the adjustments? I realize this is dynamic, but obviously I'm concerned

about what the moving parts and the changes can mean to the total projected figure.

Dr. TRIAY. I hate to commit that it's going to be less, but I would like to offer the following. We have been extremely concerned about that life-cycle cost and we have been looking at investments that can actually significantly lower that life-cycle cost. So like I was saying, for the Recovery Act investments we see return on investment that is on the order of 120 percent. What that means is that the life-cycle cost will be reduced next year when we send our life-cycle cost to Congress as a result of the investment in the Recovery Act.

So even if some of the additional facilities that were not in the life-cycle costs come in, my intent is for the life-cycle cost to still be less than the life-cycle costs that you have delineated, even with the additional efforts of the excess facilities coming in. Not only the investments of Recovery Act, but in addition I talked about the investment in technology development and in particular in the area of tank wastes at the Savannah River Site and at the Hanford Site. We believe that with some of those investments that we have made and are making in the technology development portfolio, we can actually significantly reduce the life-cycle costs of the tank wastes by tens of billions of dollars and reduce the period of execution by decades.

My intent is to not only accept those excess facilities as they need to come into the EM cleanup program, but work on the portfolio that I do have now so that that life-cycle cost decreases as a result of these investments that we're making now in Recovery Act as well as in technology development for the tank waste. That is my objective. I know that that is the objective of DOE. We know that this liability weighs large in your defense portfolio.

Senator BEN NELSON. I know you'll do your best, and I suspect you know I'll be asking you the same question next year.

Dr. TRIAY. I'm counting on it.

Senator BEN NELSON. To see if there have been any changes that would modify that number.

Dr. TRIAY. Very good, absolutely.

Senator BEN NELSON. Thank you.

The January 2009 report identified a number of enforceable milestones at several sites that were at risk of not being met. Will the recovery funds and the rest of the funds allow any of these milestones to be met that probably weren't going to be achieved according to that 2009 report?

Dr. TRIAY. Absolutely. The Recovery Act has been instrumental in changing those facts. In fiscal year 2009, we completed successfully 72 out of 74 major milestones. Essentially, over 95 percent of the milestones were met. In fiscal years 2010 and 2011, we have on the order of the same amount of milestones and we intend to meet and complete successfully 100 percent of them.

Senator BEN NELSON. Then can you, for the record, provide a list of those that have been achieved, as well as those that have yet to be accomplished?

Dr. TRIAY. I would be happy to. As a matter of fact, the EM program decided to publish the milestones, the upcoming milestones, and the success that we have in meeting them on the web site, so

that we can have meaningful dialogue with our colleagues that were concerned about exactly how many milestones are we meeting, how are we completing our efforts. So we would be happy to provide that for the record.

Senator BEN NELSON. Very good.

The statute that required that January 2009 report also directed the GAO to review the report. GAO completed its review and submitted its report in June. The GAO had several issues with respect to the report, but I'd like to just highlight a couple of them.

The report was supposed to include an assessment of whether legislative changes or clarifications would improve or accelerate cleanup. The report did not address this requirement, as the report was submitted shortly before President Obama took office and this section was deferred to the new administration.

In the year that you've been the Assistant Secretary, have you had an opportunity to make such an assessment, and if you did what are your results?

Dr. TRIAY. We have made assessments in terms of what could be changed moving forward, and during the current tenure of the administration we actually have been sharing that within the EM program and we would be ready to start vetting that through the entire DOE. The situation was at that time, for the reasons that you describe, we felt that to get ahead of the new administration was something that was not useful for the EM program to do in this particular report.

But we always complete analysis of the things that could be improved, things that could be considered, deliberations that we could make in a very, very complex regulatory framework, and we are always ready and prepared for those kinds of deliberations within the Department and ultimately within the administration.

Senator BEN NELSON. The report was also supposed to list the major mandatory milestones and if those milestones were not going to be met to identify the reason. For example, was it a technical or a financial reason. This element wasn't addressed. Do you have some information for the record on that that you would submit?

Dr. TRIAY. Absolutely, I'd be happy to do so.

[The information referred to follows:]

Most of Environmental Management's (EM) cleanup is performed under the Comprehensive Environmental Response, Compensation and Liability Act through Federal Facility Agreements and under the Resource Conservation and Recovery Act through various consent and compliance orders. EM's overall record of meeting regulatory milestones exceeds 90 percent. EM is committed to meeting its regulatory obligations and is taking a number of steps to expand and improve the tools used to monitor and track regulatory compliance. The enforceable milestones at risk table, below, was produced in January 2009. Our more recent analysis of the 24 milestones in the table with commitment dates through September 30, 2011, shows that 4 have been met, one was partially met, and 19 have been renegotiated since the table was developed. One of the four milestones that was met and the partially met milestone were accomplished due to the availability of American Recovery and Reinvestment Act funding. The 19 that were renegotiated were at the Hanford site and were changed in consultation with our regulators to reflect mutual understandings of alterations in cleanup priorities, and the technical and sequencing complexities inherent in our environmental cleanup work.

## Enforceable Milestones at Risk

Milestone Description	Commitment Date	Category			
		Competing Priorities	Technical Difficulty	Project Performance	Unrealized Assumptions
<b>Los Alamos National Laboratory</b>					
New Mexico Environment Department Consent Order					
Submit Investigation Report for Upper Los Alamos Canyon Aggregate Area	5/31/2009	✓	✓		✓
Submit Investigation Report for Canada del Buey Canyons	8/31/2009	✓			✓
<b>Richland Operations Office</b>					
Hanford Federal Facility Agreement and Consent Order ("TPA")					
Complete removal of the K Basins and their content	3/31/2009		✓		✓
Initiate soil remediation at K West Basin	04/30/2009				✓
Complete treatment of K Basin Sludge	11/30/2009		✓	✓	✓
Complete interim remedial actions at Areas 100-B and C	12/31/2009		✓		✓
Retrieve 12,200 cubic meters (cumulative) of contact handled retrievably stored waste	12/31/2009	✓			
Complete treatment of all contact handled mixed low level waste	12/31/2009	✓	✓		
Treat 6,600 cubic meters of contact handled mixed TRU waste (cumulative)	12/31/2009	✓	✓		
Submit a revised Feasibility Study Report and proposed plan for the Area 200 BC cribs and trenches for the new 200-BC-1 Operable Unit	4/30/2010	✓			
Submit 200-6P-5 Operable Unit Feasibility Study and proposed plan to U.S. EPA	10/31/2010	✓			
Submit revised Feasibility Study Report and revised proposed plan for 200-CW-1 Operable Unit	11/30/2010	✓			
Submit 200-UP-1 Operable Unit Combined Remedial Investigation/Feasibility Study Report and proposed plan	11/30/2010	✓			

Milestone Description	Commitment Date	Category			
		Competing Priorities	Technical Difficulty	Project Performance	Unrealized Assumptions
Retrieve all contact handled retrievably stored waste within Burial Grounds 218-W-4C, 218-W-4B, 218-W3A and 218-E-12B	12/31/2010	✓			
Treat 7,600 cubic meters contact handled mixed TRU waste (cumulative)	12/31/2010	✓	✓		
Submit a Feasibility Study Report and proposed plan for 200-SC-1 Operable Unit	12/31/2010	✓			
Submit the Feasibility Study Report and the revised recommended remedy(ies) for 200-PW-2 and 200-PW-4 Operable Units	12/31/2010	✓			
Initiate full-scale retrieval of remote handled retrievably stored waste	01/01/2011	✓			
Treat 300 cubic meters per year of remote handled mixed low level waste	6/30/2011	✓			
Complete interim safe storage for 105-K Basin East and 105-K Basin West reactor	09/30/2011				✓
Complete the Combined Remedial Investigation/ Feasibility Study process for all Operable Units	12/31/2011	✓			
Complete all Area 200 Non-Tank Farm Operable Unit Site Investigations	12/31/2011	✓			
Complete the treatment or certification of contact handled mixed TRU waste regarding small containers of: (1) newly generated contact handled waste; (2) contact handled retrievably stored waste; and (3) contact handled waste currently in above-ground storage	12/31/2011	✓	✓		
Treat 8,600 cubic meters of contact handled mixed TRU waste (cumulative)	12/31/2011	✓	✓		
Submit Area 200 Chemical Laboratory Waste Operable Units Feasibility Study	12/31/2011	✓			

Milestone Description	Commitment Date	Category			
		Competing Priorities	Technical Difficulty	Project Performance	Unrealized Assumptions
Submit a revised Feasibility Study Report and revised proposed plan for 200-TW-1 and 200-PW-5 Operable Units	12/31/2011	✓			
Submit a revised Feasibility Study Report and a revised recommended remedy(ies) for 200-TW-2 Operable Unit	12/31/2011	✓			
Complete acquisition of capabilities and/or facilities necessary for retrieval, designation, storage and treatment prior to disposal of post-1970 TRU/mixed TRU waste	06/30/2012	✓	✓		
Treat 300 cubic meters per year of remote handled mixed low level waste	6/30/2012	✓			
Begin treating remote handled mixed TRU waste and large containers of contact handled mixed TRU waste	6/30/2012	✓			
Complete all Interim response actions for Area 100	12/31/2012		✓		✓
Complete interim response actions for Area 100 K	12/31/2012			✓	
Complete disposition of Area 300 surplus facilities	09/30/2015				✓
Complete all interim remedial actions for Area 300 including the 618-10 and 618-11 burial grounds	09/30/2018				✓
Complete remedial actions for all Non-Tank Farm Operable Units	9/30/2024				✓
<b>Office of River Protection</b> Hanford Federal Facility Agreement and Consent Order ("TPA")					
Start WTP cold commissioning (TPA and Washington Dangerous Waste Permit requirement)	2/28/2009			✓	✓

Milestone Description	Commitment Date	Category			
		Competing Priorities	Technical Difficulty	Project Performance	Unrealized Assumptions
Complete startup and turnover activities for waste retrieval and mobilization systems for selected initial high level waste feed tank	3/31/2009				✓
Complete hot commissioning of WTP Balance of Facilities	1/31/2011			✓	✓
Initiate negotiations of single shell tank waste retrieval and closure for remainder of the single shell tank program	10/31/2012		✓	✓	✓
Negotiations for retrieval and closure of remaining single shell tanks shall be complete within 120 days	2/28/2013		✓	✓	✓
Complete WTP pretreatment and vitrification of no less than 10% of tank waste by mass and 25% by activity	2/28/2018		✓	✓	✓
Complete all work necessary in support of the acquisition and operation of high level waste treatment, storage and disposal facility	2/28/2018			✓	✓
Retrieve waste from all remaining single shell tanks	9/30/2018		✓	✓	✓
Close all single shell tank farms	9/30/2024			✓	✓
Complete closure of all single shell tanks in accordance with approved closure/post closure plans	9/30/2024			✓	✓
Complete pre-treatment processing and vitrification of Hanford high level waste and low activity waste tank wastes	12/31/2028			✓	✓
<b>Savannah River Site</b>					
Memorandum of Agreement					
DOE must remove the Battelle remote handled-TRU waste from SRS	1/1/2009		✓		✓

The web address for our compliance performance as measured by environmental agreement milestones met is: <http://www.em.doe.gov/Pages/CompliancePerformance.aspx>.

At that location, we post the past five quarters of Environmental Management's (EM) "Environmental Compliance Scorecard." Those scorecards show that, for fiscal year 2010, EM met 95 percent of its 141 major enforceable agreement milestones due.

SITE	FINAL FOURTH QUARTER OF FY 2010 -- SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)		ENFORCEABLE AGREEMENT (EA) & PLANNED ENFORCEABLE AGREEMENT (PEA) MILESTONE STATUS		NON-ENFORCEABLE AGREEMENT (NEA)	LLV DISPOSAL	NEPA
	EA & PEA MILESTONES MET DURING QUARTERS 3, 4 & PEA MILESTONES TO BE COMPLETED DURING QUARTERS 1, 2 & 3	ON SCHEDULE EA & PEA MILESTONES MET DURING QUARTERS 3, 4 & PEA MILESTONES TO BE COMPLETED DURING QUARTERS 1, 2 & 3	EA & PEA MILESTONES MET DURING QUARTERS 3, 4 & PEA MILESTONES TO BE COMPLETED DURING QUARTERS 1, 2 & 3	ON SCHEDULE EA & PEA MILESTONES MET DURING QUARTERS 3, 4 & PEA MILESTONES TO BE COMPLETED DURING QUARTERS 1, 2 & 3			
Aspen (AKL)							
Brookhaven (BHL)							
Cardinal / Waste Interim Remediation (CISD / WIP)	NOV						
Energy Technology Engineering Center (ETEC)							
Energy Technology Laboratory (ETL)							
Lawrence Livermore National Laboratory (LLNL)							
Los Alamos National Laboratory (LANL)							
Moab							
Nevada National Security Site (NNSS)							
Oak Ridge (OR)							
Pasadena (PA)							
Panthers							
Portsmouth (PORTS)							
Richland (RL)							
River Protection (RP)							
Sandia National Laboratory (SNL)							
Savannah River Site (SRS)							
Separations Process Research Unit (SPRU)							
Stamford Linear Acceleration Center (SLAC)							
West Valley Project (WVPP)							

FINAL FOURTH QUARTER OF FY 2010 — SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)	
DETAILS OF NOTICES OF VIOLATION AND ASSOCIATED FINES & PENALTIES	
SITE	SCORE
SUMMARY (NOTE: CHANGES / ADDITIONS IN "BOLD" TEXT)	
	<p>PBS DB-080 - Waste Disposal Ops - WIPP — On 11/28/2007, the State of New Mexico cited WIPP for deficiencies in its ground-water monitoring program. The NOV alleged four deficiencies related to the following: 1) Ground water Surface Elevation Monitoring Methodology, 2) Environmental Monitor Manager Training, 3) procedures for developing periodic maps and 4) Data Quality Objectives for some field monitoring activities. A fine of \$38,520 was levied by the State. The WFO and WTS met with the NMEED on January 22, 2009 to negotiate a settlement for the NOV. The settlement was signed on February 17, 2009 and the NMEED issued a Final Order (SFO) on February 17, 2009. As part of this settlement, the permittees provided partial required submittals, including a work plan to discuss improvements to the program, on December 21, 2009. CBFO is currently awaiting approval from the NMEED for the work plan. Within 60 days of receipt of that approval, a Class 2 Permit Modification to the HWFP addressing deficiencies in the program will be submitted to the NMEED. Submittal of the PMR will complete the actions necessary to resolve this NOV.</p>
Carlsbad / Waste Isolation Pilot Plant (CBFO / WIPP)	<p><b>YELLOW</b></p> <p><b>NOTE: CORRECTIVE ACTION</b> — On 08/11/2008, Waste Disposal Ops - WIPP — On 08/02/2008, Washington TRU Solutions, LLC (WTS) management was notified that a Control Hatched media drum that was stored to WIPP on May 21, 2008, in a Stipulated Waste Box (SWB), had an unresoluted nonconformance (NOC) for remediation of free liquids. During the characterization process at the generator site (i.e. LANL), the drum had been tagged and segregated for future remediation for free liquids, but the drum was loaded into the SWB and shipped. All TRU waste shipments were suspended, and notifications to regulatory agencies and stakeholders were made. The drum was returned to LANL for further action, and shipments resumed. The NMEED requested additional information and that was provided to the NMEED on September 24, 2008. The NMEED subsequently issued Compliance Order RWB 09-31 (CO) (LANL) on July 24, 2009. The Permittees signed a Partial Stipulated Final Order (SFO) on December 10 and 16 2009, and NMEED signed the SFO on December 21, 2009. A Stipulated Final Order was agreed to by the parties involved and was approved by the New Mexico Secretary of Environment on May 12, 2010. All conditions of the Stipulated Final Order have been met resolving this compliance order.</p>
	<p>03/17/2009 OIRFS Report — NOV for Unauthorized Discharge of Brines, Metals — On March 3, 2009, the Department of Energy, Coalfield Field Office, received a Notice of Violation (NOV) from the Environmental Protection Agency (EPA) regarding an unauthorized discharge of brines from the Salt Storage Extension Basin (SSEB) at the Waste Isolation Pilot Plant (WIPP). The NOV alleged that the SSEB, which is located between the Salt Storage Extension Cell A and the Salt Storage Extension Basin. The unauthorized discharge alleges a violation of the Water Quality Act, the Water Quality Control Commission regulations and the WIPP Discharge Permit 831 (DP-831). The discharge resulted from inadequate design and inadequate review of environmental data. Corrective actions have been identified. The discharge resulted from a large rainfall event in October 2008 and additional rainfall a few days after the initial large rainfall that led to minor amounts of water seeping over the spillway. No fire was associated with the NOV and corrective actions described in the NOV are ongoing. <b>To resolve the NOV, the following actions have been completed as of the fourth quarter of FY 2010:</b> 1) line the berm area and raise the level of the spillway located between the Salt Storage Extension Cell A and the Salt Storage Evaporation Basin (this is complete); 2) build an additional Salt Storage Evaporation Basin adjacent to the existing basin (completed in July of 2010); and 3) provide the NMEED the As-Built drawings of the new basin (completed in September of 2010). Completion of these actions as of the fourth quarter of FY 10 concludes all of the actions necessary to resolve this NOV.</p>

This document has been prepared for public release. Every effort will be made to comply with all applicable environmental legal obligations, while also maintaining essential functions to protect human health, the environment, or national security.

FINAL FOURTH QUARTER OF FY 2010 — SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)	
DETAILS OF NOTICES OF VIOLATION AND ASSOCIATED FINES & PENALTIES	
SITE	SCORE
SUMMARY (NOTE: CHANGES / ADDITIONS IN "BOLD" TEXT)	
Idaho National Laboratory (INL)	<p>6/11/2010 CERP8 Report — IDEQ NOV of RCRA Effect — On June 10, 2010, AMWTP received a Notice of Violation (NOV) from the Idaho Department of Environmental Quality (IDEQ) citing a violation of RCRA 40 CFR 261.24(a)(1) for the presence of a 3-inch crack in the RCRA floor coating of the secondary containment system in Building WME-631. One crack was approximately 3 feet in total length, with a 3-inch section that exceeded 1/32 of an inch in width. This issue was identified during an IDEQ inspection on March 8-12, 2010. All cracks in this secondary containment were repaired the day they were identified. During the July 22, 2010 Settlement Conference, the Idaho Department of Environmental Quality (IDEQ) withdrew this alleged violation based on the facts provided by the DOE and the AMWTP Contractor (BBWI). At the Settlement Conference, full disclosure of the floor crack program being implemented by BBWI at the time of the IDEQ inspection, showed that no violation of the permit conditions occurred. This NOV is now closed.</p> <p>8/17/2010 — Notice of Violation (NOV) from the DOE for Improper Drum Storage in Building 794, CSESB — On June 16, 2010, the Idaho State Department of Environmental Quality issued BEA a Notice of Violation (NOV) for a self-reported RCRA violation following a site inspection in March 2010. On January 27, 2010, a safety analyst was reviewing documentation on container contents prior to shipping. During this review, the analyst noted a container that may have waste codes that were not listed in the Container Content Inventory (CCI) for the container. The container was inspected during the RCRA inspection. The waste was under the sample exclusion provision while in the AL. The container was subsequently shipped to the CSESB and received by CSESB rather than being returned to the generating facility. On January 28, 2010, the container was moved to an approved storage area at the generating facility. All other MFC RCRA permitted storage areas were reviewed for proper waste codes for stored items. A process improvement was placed into the procedures to help preclude the potential for this error in the future. During the July 22, 2010 Settlement Conference with the Idaho Department of Environmental Quality (IDEQ), DOE and BEA described the events of alleged violation and the actions taken to mitigate impacts and actions taken to prevent future noncompliances. IDEQ appreciated the efforts and reduced the fine by 80%. On August 12, 2010, DOE and BEA received the consent order to resolve the NOV. The consent order has been signed, corrective actions were completed, and IDEQ closed the consent order and NOV on 8/23/2010.</p>
Los Alamos National Laboratory (LANL)	<p>Demand Letter (issued 7/26/09), notified LANL of a \$291,000 stipulated penalty imposed by the State of New Mexico for what it viewed as an inadequate Corrective Measure Evaluation Report for Material Disposal Area G (MDA-G), at Technical Area 54 (TA-54), in the first 17 days of non-compliance. LANL started installing additional groundwater monitoring wells to address the NMEC issues, collected additional groundwater data, and delivered Revision 1 of the CME on September 2009. Another Demand Letter (issued 11/23/2009) notified LANL of another \$960,000 in stipulated penalties on this issue. On December 30, 2009, a penalty of \$1,252,500 was paid to NMEC (including interest). The fine continues to accumulate at \$3,000 / day until the NOV is settled or CME report is deemed compliant. NMEC rejected revision 1 of the CME on July 26, 2010 and provided direction that could arguably be an expansion in their expectations and provide a cut-off point for penalties. The direction was to address compliance with the MDA-G and CME. LANL installed additional groundwater monitoring wells and four quarters of sampling data to support remedial alternative in the CME report, yet directed a report delivery time that did not allow for collecting all four quarters of data. The last of these wells (R-55) was complete in August 2010, only 4 months before the report was directed to be submitted. If four quarters of data from all wells are required, a revised CME report would not be submitable until August 2011. However, LANL is currently in negotiations with NMEC to reduce the number of quarters of sampling data from the new wells, which would allow an earlier submission of the CME report. This NOV continues to be tracked pending resolution with NMEC. It is still possible that NMEC may make another demand for stipulated penalties for the period from 11/23/2009 through the MDA G CME Revision 2 delivery on 11/20/2010 or possibly through July 26, 2010. This potential demand has not been made to date. If Revision 2 is determined to be substantially compliant and has sufficient groundwater data, a stipulated penalty may not be requested (not likely). The potential penalty may be - \$830,000 if through July 2010 or - \$1,100,000 if through November 2010. This would have to be paid from FY funds.</p>

This scorecard has been prepared for analytical purposes. Every effort will be made to comply with all applicable environmental legal obligations, while also maintaining essential functions to protect human health, the environment, and national security.



EA Planned EA Milestone Report		FINAL FOURTH QUARTER OF FY 2010 - SITE LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)										
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	MILESTONE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS	DATE	
											GREEN MAJZED DATES ARE 4TH QUARTER / FY 2010 MILESTONES	
<p>Site Office - All Other Sites, Carlsbad, Chertoff Site, Hanford, Idaho, INDA Sites, Oak Ridge, Savannah, and Y-12. This report is prepared by the Environmental and Technology Development and Compliance, US DOD Fund Dependent, West Valley Demonstration Project</p>												
<b>BROOKHAVEN NATIONAL LABORATORY (BNL)</b>												
BNL-0005 Solid and Water Remediation Brookhaven National Laboratory												
ARRA Project: N												
BNL-0006-001	Submit IAG Annual Schedule Update to EPA/DEC	Submit IAG Annual Schedule Update to EPA/DEC	11/30/2010	11/30/2010		11/30/2010			DOE/EPA New York CERCLA - TFA	EA		
<b>ENERGY TECHNOLOGY ENGINEERING CENTER (ETEC)</b>												
CEC-ETEC-010 Nuclear Facility DOD - Energy Technology Engineering Center												
ARRA Project: N												
<b>IDAHO NATIONAL LABORATORY (INL)</b>												

This document has been prepared for analysis purposes. Every effort will be made to comply with all applicable environmental legal obligations, while also maintaining essential functions to protect human health, the environment, and national security.

EA Planned EA Milestone Report		FINAL FOURTH QUARTER OF FY 2016 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2016)										
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	MILESTONE COMPLETION DATE	ACTUAL DATE	FORECAST DATE	EA DATE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS	GREEN MILESTONE DATES (FY 2016 MILESTONES)	
											START DATE	END DATE
<p>One Other: All Other Sites, Cellulose, Cleary Sites, Headquarters, Idaho, IRGA Sites, Oak Ridge, and other sites. This includes all sites that are not in the "Other" category. This includes all sites that are not in the "Other" category. This includes all sites that are not in the "Other" category.</p>												
00018	Resistive Liquid Tank Wash Installation and Disposition-2017 (Capital)	Resistive Liquid Tank Wash Installation and Disposition-2017 (Capital)	ARBA Project M									
0018L01-104	Resistive Liquid Tank Wash Installation and Disposition-2017 (Capital)	Resistive Liquid Tank Wash Installation and Disposition-2017 (Capital)	13/31/2016		12/31/2016	12/31/2016			DOE/EA/RCMA/FCM/STPCO	EA		
00008	Cell and Water Remediation-2017 (Capital)	Cell and Water Remediation-2017 (Capital)	ARBA Project M									
00008C1-008	Cell and Water Remediation-2017 (Capital)	Cell and Water Remediation-2017 (Capital)	8/30/2016	8/30/2016	8/30/2016	8/30/2016			DOE/EA/RCMA/FCM/STPCO	EA		
<b>LAWRENCE LIVERMORE NATIONAL LABORATORY (LLNL)</b>												
00001	Cell and Water Remediation-Lawrence National Laboratory - Site 306	Cell and Water Remediation-Lawrence National Laboratory - Site 306	ARBA Project M									

This document has been prepared for analysis purposes. Every effort will be made to comply with all applicable environmental legal obligations, with the exception of certain functions to protect health, the environment, and national security.

EA / Planned EA Milestone Report										FINAL FOURTH QUARTER OF FY 2010 — SITE LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)											
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	ANALYSIS COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE		STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS										
						GREEN SHARD DATES AND 17th QUARTER 17 2010	RED SHARD DATES														
YU-LINE-001-001	Characterization Work Plan for Building B17 Approved	Characterization Work Plan for Building B17 Approved	4/1/2011	4/1/2011		4/1/2011				DOE-EPA California CERCLA - FA	B.E.A.										
YU-LINE-001-002	Complete Building B17 Final Proposed Plan	Complete for CERCLA Proposed Plan for the Building B17 Final Table Remediation.	9/30/2011	9/30/2011		9/30/2011				DOE-EPA California CERCLA - FA	B.E.A.										
<b>LOS ALAMOS NATIONAL LABORATORY (LANL)</b>																					
YU-LINE-002-001 and Water Remediation (YU-LINE-002-01) and Water Remediation (YU-LINE-002-02)	Investigation Work Plan for Lower Plutonium Canyon Appropriate Area	Investigation Work Plan for Lower Plutonium Canyon Appropriate Area to NMEED	7/31/2010	7/31/2010		7/31/2010		Investigation Work Plan and Historical Investigation Report submitted to NMEED on July 28, 2010.	Completed ahead of schedule	New Mexico Environment Department Consent Order	B.E.A.										
YU-LINE-002-01-1-001	IC-200 Appropriate Area Investigation Report	Complete Investigation Report for IC-200 Appropriate Area Investigation Report to NMEED per Consent Order	9/31/2010	9/31/2010		9/31/2010			Measures completed on schedule.	New Mexico Environment Department Consent Order	B.E.A.										

This document has been prepared to analyze projects. Every effort will be made to comply with all applicable environmental legislation, with the understanding that compliance is not a guarantee of environmental protection.

EA / Planned EA Milestone Report										
FINAL FOURTH QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)										
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	MILESTONE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	MILESTONE DATES ARE IN QUARTER FY 2010 (MILESTONES)	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS
VL-AM-0020-D1-1-01	Permit Monitoring Report DA 2010	Submit Periodic Monitoring Report for Manganese, Sulfate, Phosphate, Water, and Arsenic to the IMED	8/31/2010	8/31/2010	8/18/2010	8/1/2010	Complete draft of schedule.		New Mexico Environment Department (NMED) Final Order	EA
VL-AM-0020-D1-1-11	Investigation Work Plan for Upper Water Canyon Appropriate Area for IMED	Complete and submit Investigation Work Plan for Upper Water Canyon Appropriate Area for IMED	8/1/2010	8/1/2010	8/31/2010	8/31/2010	Complete on schedule.		New Mexico Environment Department Consent Order	EA/F
VL-AM-0020-D1-1-04	Investigation Work Plan for Public Canyon Appropriate Area	Complete and submit Investigation Work Plan for Public Canyon Appropriate Area	8/30/2010	8/30/2010	8/30/2010	8/30/2010	Extension requested 2/27/11. IMED extended submission on 02/20/11.	Extension requested 2/27/11. IMED extended due date to 02/30/11.	New Mexico Environment Department Consent Order	B,EA
VL-AM-0020-D1-1-09	Investigation Work Plan for Stoney Upper Pajaro Canyon Appropriate Area	Submit Investigation Work Plan for Stoney Upper Pajaro Canyon Appropriate Area to IMED	8/30/2010	8/30/2010	8/29/2010	8/29/2010	Submitted to IMED on 8/29/2010.	Submitted to IMED on schedule.	New Mexico Environment Department Consent Order	EA/F
VL-AM-0020-D1-1-05	MSAL Corrective Measures Evaluation Report (I)	MSAL Corrective Measures Evaluation Report (I) submitted to IMED.	10/1/2010	10/1/2010	8/30/2010	10/1/2010	In final review of Disapproval. IMED required that a revision to Report be submitted by 10/01/2010.	Submitted by IMED on schedule.	New Mexico Environment Department Consent Order	B,EA/F
VL-AM-0020-D1-1-03	Investigation Work Plan for Pajaro Canyon Appropriate Area	Submit Investigation Work Plan for Pajaro Canyon Appropriate Area. Currently this submission is in final review. The investigation has been completed.	10/31/2010	10/31/2010	10/31/2010	10/31/2010			New Mexico Environment Department Consent Order	EA/F

This document has been prepared for internal purposes. Every effort will be made to comply with applicable environmental legal requirements, while also recognizing operational requirements to protect human health, the environment, and national security.



REGULATORY MILESTONE STATUS BY FINAL QUARTER BY QUARTER (Q1-Q4) - FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)

EA Planned EA Milestone Report		FINAL FOURTH QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)									
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE	DATES SAUCED QUARTER (FY 2010) MILESTONE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS
W-LAM-0006-01-1-002	MDA H Corrective Measure Evaluation Report, Revision 1	MDA H Corrective Measure Evaluation Report, Revision 1 submitted to NMEQ.	11/31/2010	11/31/2010		12/31/2010		In a Withdrawal letter dated June 16, 2010, NMEQ advised that the proposed remedy submission for MDA H, is not a final remedy. The final remedy submission is due on or before December 31, 2010. NMEQ will conduct a Remedial Action Plan (RAP) Review Evaluation (RER) 1. Upon completion of a RER, NMEQ will issue a CME if action will be taken for the implementation of the remedial remedy.		New Mexico Environment Department Consent Order	EA,F
W-LAM-0006-01-1-001	Investigation Report for Water Sampling Conducted at VAB	Submit Investigation Report for Water Sampling Conducted at VAB to NMEQ	11/31/2010	8/3/2011		12/31/2010				New Mexico Environment Department Consent Order	EA,F
W-LAM-0006-01-1-004	Investigation Report for Analysis of Sampling Wells at Canyon	Submit Investigation Report for Analysis of Sampling Wells at Canyon to NMEQ	2/29/2011	2/29/2011		2/29/2011		Priority listed to issue report submitted on or before 02/28/2011.		New Mexico Environment Department Consent Order	EA,F
W-LAM-0006-01-1-003	Complete phase 2 investigation of sampling wells at Canyon	Complete phase 2 investigation of sampling wells at Canyon. Appropriate Area	3/31/2011	3/31/2011		3/31/2011				New Mexico Environment Department Consent Order	EA,F

This document (and) data presented for analysis purposes. Every effort will be made to complete all applicable environmental and regulatory milestones, unless data presented is otherwise indicated. Some milestones may be in progress, and reported as such.



ME-0454 MILESTONE STATUS BY FISCAL QUARTER FY 2010 - Q4

**EA Planning EA Milestone Report**

One Office, All Other Sites, Chemical, Chemical Sites, Hazardous Waste, HMA Sites, O&E, Technology Development and Deployment, US O&E Fund Projects, West Valley Demonstration Project

MILESTONE FIELD	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE		STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DECOMPOSITION
						GREEN MAILED-DATES ARE 3TH QUARTER FY 2010	RED MAILED-DATES ARE 4TH QUARTER FY 2010				
VI-LAM-0035.O1-045	Investigation Report for Pesticide/Insect Control	Submit Investigation Report for Pesticide/Insect Control to NMEC	8/31/2011	8/31/2011	8/31/2011	8/31/2011				New Mexico Environment Department Consent Order	EA/J
VI-LAM-0035.O1-089	Use Airmax Pesticide Control	Complete all license actions in Airmax Pesticide Control ready completion report	8/31/2011	8/31/2011	8/31/2011	8/31/2011				New Mexico Environment Department (NMEC) Final Order	EA
VI-LAM-0035.O1-090	Individual Permit Issuance and Compliance Annual Report	Complete Airmax/Control Water Pollution Control Permit Issuance for compliance with individual permit and submit Annual Report to EPA	8/30/2011	8/30/2011	8/30/2011	8/30/2011				OSG/LAN/INMEO/PC/CAU/PC/CA/COMO	SEA

This document has been prepared for EPA's use only. It is not intended to be used for any other purpose. Error does not constitute a warranty. The information is provided for informational purposes only and should not be used for any other purpose.

EA-04 EA MILESTONE STATUS BY QUARTER FY 2010 - SITE LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)

EA / Planned EA Milestone Report		FINAL FOURTH QUARTER OF FY 2010 - SITE LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)									
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE GREEN SHARD DATES ARE 1TH QUARTER IN 2010 RESPONSES	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS	
<p>Site Specific: All Other Sites, Carlsbad, Closure Sites, Nevada, Idaho, NMS, Shoshone, Oak Ridge, etc. All Other Sites, Carlsbad, Closure Sites, Nevada, Idaho, NMS, Shoshone, Oak Ridge, etc. Technology Development and Deployment, US DAD Fund Deposit, West Valley Demonstration Project</p>											
V-LAN-0050 Sub and Water Remediation/LAK - V-LAN-0050.R1 Defense Site and Groundwater V-LAN-0050.R1 DP Site/MSLB			AREA Project: Y								
V-LAN-0050.R1-1-001	Subarea Investigation Report for SWMI 21-511 (MOA R) to IMED	Subarea Investigation Report for SWMI 21-511 (MOA R) to IMED	12/31/2010	12/31/2010		12/31/2010	N/A	Time changed per FFO 3-3513	New Mexico Environment Department (MED); Fund Other	EA/DA	
V-LAN-0050.R Nuclear Facility (RAD/LAK - 0050-001) V-LAN-0050 Nuclear Facility (RAD-LAK) (Defense) V-LAN-0050-PRUCAP DAD - DP Site and 13-04			AREA Project: N								
BEBAL114	Remedy Completion Report for MIA L		7/8/2011	7/8/2011	7/8/2011	7/8/2011 EA Date reorganized & approved 12/30/2010	ICR extension request based on pending MOA approval & N. IMED provided approval of the extension. Letter dated 07/23/2010.			N/A	

NEVADA NATIONAL SECURITY SITE (NNSS)

This document has been prepared for public release for all applicable environmental regulatory obligations. Public data, containing national security information, is provided herein, but does not constitute an acknowledgment of national security.





EA / Planned EA Milestone Report		FINAL FOURTH QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)									
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	MILESTONE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE	STATUS/INARRATIVE	VARIANCE/INARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS	
											OVERSIGHTED DATES AND 4TH QUARTER OF FY 2010
VL-WV-0025-01-1-188	Submit Corrective Action Unit 172 Document Closure Report	Submit Corrective Action Unit 172 Corrective Action Decision Document Closure Report	7/13/2011	8/1/2011		8/31/2011	Enforceable Agreement status set by Regulator on 8/31/2011. Agreement date (8/31/2011) and milestone set. Milestone set by Regulator in Active Decision Document Document Closure Report (Document Closure Report) by Regulator is a follow up to the Corrective Action Unit 172. Since milestone type was set to "Document Closure Report Milestones are set by the Regulator and are not enforceable by PADES."		FFACO	EA	
VL-WV-0025-01-1-184	Submit Corrective Action Unit 147 Streamlined Approach for Environmental Remediation	Submit Corrective Action Unit 147 Streamlined Approach for Environmental Remediation	5/31/2011	5/31/2011		5/31/2011	This milestone is being entered to replace AG in VL-WV-0025-01-1-178 as milestone is being retired in update to PADES in accordance with change request #20100738. Milestone was set in August 2010.		FFACO	EA	
VL-WV-0025-01-1-122	Submit CAUIB Corrective Action Unit 188 Corrective Action Decision Document Closure Report (CAUIB CAP)	Submit Corrective Action Unit 188 Corrective Action Decision Document Closure Report (CAUIB CAP)	6/22/2011	6/22/2011		6/22/2011	Enforceable Agreement milestone and due date established by Regulator April 11, 2010.		FFACO	EA	

This document has been prepared for analysis purposes. Every effort is made to comply with all applicable environmental laws and regulations. While data is continuously updated, functions to permit a correct result, the information, and historical information.

EA Planned EA Milestone Report											
FINAL FOURTH QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)											
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATION	EA DATE
											ORIGIN DATED DATES ARE 17th JANUARY / FY 2010 MILESTONE
VI-W-002B.01.1-109	Submit Corrective Action Unit (CAU) (M Closure Report) (CR)	Submit Corrective Action Unit (CAU) (M Closure Report) (CR)	6/30/2011	4/3/2011		6/30/2011			FFACD	EA	
VI-W-002B.01.1-110	Corrective Action Unit B7 Transport Model Presentation	Corrective Action Unit B7 Transport Model Presentation	7/14/2011	7/14/2011		7/14/2011	Enforceable Agreement milestone and due date established by Regulator April 14, 2009		FFACD	EA	
VI-W-002B.01.1-109	Corrective Action Unit 101 Drilling Operations Presentation	Corrective Action Unit 101 Drilling Operations Presentation	6/18/2011	6/18/2011		6/18/2011	Enforceable Agreement milestone and due date established by Regulator April 14, 2009		FFACD	EA	
VI-W-002B.01.1-108	Corrective Action Unit 102 Drilling Operations Presentation	Corrective Action Unit 102 Drilling Operations Presentation	6/18/2011	6/18/2011		6/18/2011	Enforceable Agreement milestone and due date established by Regulator April 14, 2009		FFACD	EA	
VI-W-002B.01.1-114	Corrective Action Unit B9 Flow Model Presentation	Corrective Action Unit B9 Flow Model Presentation	6/15/2011	6/15/2011		6/15/2011	Enforceable Agreement milestone and due date established by Regulator April 14, 2009		FFACD	EA	

This document has been prepared for analysis purposes. Every effort will be made to comply with all applicable environmental legal obligations, with due monitoring, record keeping, to permit future health, to assessment, and related matters.

EAL Planned EA Milestone Report										FISCAL YEAR 2010 - 4TH QUARTER				FISCAL YEAR 2009 - 4TH QUARTER			
EAL Milestone Report										FISCAL YEAR 2010 - 4TH QUARTER				FISCAL YEAR 2009 - 4TH QUARTER			
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DEVIATIONS							
VL-W-0028-D1-1-185	Submit Corrective Action Unit 118 Closure Report	Submit Corrective Action Unit 118 Closure Report	9/30/2011	9/30/2011		9/30/2011	This milestone is being reviewed to replace MS # 118 with MS # 118A which was cancelled. This milestone is being entered in accordance with change order #100 (PAMS) in August 2010.		FFACQ	EA							
VL-W-0028-D1-1-500	Submit Corrective Action Unit 124 Remedial Action Investigation Plan	Submit Corrective Action Unit 124 Remedial Action Investigation Plan	9/3/2011	9/29/11		Planned EA (PEA), no EA date	This milestone is being reviewed to replace MS #124 with MS #124A which was cancelled. This milestone is being entered in accordance with change order #100 (PAMS) in August 2010.			PEA							
VL-W-0028-R1-401	Submit Corrective Action Unit (CAU) 188 Closure Report (CR)	Submit Corrective Action Unit (CAU) 188 Closure Report (CR)	9/30/2010	9/30/2010	9/9/2010	9/30/2010		Completed ahead of schedule.	FFACQ	EA/BA							
VL-W-0028-R1-211	Submit Corrective Action Unit 207 Corrective Action Decision Document (CADDD)	Submit Corrective Action Unit 207 Corrective Action Decision Document (CADDD)	12/8/2010	11/3/2011		11/11/2011			FFACQ	EA/BA							

The information has been prepared for website purposes. Every effort will be made to comply with all applicable environmental legal obligations, with the understanding that compliance is not guaranteed.



EA / Planned EA Milestone Report		FINAL FOURTH QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)									
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS	
ML-04-0000-01-006	Mixed Low-Level Waste- Complete Work for Disposal	Mixed Low-Level Waste- Complete Work for Disposal	11/30/2010	11/30/2010		11/30/2010			RCRA Part B Permit	EA	
ML-04-0000-01-014	Initiate closure of PG 2 (Mixed Low-Level Waste)	Initiate closure of PG 2 (Mixed Low-Level Waste)	9/30/2011	9/30/2011		9/30/2011			RCRA Part B Permit	EA	
ML-04-0000-01-011	Dispose Low-Level Waste	Dispose Low-Level Waste	9/30/2011	9/30/2011		9/30/2011			RCRA Part B Permit	EA	
<p>ML-04-0100 Nevada Community and Regulatory Support</p> <p>ABRA Projects</p>											
ML-04-2100-002	Provide Regulatory and Stakeholder Funding	Provide Regulatory and Stakeholder Funding	9/30/2010	9/30/2010	9/30/2010	9/30/2010		Milestones were updated as of the month of September were updated.	FFACD	B, EA	
ML-04-2100-003	Provide Regulatory and Stakeholder Funding	Provide Regulatory and Stakeholder Funding	9/30/2011	9/30/2011		9/30/2011			FFACD	B, EA	
<b>OAK RIDGE (OR)</b>											

This document has been prepared for analysis purposes. Every effort will be made to comply with all applicable environmental legal obligations, while also recognizing essential functions to protect human health, the environment, and national security.





EA Planning EA Milestone Report		FINAL FOURTH QUARTER OF FY 2010 - SITE LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)									
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGENCY NAME	DESIGNATIONS	SA DATE	
										DESIGNED DATES ARE (7th QUARTER / FY 2010)	REVISIONS
DR0042.01-020	CHL Facilities DAD (Pre-Resistor Facility) - Submit WRP for NW Ground Cell System		8/12/2011	8/12/2011				DOE-EPA Tennessee CERCLA/NCLRA TFA	EA		
DR0042.01-013	Submit the BSEAE RA, Push & Pull as Removal RA to the Regulators		8/1/2012	3/6/2011				DOE-EPA Tennessee CERCLA/NCLRA TFA	EA		
DR0042.01-012	Start construction on the BY DAD (Isotope Area Facilities (ISAF CLAD))		7/19/2011	8/18/2011				DOE-EPA Tennessee CERCLA/NCLRA TFA	EA		
DR0042 Nuclear Facility DAD-Old Ridge National Laboratory / DR0042.R1 Oak Ridge Recovery Facility - Submit CHL DAD / DR0042.R1.2 Facility Completion - Building Job Order											
JORA Project Y											
DR0042.R1-2-028	Start construction on the BY DAD (Isotope Area Facilities (ISAF CLAD))	Start construction on the BY DAD (Isotope Area Facilities (ISAF CLAD))	7/19/2011	8/18/2011				DOE-EPA Tennessee CERCLA/NCLRA TFA	EA/BA		
DR0042 Nuclear Facility DAD-Old Ridge National Laboratory / DR0042.R1 Oak Ridge Recovery Facility - Submit CHL DAD / DR0042.R1.3 Defense Remedial Action											
JORA Project Y											

This document has been prepared for analysis purposes. Every effort will be made to comply with all applicable environmental legal obligations, while also maintaining essential facilities to protect human health, the environment, and national security.

EA - Planned EA Milestone Report		FINAL FOURTH QUARTER OF FY 2019 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2019)									
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS	
						GREEN SHADED DATES ARE 4TH QUARTER MILESTONES					
OR-0012-B1-4-008	Tank W1-A - Construction Start on Conclude # (CA)	Tank W1-A - Construction Start on Conclude # (CA)	1/22/2011	1/21/2011		1/22/2011			DOBEPA Transmittal: CERCLA/RCRA-TFA	EA/SA	
OR-0012-B1-4-007	Tank W1-A - Removal Action Complete	Tank W1-A - Removal Action Complete	8/12/2011	8/17/2011		8/12/2011			DOBEPA Transmittal: CERCLA/RCRA-TFA	EA/SA	
OR-0012-B1-4-008	Tank W1-A - Submit Conclude # D1 Removal Action Report	Tank W1-A - Submit Conclude # D1 Removal Action Report	8/24/2011	8/24/2011		8/24/2011			DOBEPA Transmittal: CERCLA/RCRA-TFA	EA/SA	
<b>OR-0012-NEW Oak Ridge Recovery Act Project / OR-0012-NEW R2-2 ORNL Non-Dioxin Facility Demolition - 2008 Complex</b> ARRA Project - Y											
OR-0012-NEW R2-2-010	ORNL Facilities D1C (non-RRR) for RW Quadline Laydown	ORNL Facilities D1C (non-RRR) for RW Quadline Laydown	8/12/2011	8/12/2011		8/12/2011			DOBEPA Transmittal: CERCLA/RCRA-TFA	EA/SA	
<b>OAK RIDGE RESERVATION (ORR)</b>											

This scorecard has been prepared for analytical purposes. Every effort will be made to comply with all applicable environmental legal obligations, while also maintaining essential functions to protect public health, the environment, and national security.

EA Phased EA Milestone Report		FINAL FOURTH QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)									
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS	
											ISSUE DATED QUARTER / FY 2010 MILESTONE
OR-00138.01.1-028	Issue the Quarterly Report of the Status of Compliance Agreement Activities	Issue the Quarterly Report of the Status of Compliance Agreement Activities	7/30/2010	7/30/2010	7/30/2010	7/30/2010			DOE/Tennessee: RCMA/FCAI-Cornm, Other LDR STP	EA	
OR-00138.01.1-033	Submit Quarterly Report on STP Tables 3.4 and 3.6 within 15 business days of the end of the reporting period	Submit Quarterly Report on STP Tables 3.4 and 3.6 within 15 business days of the end of the reporting period	7/30/2010	7/30/2010	7/30/2010	7/30/2010			DOE/Tennessee: RCMA/FCAI-Cornm, Other LDR STP	EA	
OR-00138.01.1-035	Issue the Quarterly Report of the Status of Building Activities Compliance Agreement Activities	Issue the Quarterly Report of the Status of Compliance Agreement Activities	10/30/2010	10/30/2010	10/30/2010	10/30/2010			DOE/Tennessee: RCMA/FCAI-Cornm, Other LDR STP	EA	
OR-00138.01.1-038	Submit Quarterly Report on STP Tables 3.4 and 3.6 within 15 business days of the end of the reporting period	Submit Quarterly Report on STP Tables 3.4 and 3.6 within 15 business days of the end of the reporting period	10/30/2010	10/30/2010	10/30/2010	10/30/2010			DOE/Tennessee: RCMA/FCAI-Cornm, Other LDR STP	EA	
OR-00138.01.1-044	Submit the Quarterly Report of the Status of processing THU with Inventory	Submit the Quarterly Report of the Status of processing THU with Inventory	10/30/2010	10/30/2010	10/30/2010	10/30/2010			DOE/Tennessee: RCMA/FCAI-Cornm, Other LDR STP	EA	
OR-00138.01.1-078	Submit STP Annual Update for FY 2011	Submit STP Annual Update for FY 2011	10/31/2010	10/31/2010	10/31/2010	10/31/2010			DOE/Tennessee: RCMA/FCAI-Cornm, Other LDR STP	EA	
OR-00138.01.1-088	Submit STP Semi-annual Progress Report	Submit STP Semi-annual Progress Report	10/31/2010	10/31/2010	10/31/2010	10/31/2010			DOE/Tennessee: RCMA/FCAI-Cornm, Other LDR STP	EA	
OR-00138.01.1-021	Issue the Quarterly Report of the Status of Building Activities Compliance Agreement Activities	Issue the Quarterly Report of the Status of Compliance Agreement Activities	1/30/2011	1/30/2011	1/30/2011	1/30/2011			DOE/Tennessee: RCMA/FCAI-Cornm, Other LDR STP	EA	

This document has been prepared by private process. Every effort will be made to comply with all applicable environmental legal obligations, while also protecting essential functions to protect human health, the environment, and national security.

EA / Planned EA Milestone Report											
FINAL FOURTH QUARTER OF FY 2019 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2019)											
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE		STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS
						DATES AND FY QUARTER	2019 MILESTONE				
OR-0018-01-1-004	Submit Quarterly Report on STP Table 3.4 and 3.8 wastes.	Submit Quarterly Report on STP Table 3.4 and 3.8 wastes. DOE Transverse: RCMA/FACAL - Comm. Omit LDR/STP	1/30/2011	1/30/2011		1/30/2011				DOE Transverse: RCMA/FACAL - Comm. Omit LDR/STP	EA
OR-0018-01-1-108	Submit the Quarterly Report of Status of Processing THU waste inventory.	Submit the Quarterly Report of Status of Processing THU waste inventory.	1/30/2011	1/30/2011		1/30/2011				DOE Transverse: RCMA/FACAL - Comm. Omit LDR/STP	EA
OR-0018-01-1-022	Issue the Quarterly Report of the Status of Building K-1050 Compliance Agreement Activities.	Issue the Quarterly Report of the Status of Building K-1050 Activities. DOE Transverse: RCMA/FACAL - Comm. Omit LDR/STP	4/30/2011	4/30/2011		4/30/2011				DOE Transverse: RCMA/FACAL - Comm. Omit LDR/STP	EA
OR-0018-01-1-007	Submit Quarterly Report on STP Table 3.4 and 3.8 wastes.	Submit Quarterly Report on STP Table 3.4 and 3.8 wastes. DOE Transverse: RCMA/FACAL - Comm. Omit LDR/STP	4/30/2011	4/30/2011		4/30/2011				DOE Transverse: RCMA/FACAL - Comm. Omit LDR/STP	EA
OR-0018-01-1-007	Submit STP Semi-annual Progress Report.	Submit STP Semi-annual Progress Report.	4/30/2011	4/30/2011		4/30/2011				DOE Transverse: RCMA/FACAL - Comm. Omit LDR/STP	EA
OR-0018-01-1-010	Submit the Quarterly Report of Status of Processing THU waste inventory.	Submit the Quarterly Report of Status of Processing THU waste inventory.	4/30/2011	4/30/2011		4/30/2011				DOE Transverse: RCMA/FACAL - Comm. Omit LDR/STP	EA
OR-0018-01-1-010	Complete K-1050 waste segregation, and characterization activities, in accordance with the waste management plan.	Complete K-1050 waste segregation, and characterization activities, with exception of 122500 waste.	4/30/2011	4/30/2011		4/30/2011				DOE Transverse: RCMA/FACAL - Comm. Omit LDR/STP	EA

This document contains information for public purposes. Every effort will be made to comply with all applicable environmental legal obligations. In the public reporting material furnished to protect human health, the environment, and natural resources.



EPA Planned EA Milestones Report									
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	REASON FOR COMPLETION DATE	FORECAST DATE	ACTUAL DATE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DEVIATIONS
OH-0138-01-1-006	Complete processing of 85 cu m of CH waste	Complete processing of 85 cu m of CH waste	8/31/2011	5/31/2011	5/31/2011	Regulatory approval was received for this milestone from USDOE on 01/28/11. USDOE was unable to respond with the milestone.		DOE Tennessee RCRA/FPCA - Over/LDR/STP	EADA
OH-0138-01-1-003	Complete processing of 152 cu m of CH waste	Complete processing of 152 cu m of CH waste	9/30/2011	9/30/2011	9/30/2011	DOE Tennessee RCRA/FPCA / Comm. Over/LDR/STP		DOE Tennessee RCRA/FPCA - Comm. Over/LDR/STP	EADA
OH-0138-01-1-004	Complete processing of 373 cu m of CH waste	Complete processing of 373 cu m of CH waste	9/30/2011	9/30/2011	9/30/2011	DOE Tennessee RCRA/FPCA - Comm. Over/LDR/STP		DOE Tennessee RCRA/FPCA - Comm. Over/LDR/STP	EADA
<b>Y-12 PLANT (Y-12)</b>									
OH-0041 Nuclear Facility DAS-V12 / OH-0141 Nuclear Facility DAS-V12 (Operational) / OH-0142 Nuclear Facility DAS-V12 (Operations 1)			ARMA Project						
OH-0041-02-1-124	Y-12 Building DAS	Submit (renew) to the regulatory	8/1/2010	8/1/2010	8/1/2010	Completed ahead of schedule.		DOE EPA Tennessee CERCLA/RCRA / PFA	EADA

This document has been prepared for analysis purposes. Every effort shall be made to comply with all applicable environmental laws and regulations, while also recognizing general practices for prudent business, the environment, and national security.

EA / Planned EA Milestone Report										FINAL FOURTH QUARTER OF FY 2010 – SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)			
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE		STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS		
						DATES ARE 4TH QUARTER OF 2010	MILESTONE						
OR-041-01-1-03	Submit the USFPC Submittals (Part of USFPC Phase 4 ROD Study and Strip Test	Part of USFPC Phase 4 ROD Study and Strip Test	1/3/2010	9/30/2010	9/23/2010	9/30/2010	9/30/2010	Completed ahead of schedule.	The current submittals are on schedule. 8/29/2010.	DOE/EPA Tennessee CERCLAND/CA - PFA	EA		
OR-041-01-1-07	Submit Water Resources Capacity Assurance Report (CAR) to the regulator for approval.	Submit Water Resources Capacity Assurance Report (CAR) to the regulator for approval.	2/23/2011	2/20/2011		2/20/2011				DOE/EPA Tennessee CERCLAND/CA - PFA	EA		
OR-041-01-1-02	Submit ERM/WAC Abatement Capacity Assurance Report (CAR) to the regulator for approval.	Submit ERM/WAC Abatement Capacity Assurance Report (CAR) to the regulator for approval.	9/30/2011	9/1/2011		9/1/2011				DOE/EPA Tennessee CERCLAND/CA - PFA	EA		
OR-041-01-1-04	Submit USFPC Phase 1 ROD in Source Control Action Statement to the regulator.	Submit USFPC Phase 1 ROD in Source Control Action Statement to the regulator.	9/29/2011	9/30/2011		9/30/2011				DOE/EPA Tennessee CERCLAND/CA - PFA	EA		
OR-041 Nuclear Facility 030-V-12 / OR-041 RI V-12 Recovery Act Project - OR-041-RI-1.2 V-12 Remediation Preparation										ARBA Project: V			
OR-041-RI-2-012	V-12 Salvage Year 2 - Strip YHA, Strip Removal	V-12 Salvage Year 2 Strip Removal - CS	9/30/2016	9/30/2010	9/9/2009	9/30/2010	9/30/2010		Completed ahead of schedule.	DOE/EPA Tennessee CERCLAND/CA - PFA	EA		

This document has been prepared for project purposes. Every effort will be made to comply with all applicable environmental regulatory obligations. While not representing formal findings or project findings, the information and material herein





USEPA MILESTONE STATUS BY FINAL QUARTER FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST & SEPTEMBER 2010)

EA / Planned EA Milestone Report		FINAL FOURTH QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST & SEPTEMBER 2010)								
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS
PA006QD114	Issue Output Side Permit/Draft RI Report to EPA/CEM (D)	Milestone taken from current baseline approved by EMAS on January 2009. The milestone is due in the FY10 Site Management Plan.	4/25/2011	1/18/2011		3/22/2011	Baseline completion date is 1/18/2011 from an approved RCP.	Baseline completion date is 1/18/2011 from an approved RCP.	DOE/EPA Kentucky CERCLA/MDA / YFA	EA
PA006QD115B	Subs GI Remedial Action D1 Remedial Investigation Report	Milestone listed in the February 2010 Site Management Plan.	4/25/2011	2/23/2011		3/22/2011	On track to complete baseline for Environmental Agreement date.		DOE/EPA Kentucky CERCLA/MDA / YFA	EA
PA006QD115E	Site Evaluation Report for the February 2010 GI Remedial Action	Milestone listed in the February 2010 Site Management Plan.	3/18/2011	6/17/2011		3/17/2011	The Planned EA Mile is in compliance with the Site Management Plan (SMP). The next SMP will due 10/10/2011.		DOE/EPA Kentucky CERCLA/MDA / YFA	PLA
PA006QD115Z	Issue Groundwater Plume D1 R20 to EPA and KY	Milestone listed in current baseline approved by EMAS in January 2009. The milestone is due in the FY10 Site Management Plan.	8/17/2010	8/16/2011		8/18/2011	Review Entendable Agreement date from an approved RCP. The next RCP will be issued October 20, 2010. LQOP needed for this milestone. The next RCP will be issued October 20, 2010.	Per dispute resolution, the milestone is in compliance with EPA and KY on 8/18/2011. The next RCP will be issued October 20, 2010. LQOP needed for this milestone. The next RCP will be issued October 20, 2010.	DOE/EPA Kentucky CERCLA/MDA / YFA	EA

This document has been prepared for agency purposes. It may not be used for any other purpose without the written consent of the agency. It is not intended to be used for any other purpose.





MELOH EA MILESTONE STATUS BY FINAL QUARTER FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)

EA Planned EA Milestone Report		FINAL FOURTH QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)								
MILESTONE FIELD	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS
						GREEN SHADO-DATES ARE 15th QUARTER / FY 2010 MILESTONE				
PC-0013.01-014	Submit Annual TSCA/FICA Compliance Report to US EPA	Submit Annual Compliance Agreement Report to U.S. EPA in accordance with TSCA/FICA.	6/30/2011	6/30/2011		6/30/2011			DOE EPA TSCA-FIC REPORT	R/A
PC-0046.01-1-028	Submit Monthly Technical Progress Report to US EPA.	Submit Monthly Technical Progress Report to US EPA.	7/15/2010	7/15/2010	7/15/2010	7/15/2010	Completed ahead of schedule.		US EPA RCRA Consent Decree - CONO	EA
PC-0046.01-1-044	Submit Quarterly Progress Report to US EPA.	Required by Consent Decree by end of the month on a quarterly basis. Report to US EPA. WYGLCB WBS for Environmental Monitoring & Reporting.	7/15/2010	7/15/2010	7/15/2010	7/15/2010	Completed ahead of schedule.		DOE EPA RCRA Consent Decree - CONO	EA

The information has been prepared for analysis purposes. Every effort will be made to complete each of applicable environmental legal obligations. While data concerning material functions is provided (where) issued, the information is not intended to be a substitute for professional advice.

EA / Planned EA Milestone Report		FINAL FOURTH QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)									
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE OR SHARED DATES ARE IN QUARTERS 7, 8, 9 MILESTONES	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATION AGREEMENT NAME	DESIGNATION	
PO-000001-1-037	Submit Monthly Technical Progress Report to OIA EPA	Enforceable agreement milestone is due by the 15th of each month as required by the Consent Decree. This will be required as long as the Consent Decree is in effect at the Portsmouth site.	9/15/2010	9/15/2010	9/15/2010	9/15/2010			DOE/DOH RCRA/Consent Decree-COING	EA	
PO-000001-1-076	Submit Monthly Technical Progress Report to OIA EPA	Enforceable agreement milestone is due by the 15th of each month as required by the Consent Decree. This will be required as long as the Consent Decree is in effect at the Portsmouth site.	10/15/2010	10/15/2010		10/15/2010			DOE/DOH RCRA/Consent Decree-COING	EA	
PO-000001-1-085	Submit Quarterly Progress Report to OIA EPA	Required by Consent Decree by end of the month on a quarterly basis. This will be required as long as the Consent Decree is in effect at the Portsmouth site.	10/31/2010	10/31/2010		10/31/2010			DOE/EPA CERCLA- COING	EA	
PO-000001-1-148	Submit Quarterly CERCLA Progress Report to OIA EPA	Paragraph 6.2 DWIC - submit a CERCLA report to OIA EPA by the end of each calendar quarter.	10/31/2010	10/31/2010		10/31/2010			DOE/DOH CERCLA	EA	

This information has been prepared for display purposes. Every effort will be made to correctly enter all applicable environmental data components, with the understanding assumed for entry to general ledger items, the assessment, and related activity.

EA Planned EA Milestone Report											
FINAL FOURTH QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)											
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	MILESTONE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGENCY NAME	DESIGNATION	REGULATORY AGENCY NAME
											REGULATORY AGENCY NAME
PO-008-01-1-077	Submit Monthly Technical Progress Report to Ohio EPA	Effluents are sampled and analyzed in accordance with the permit at the Portsmouth site. Effluents are sampled and analyzed in accordance with the permit at the Portsmouth site.	11/15/2010	11/18/2010		11/15/2010			DOE/Ohio NRCA/Consent Decree - CORO	EA	DOE/Ohio NRCA/Consent Decree - CORO
PO-008-01-1-078	Submit Monthly Technical Progress Report to Ohio EPA	Effluents are sampled and analyzed in accordance with the permit at the Portsmouth site. Effluents are sampled and analyzed in accordance with the permit at the Portsmouth site.	12/15/2010	12/15/2010		12/15/2010			DOE/Ohio NRCA/Consent Decree - CORO	EA	DOE/Ohio NRCA/Consent Decree - CORO

This scorecard was developed for regulatory purposes. Every effort was made to comply with all applicable environmental legal requirements, which may occasionally be amended. Feedback is invited to improve the scorecard. All feedback is appreciated.

EA, Phase 1 EA Milestone Report		FINAL FOURTH QUARTER OF FY 2010 - SITE LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)									
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE GREEN CHECKED DATES ARE 4TH QUARTER FY 2010 MILESTONES	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS	
POW00101-1-143	Submit CERCLA Annual Report to Ohio EPA	Paragraph 22 of DFO. On or before the 21st day of December of each year Issue Owners retain responsibility for the preparation and submission of the Annual Report to Ohio EPA. A written report for the previous year is due on or before the 21st day of December of each year. Updated Compliance Schedule which incorporates all approved actions in accordance with the Compliance Schedule made during the previous year. The Annual Report shall include the following information: an updated list of all CERCLA sites and projects identified in the project schedule and any other documents concerning compliance with the Milestones contained in the Compliance Schedule documents, or other documents concerning site or project compliance with the description of any projected difficulties in achieving Milestones and target dates.	12/31/2010	12/31/2010		12/31/2010			DOE Ohio DFO-CERCLA	EA	

WE EA MILESTONE STATUS BY FINAL QUARTER FY COMPLIANCE SCORECARD V2.25-10.XLS

EA Planned EA Milestone Report		FINAL FOURTH QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)									
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	MILESTONE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	SA DATE	STATUS ABBREVIATE	VIOLANCE ABBREVIATE	REGULATORY AGREEMENT NAME	DESIGNATIONS	
											CHECKS BALLOD DATES (APR 4TH QUARTER FY 2010) MILESTONE
PO000001-079	Subunit Monthly Technical Progress Report to Ohio EPA	Enforceable agreement milestone is required by the Consent Decree. This will be required as a condition of the Consent Decree in order to be in effect at the Portwest site.	1/15/2011	1/15/2011		1/15/2011			DOE/Ohio Environmental Protection Agency - Consent Decree - CONO	EA	
PO000001-142	Subunit Quarterly Progress Report to US EPA	Required by Consent Decree by end of the month on a quarterly basis. ERM code based on monitoring & reporting.	1/31/2011	1/31/2011		1/31/2011			DOE/EPA - RCRA CERCLA - CONO	EA	
PO000001-509	Subunit Quarterly Environmental and Monitoring Report to Ohio EPA	Required by the Consent Decree by end of the month on a quarterly basis.	1/31/2011	1/31/2011		1/31/2011			DOE/Ohio Environmental Protection Agency - Consent Decree - CONO	EA	

This document has been prepared for a specific program. Every effort was made to comply with all applicable environmental legal requirements, with data management accuracy functions to protect personal health, the environment, and national security.



EA, Planned EA Milestones Report									
FINAL - FOURTH QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)									
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	MILESTONE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS
						DESIRED DATES (BY QUARTER) / FY 2014 BUDGET			
PO-0642.01.1-081	Submit Monthly Technical Progress Report to Ohio EPA	Anticipable agreement milestone is due by the 15th of each month. This will be reported as late as the milestone date is reached in the Performance Plan.	5/1/2011	3/1/2011		5/1/2011		0501 Ohio INDIA Consent Decree - CDR2	EA
PO-0642.01.1-074	Submit Annual Compliance Monitoring Report to Ohio EPA	Required by Secondary Food Processing & Divers (SFFD).	4/1/2011	4/1/2011		4/1/2011		0501 Ohio INDIA Consent Decree - CDR2	EA
PO-0642.01.1-082	Submit Monthly Technical Progress Report to Ohio EPA	Anticipable agreement milestone is due by the 15th of each month. This will be reported as late as the milestone date is reached in the Performance Plan.	4/1/2011	4/1/2011		4/1/2011		0501 Ohio INDIA Consent Decree - CDR2	EA

This scorecard has been prepared for regulatory compliance. Every effort will be made to comply with all applicable environmental legal obligations, unless when necessary, warranted, authorized, or otherwise required by law, regulation, and national policy.



ME 14 EA MILESTONE STATUS BY FINAL QUARTER FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST & SEPTEMBER 2010)

EA, Planned EA Milestone Report		FINAL FOURTH QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST & SEPTEMBER 2010)									
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	SA DATE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS	
											CHECK DATED DATE (JULY 27th) OBJECTIVE (FY 2010) MILESTONE
PO008011-001	Submit Monthly Technical Progress Report to ODEQ EPA	Enforceable agreement milestone is due by the 15th of each month as required by the Consent Decree. This will be reported as being as the Consent Decree is in effect at the Portsmouth site.	6/15/2011	5/15/2011		5/15/2011			ODEQ Consent Decree - CONQ	EA	
PO008011-004	Submit Monthly Technical Progress Report to ODEQ EPA	Enforceable agreement milestone is due by the 15th of each month as required by the Consent Decree. This will be reported as being as the Consent Decree is in effect at the Portsmouth site.	6/15/2011	6/15/2011		6/15/2011			ODEQ Consent Decree - CONQ	EA	
PO008011-005	Submit Monthly Technical Progress Report to ODEQ EPA	Enforceable agreement milestone is due by the 15th of each month as required by the Consent Decree. This will be reported as being as the Consent Decree is in effect at the Portsmouth site.	7/15/2011	7/15/2011		7/15/2011			ODEQ Consent Decree - CONQ	EA	

This document has been prepared for display purposes. Every effort will be made to provide data of applicable environmental legal obligations, with data containing accurate location for permit (local), health, the environmental, and national security.



EA Planned EA Milestone Report		FINAL FOURTH QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST & SEPTEMBER 2010)									
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	MILESTONE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS	
											Q3/2010 DATE/ACTUAL DATE/ACTUAL DATE
PO-0001-01-008	Submit Monthly Technical Progress Report to Ohio EPA	Enterprise agreement milestone is due by the 15th of each month as required by the Consent Decree as long as the Consent Decree is in effect at the Portsmouth site.	8/15/2011	8/15/2011	8/15/2011	8/15/2011			DOE/Ohio RCRA Consent Decree - CONQ	EA	
PO-0001-01-148	Submit Updated Milestone List for Next 3 FYs to Ohio EPA	Paragraph 10.6 of OTCO. Respondent shall provide Ohio EPA with a projection of those Tables below that Respondent anticipates to occur in FY 1, FY 2, and annually thereafter.	8/31/2011	8/31/2011	8/31/2011	8/31/2011			DOE/Ohio RCRA Consent Decree - CONQ	EA	
PO-0001-01-149	Submit Monthly Technical Progress Report to Ohio EPA	Enterprise agreement milestone is due by the 15th of each month as required by the Consent Decree. This will be required as long as the Consent Decree is in effect at the Portsmouth site.	8/15/2011	8/15/2011	8/15/2011	8/15/2011			DOE/Ohio RCRA Consent Decree - CONQ	EA	
<b>RICHLAND (RL)</b>											
PO-0001-01-148	Submit Monthly Technical Progress Report to Ohio EPA	Enterprise agreement milestone is due by the 15th of each month as required by the Consent Decree. This will be required as long as the Consent Decree is in effect at the Portsmouth site.	8/15/2011	8/15/2011	8/15/2011	8/15/2011			DOE/Ohio RCRA Consent Decree - CONQ	EA	

This document has been prepared for anyone reviewing. Every effort will be made to comply with all applicable environmental legal obligations, while also maintaining essential functions to protect human health, the environment, and national security.

EA Planned EA Milestone Report										
FINAL FOURTH QUARTER OF FY 2016 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2016)										
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS
ML-0332	Complete Orders of the PFP 211-27320 EA		9/30/2011	9/30/2007	2/22/2007	9/20/2011		Completed ahead of schedule.		EA
ML-0342	Complete Transition and Installation of the 211-27320 Waste Treatment Facility	Complete Transition and Installation of the 211-27320 Waste Treatment Facility	6/30/2011		6/8/2007	9/20/2011		Completed ahead of schedule.	DOE EPA Washington Field Office, REGIONAL FACCORD	EA
RL-0012 BMP Stabilization and Disposition / RL-0012 (O) BMP Stabilization and Disposition-ABC (Operations) / RL-0012 (O) BMP Stabilization and Disposition-ABC (Operations)										
RL-0012 (O) 606	M-216-102 System Revised RDRMA Record of Decision for 100 E. Ames Road, Waukegan, IL, U.S. With New Proposed Milestones	M-216-102 System Revised RDRMA Record of Decision for 100 E. Ames Road, Waukegan, IL, U.S. With New Proposed Milestones	3/1/2011			3/1/2011			DOE EPA Washington Field Office, REGIONAL FACCORD	EA
RL-0012C Solid Waste Stabilization & Disposition / RL-0012C (O) Solid Waste Stabilization and Disposition-200 Area/Operations Waste Processing Facility (Operations) / RL-0012C (O) Solid Waste Stabilization and Disposition-200 Area/Operations Waste Processing Facility (Operations)										
			AREA Projects: N							

This scorecard has been prepared for analysis purposes. Every effort will be made to comply with all applicable environmental legal obligations, while also maximizing operational efficiency to protect human health, the environment, and national security.

EA Planned EA Milestone Report											
FINAL FOURTH QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)											
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE		STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS
						CREED NARRATED QUARTER FY 2010	REPORTING QUARTER FY 2010				
ML-0413C-01-008	MCS1-407 Fieldwork for DTR FY10 Borehole Ground Sample Results	MCS1-407 Fieldwork for DTR FY10 Borehole Ground Sample Results	9-15-2010	9-15-2010	7-22-2010	9-15-2010	9-15-2010		Completed ahead of schedule.	NOISE EA (Washington) : CERCLA/RCRA : FFACORD	EA
ML-0413C-01-071	C-04-07E Submittal Review Technology Development to Ecology and Environment Protection Agency	TM Metrics C-04-07E Submittal Review Technology Development to Ecology and EPA	3-31-2011	3-31-2011		3-31-2011	3-31-2011			DOE EPA (Washington) : RCRA : FFACORD	B.EA
ML-0413C-01-008	MCS1-407E Review 2,000 Gallon Metrics of Contact Number Interwelded Steel Vessel	Review 2,000 Gallon Metrics of Contact Number Interwelded Steel Vessel	9-30-2011	9-30-2011		9-30-2011	9-30-2011		As of April 2010, this milestone was created per the TNA timeline for the Appropriations for the Superfund and MCRS Waste Management and Environmental Response program milestone. This milestone supports the FY2012 budget submittal.		PEAB

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EA - Planned EA Milestones Report										
FINAL FOURTH QUARTER OF FY 2016 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2016)										
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	MILESTONE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	E.A. DATE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGENCY NAME	DESIGNATION
PL-008-01-07N	1404-018 Scaled Feasibility Study plan as an amendment to the 2008-B-2	Request Feasibility Study plan as an amendment to the 2008-B-2 RFS Work Plan for assessing a... and distribution system to... the various and competing T... the plans and the B, BC, and BY... the project to be administered... sustained yield.	12/31/2016	12/31/2016	03/31/2016	12/31/2016	Added per the Final... The... Agreement for... Order Modifications... Regarding Accretion... Milestones FY2009-Present... Solutions approved... 12/31/2016	Completed phase of...	DOE EA Worksheet - EDRCLARDA - FYAC080	EA

EA Planned EA Milestone Report										
FINAL FOURTH QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)										
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	MILESTONE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY ASSESSMENT NAME	DESIGNATIONS
61-40301482	M114-43 (dunn) - Proposed Plan for 205-UM1	Submit a Proposed Plan for 205-UM1	3/31/2010	6/30/2011		6/30/2011	<p>Milestones added per the final Approval Package for the 205-UM1 Project Agreement on Hazardous Waste Site Remediation and Construction Modifications Regarding the 205-UM1 Project. Milestones F2008F (submit a Proposed Plan for 205-UM1) and F2009F (Submit a Proposed Plan for 205-UM1) were approved by the Board on 11/18/09. Milestone Change Package M114-43 (dunn) was approved on 6/22/2010. As of April 2010, the releases will be in compliance with the TSD/TSR Agreement for the 205-UM1 Project. The planned construction activities for the FY2012 budget for the 205-UM1 Project will be completed in 2010 once the TPA is finalized.</p>	<p>Milestone Change Package M114-43 (dunn) was approved on 6/22/2010.</p>	DOE/EPA Management Plan for 205-UM1 - FACONG	EA



EA / Planned EA Milestones Report										
FINAL FOURTH QUARTER OF FY 2010 -- SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)										
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DEGRADATIONS
RL-0000-01-044	WQ21-422-091 Complete Investigation of well contributions initiated under M22438	"Complete investigation of well contributions initiated under M22438 and add a new driver to the investigation. The investigation is to be completed by December 31, 2010 to incorporate new well installation caused to the investigation. The investigation is to be completed during schedule."	8/1/2011	8/1/2011		8/1/2011			DOLEA Vancouver - SERCLA/CRMA - PACOM	EA
RL-0000-01-090	M31-1-13C Uranium treatment technology feasibility study plan	Uranium treatment technology feasibility study as an element of the RCMA facility investigation and remedial investigation for the 2004-1 of CO to Ecology.	12/31/2010	12/31/2010		Forecast EA (PEA); no EA Date	As of April 2010, issued the addendum and Forecast Dates per the EA. The EA is currently in the process of being submitted to the Central Planning and Implementation Group. The addendum supports the P2012 budget submission.			PEA,B
RL-0000-01-094	WQ31-07, Revised Closure Plan for Regener Storage and Treatment Facility T20 tank.	Submit Revised Closure Plan to support T20 closure at the Regener Storage and Treatment Facility (20-14-142) T20 unit. Note issuance of the draft comment on Revision 2 of the initial RCMA Permit for the tank.	12/31/2010	12/31/2010		Forecast EA (PEA); no EA Date	As of April 2010, revised the addendum and Forecast Dates per the EA. The EA is currently in the process of being submitted to the Central Planning and Implementation Group. The addendum supports the P2012 budget submission.			PEA,B

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EA, Phase 1 EA Milestone Report											
FINAL FOURTH QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)											
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	MAXIMUM COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE		STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS
						DESIRED DATES AND 4TH QUARTER FY 2010 MILESTONES	ACTUAL DATE				
RL-003A-F-003	M02441	DOE shall complete the construction of all units listed in the schedule year 2010 and before the start of the 2011 calendar year. Change Package M-024-02-11.	12/31/2010	12/31/2010	1/1/2010	12/31/2010	Completed ahead of schedule.	Completed ahead of schedule.	DOE-EPA Washington ; CERCLA/RCA ; FACCOM	E, A, B	
RL-0041-CT-020		Complete Disposition of Surplus Facilities	9/30/2010	9/30/2010	8/22/2008	9/30/2010	DOE-IL-09-AMRC-08-04-004 approved in 8/20/2010 for the start of this milestone.	DOE-IL-09-AMRC-08-04-004 approved in 8/20/2010 for the start of this milestone. Activity was completed ahead of schedule.	DOE-EPA Washington ; CERCLA/RCA ; FACCOM	E, A	
RL-0041-CT-022		Complete Interim Remedial Actions for 8 Specific Units in 207 Bldg REC BAO Cells	9/30/2010	9/30/2010	9/9/2010	9/30/2010	Completed ahead of schedule.	Completed ahead of schedule.	DOE-EPA Washington ; CERCLA/RCA ; FACCOM	E, A, B	
RL-0041-CT-011		Change Of Non-Remediated MW Units in 207 Bldg REC BAO Cells	9/30/2010	9/30/2010		9/30/2010 EA Date changed to 9/30/2010	The EPA milestone list in the 2010 EA Date forecast to move the forecast to 09/30/2010.	Extremely high above 1998 in the 2010 EA Date. Agency has same cell to building substations with complete forecast.	DOE-EPA Washington ; CERCLA/RCA ; FACCOM	E, A	

This document has been prepared for public release. Every effort will be made to comply with applicable environmental legal obligations, and to use non-binding personal information to protect personal safety, the environment, and national security.

EA / Planned EA Milestone Report		FINAL QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)									
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE GREEN SHADDED DATES ARE WITHIN MILESTONES	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS	
BL-001-01-002	Complete In-situ Remediation Actions at 100-81C Area	Complete In-situ Remediation Actions at 100-81C Area	12/31/2009	11/30/2010	5/14/2010	11/05/2010	Change request M15-004 was approved on 1/14/09	Change request M15-004 was signed and approved on 1/14/09. Current status of work is unknown.	DE-GA Regulatory Agreement : CERCLA/RCRA / FAC/RCO	B, EA	
BL-002-01-011	Complete PFTF Facility Transition and Release S&M Phase	Complete PFTF Facility Transition and Release S&M Phase	3/26/2011	2/28/2011	6/1/2009	2/23/2011	The PFTF baseline data to complete the necessary work items to start the PFTF at all support facilities is a King August 31, 2009. The Milestone report in August 2009 indicated that the PFTF data to complete the milestone on schedule. The TPA was completed on 2/23/2011. The PFTF data was updated on February 28, 2011.	Complete areas of schedule.	DE-GA Regulatory Agreement : CERCLA/RCRA / FAC/RCO	EA	

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EA / Planned EA Milestone Report											
FINAL FOURTH QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)											
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE		STATUS INDICATOR	VARIANCE INDICATOR	REGULATORY AGREEMENT NAME	DESIGNATIONS
						GREEN-SHARD DATES ARE (Y) MILESTONES	EA DATE				
ME4-01W	Submit environmental project compliance report		7/31/2011	7/31/2011		7/31/2011		On schedule			EA
<b>SANDIA NATIONAL LABORATORY (SNL)</b>											
VI-04-003 Soil and Water Remediation-Status											
ANSA Project:											
PBS VI-04-003	Submit the Corrective Measure Evaluation (CME) Report for the remediation of contamination area 11 NMFQ.	August 21, 2007 letter received from IMED approving the final CME report and the NMFQ of 9/30/2010.	11/20/2007	9/3/2013		9/30/2013		EA Date has been rescheduled & is changed from 9/30/2011 to 9/30/2013.	IMED has requested the CME report for the additional characterization will be published in the NMFQ. The CME report for the NMFQ is scheduled for January 29, 2011. A letter to IMED is necessary for the CME report to be published as a NMFQ. The CME report is currently being prepared and reported and characterization.	IM Compliance Order 04/000004	EA

This scorecard is prepared for analysis purposes. Every effort will be made to comply with all applicable environmental legal obligations, while also maintaining essential functions to protect human health, the environment, and national security.





Ms. 01 EA MILESTONE STATUS BY FINAL QUANTITIES SCORECARD - 1/25/10

EA / Planned EA Milestone Report		FINAL FOURTH QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)									
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DEGRADATION	
											GREENBARRED DATES ARE FY10 MILESTONES
SR00001008	Install C.V. and R-Barrier Completes Early Action Remedial Action Plan	Install C.V. and R-Barrier Completes Early Action Remedial Action Plan	12/24/2010	1/13/2011		1/13/2011	Final EA has been changed based on regulatory approved remedial action plan. The R-Barrier is not applicable to the Remedial Action Plan (RAP) because the R-Barrier will be installed with the R-Barrier.	On schedule to meet new date.	Federal Facility Agreement	EA	
SR00001008	Submit A Area Act Plan (2008-04) and A Area Cost Plan (2008-04) to EPA, and submit A Area Act Plan (2008-04) and A Area Cost Plan (2008-04) to EPA.	Submit A Area Act Plan (2008-04) and A Area Cost Plan (2008-04) to EPA, and submit A Area Act Plan (2008-04) and A Area Cost Plan (2008-04) to EPA.	3/11/2011	3/11/2011		3/11/2011	On schedule. Note: EA is deferred but the EA Date of 3/11/2010 was a typo. Therefore, the EA date was changed to match the forecast date.	On schedule.	Federal Facility Agreement	EA	

This spreadsheet has been prepared for internal purposes. Every effort will be made to comply with all applicable environmental laws and regulations, which may vary by jurisdiction. The information in this spreadsheet is for informational purposes only and should not be used for any other purpose.











TABLE 4: EA MILESTONE STATUS BY FINAL QUARTER FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)

EA / Planned EA Milestone Report		FINAL FOURTH QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)									
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DEVIATIONS	
SH0009 (M79)	Mile ROD for Controls #12 from Controls #1L and #2	Mile ROD for Controls #12 from Controls #1L and #2	12/30/2011	6/23/2011		5/31/2011	Forecast will be Date changed based on Revised Agency Approval, Revision 1 Approval, E. The Revision is based on milestone submission milestone submission in regulatory listed in the Issue Record of Deviation Forecast Date.	Do not include in next case data.	Final Facility Agreement		

One Office - All Other Sites, Catalina, Clean Sites, Redwood, Bakers, Napa, S. Sta. Clara, Technology Development and Deployment, UT D&T Fund Deposit, West Valley Demonstration Project

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EA: Planned EA Milestone Report		FINAL FOURTH QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST & SEPTEMBER 2010)									
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	SA DATE	DEVELOPED DATES AND 4TH QUARTER MILESTONE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS
SR-0020 (0452)	Start Remedial Action for B-Area Operable Unit includes 14 sub-milestones: Area on North Side of Building 105-A, and Laydown Area. Remedial Action for B-Area includes Decommission of B-Area Reactor Dismantlement Basin, Storage Basin, 105-A-2B, Process Storage, Control Room, 105-A-2C, 105-A-2D, 105-A-2E, 105-A-2F, 105-A-2G, 105-A-2H, 105-A-2I, 105-A-2J, 105-A-2K, 105-A-2L, 105-A-2M, 105-A-2N, 105-A-2O, 105-A-2P, 105-A-2Q, 105-A-2R, 105-A-2S, 105-A-2T, 105-A-2U, 105-A-2V, 105-A-2W, 105-A-2X, 105-A-2Y, 105-A-2Z, 105-A-2AA, 105-A-2AB, 105-A-2AC, 105-A-2AD, 105-A-2AE, 105-A-2AF, 105-A-2AG, 105-A-2AH, 105-A-2AI, 105-A-2AJ, 105-A-2AK, 105-A-2AL, 105-A-2AM, 105-A-2AN, 105-A-2AO, 105-A-2AP, 105-A-2AQ, 105-A-2AR, 105-A-2AS, 105-A-2AT, 105-A-2AU, 105-A-2AV, 105-A-2AW, 105-A-2AX, 105-A-2AY, 105-A-2AZ, 105-A-2BA, 105-A-2BB, 105-A-2BC, 105-A-2BD, 105-A-2BE, 105-A-2BF, 105-A-2BG, 105-A-2BH, 105-A-2BI, 105-A-2BJ, 105-A-2BK, 105-A-2BL, 105-A-2BM, 105-A-2BN, 105-A-2BO, 105-A-2BP, 105-A-2BQ, 105-A-2BR, 105-A-2BS, 105-A-2BT, 105-A-2BU, 105-A-2BV, 105-A-2BW, 105-A-2BX, 105-A-2BY, 105-A-2BZ, 105-A-2CA, 105-A-2CB, 105-A-2CC, 105-A-2CD, 105-A-2CE, 105-A-2CF, 105-A-2CG, 105-A-2CH, 105-A-2CI, 105-A-2CJ, 105-A-2CK, 105-A-2CL, 105-A-2CM, 105-A-2CN, 105-A-2CO, 105-A-2CP, 105-A-2CQ, 105-A-2CR, 105-A-2CS, 105-A-2CT, 105-A-2CU, 105-A-2CV, 105-A-2CW, 105-A-2CX, 105-A-2CY, 105-A-2CZ, 105-A-2DA, 105-A-2DB, 105-A-2DC, 105-A-2DD, 105-A-2DE, 105-A-2DF, 105-A-2DG, 105-A-2DH, 105-A-2DI, 105-A-2DJ, 105-A-2DK, 105-A-2DL, 105-A-2DM, 105-A-2DN, 105-A-2DO, 105-A-2DP, 105-A-2DQ, 105-A-2DR, 105-A-2DS, 105-A-2DT, 105-A-2DU, 105-A-2DV, 105-A-2DW, 105-A-2DX, 105-A-2DY, 105-A-2DZ, 105-A-2EA, 105-A-2EB, 105-A-2EC, 105-A-2ED, 105-A-2EE, 105-A-2EF, 105-A-2EG, 105-A-2EH, 105-A-2EI, 105-A-2EJ, 105-A-2EK, 105-A-2EL, 105-A-2EM, 105-A-2EN, 105-A-2EO, 105-A-2EP, 105-A-2EQ, 105-A-2ER, 105-A-2ES, 105-A-2ET, 105-A-2EU, 105-A-2EV, 105-A-2EW, 105-A-2EX, 105-A-2EY, 105-A-2EZ, 105-A-2FA, 105-A-2FB, 105-A-2FC, 105-A-2FD, 105-A-2FE, 105-A-2FF, 105-A-2FG, 105-A-2FH, 105-A-2FI, 105-A-2FJ, 105-A-2FK, 105-A-2FL, 105-A-2FM, 105-A-2FN, 105-A-2FO, 105-A-2FP, 105-A-2FQ, 105-A-2FR, 105-A-2FS, 105-A-2FT, 105-A-2FU, 105-A-2FV, 105-A-2FW, 105-A-2FX, 105-A-2FY, 105-A-2FZ, 105-A-2GA, 105-A-2GB, 105-A-2GC, 105-A-2GD, 105-A-2GE, 105-A-2GF, 105-A-2GG, 105-A-2GH, 105-A-2GI, 105-A-2GJ, 105-A-2GK, 105-A-2GL, 105-A-2GM, 105-A-2GN, 105-A-2GO, 105-A-2GP, 105-A-2GQ, 105-A-2GR, 105-A-2GS, 105-A-2GT, 105-A-2GU, 105-A-2GV, 105-A-2GW, 105-A-2GX, 105-A-2GY, 105-A-2GZ, 105-A-2HA, 105-A-2HB, 105-A-2HC, 105-A-2HD, 105-A-2HE, 105-A-2HF, 105-A-2HG, 105-A-2HH, 105-A-2HI, 105-A-2HJ, 105-A-2HK, 105-A-2HL, 105-A-2HM, 105-A-2HN, 105-A-2HO, 105-A-2HP, 105-A-2HQ, 105-A-2HR, 105-A-2HS, 105-A-2HT, 105-A-2HU, 105-A-2HV, 105-A-2HW, 105-A-2HX, 105-A-2HY, 105-A-2HZ, 105-A-2IA, 105-A-2IB, 105-A-2IC, 105-A-2ID, 105-A-2IE, 105-A-2IF, 105-A-2IG, 105-A-2IH, 105-A-2II, 105-A-2IJ, 105-A-2IK, 105-A-2IL, 105-A-2IM, 105-A-2IN, 105-A-2IO, 105-A-2IP, 105-A-2IQ, 105-A-2IR, 105-A-2IS, 105-A-2IT, 105-A-2IU, 105-A-2IV, 105-A-2IW, 105-A-2IX, 105-A-2IY, 105-A-2IZ, 105-A-2JA, 105-A-2JB, 105-A-2JC, 105-A-2JD, 105-A-2JE, 105-A-2JF, 105-A-2JG, 105-A-2JH, 105-A-2JI, 105-A-2JJ, 105-A-2JK, 105-A-2JL, 105-A-2JM, 105-A-2JN, 105-A-2JO, 105-A-2JP, 105-A-2JQ, 105-A-2JR, 105-A-2JS, 105-A-2JT, 105-A-2JU, 105-A-2JV, 105-A-2JW, 105-A-2JX, 105-A-2JY, 105-A-2JZ, 105-A-2KA, 105-A-2KB, 105-A-2KC, 105-A-2KD, 105-A-2KE, 105-A-2KF, 105-A-2KG, 105-A-2KH, 105-A-2KI, 105-A-2KJ, 105-A-2KK, 105-A-2KL, 105-A-2KM, 105-A-2KN, 105-A-2KO, 105-A-2KP, 105-A-2KQ, 105-A-2KR, 105-A-2KS, 105-A-2KT, 105-A-2KU, 105-A-2KV, 105-A-2KW, 105-A-2KX, 105-A-2KY, 105-A-2KZ, 105-A-2LA, 105-A-2LB, 105-A-2LC, 105-A-2LD, 105-A-2LE, 105-A-2LF, 105-A-2LG, 105-A-2LH, 105-A-2LI, 105-A-2LJ, 105-A-2LK, 105-A-2LL, 105-A-2LM, 105-A-2LN, 105-A-2LO, 105-A-2LP, 105-A-2LQ, 105-A-2LR, 105-A-2LS, 105-A-2LT, 105-A-2LU, 105-A-2LV, 105-A-2LW, 105-A-2LX, 105-A-2LY, 105-A-2LZ, 105-A-2MA, 105-A-2MB, 105-A-2MC, 105-A-2MD, 105-A-2ME, 105-A-2MF, 105-A-2MG, 105-A-2MH, 105-A-2MI, 105-A-2MJ, 105-A-2MK, 105-A-2ML, 105-A-2MM, 105-A-2MN, 105-A-2MO, 105-A-2MP, 105-A-2MQ, 105-A-2MR, 105-A-2MS, 105-A-2MT, 105-A-2MU, 105-A-2MV, 105-A-2MW, 105-A-2MX, 105-A-2MY, 105-A-2MZ, 105-A-2NA, 105-A-2NB, 105-A-2NC, 105-A-2ND, 105-A-2NE, 105-A-2NF, 105-A-2NG, 105-A-2NH, 105-A-2NI, 105-A-2NJ, 105-A-2NK, 105-A-2NL, 105-A-2NM, 105-A-2NN, 105-A-2NO, 105-A-2NP, 105-A-2NQ, 105-A-2NR, 105-A-2NS, 105-A-2NT, 105-A-2NU, 105-A-2NV, 105-A-2NW, 105-A-2NX, 105-A-2NY, 105-A-2NZ, 105-A-2OA, 105-A-2OB, 105-A-2OC, 105-A-2OD, 105-A-2OE, 105-A-2OF, 105-A-2OG, 105-A-2OH, 105-A-2OI, 105-A-2OJ, 105-A-2OK, 105-A-2OL, 105-A-2OM, 105-A-2ON, 105-A-2OO, 105-A-2OP, 105-A-2OQ, 105-A-2OR, 105-A-2OS, 105-A-2OT, 105-A-2OU, 105-A-2OV, 105-A-2OW, 105-A-2OX, 105-A-2OY, 105-A-2OZ, 105-A-2PA, 105-A-2PB, 105-A-2PC, 105-A-2PD, 105-A-2PE, 105-A-2PF, 105-A-2PG, 105-A-2PH, 105-A-2PI, 105-A-2PJ, 105-A-2PK, 105-A-2PL, 105-A-2PM, 105-A-2PN, 105-A-2PO, 105-A-2PP, 105-A-2PQ, 105-A-2PR, 105-A-2PS, 105-A-2PT, 105-A-2PU, 105-A-2PV, 105-A-2PW, 105-A-2PX, 105-A-2PY, 105-A-2PZ, 105-A-2QA, 105-A-2QB, 105-A-2QC, 105-A-2QD, 105-A-2QE, 105-A-2QF, 105-A-2QG, 105-A-2QH, 105-A-2QI, 105-A-2QJ, 105-A-2QK, 105-A-2QL, 105-A-2QM, 105-A-2QN, 105-A-2QO, 105-A-2QP, 105-A-2QQ, 105-A-2QR, 105-A-2QS, 105-A-2QT, 105-A-2QU, 105-A-2QV, 105-A-2QW, 105-A-2QX, 105-A-2QY, 105-A-2QZ, 105-A-2RA, 105-A-2RB, 105-A-2RC, 105-A-2RD, 105-A-2RE, 105-A-2RF, 105-A-2RG, 105-A-2RH, 105-A-2RI, 105-A-2RJ, 105-A-2RK, 105-A-2RL, 105-A-2RM, 105-A-2RN, 105-A-2RO, 105-A-2RP, 105-A-2RQ, 105-A-2RR, 105-A-2RS, 105-A-2RT, 105-A-2RU, 105-A-2RV, 105-A-2RW, 105-A-2RX, 105-A-2RY, 105-A-2RZ, 105-A-2SA, 105-A-2SB, 105-A-2SC, 105-A-2SD, 105-A-2SE, 105-A-2SF, 105-A-2SG, 105-A-2SH, 105-A-2SI, 105-A-2SJ, 105-A-2SK, 105-A-2SL, 105-A-2SM, 105-A-2SN, 105-A-2SO, 105-A-2SP, 105-A-2SQ, 105-A-2SR, 105-A-2SS, 105-A-2ST, 105-A-2SU, 105-A-2SV, 105-A-2SW, 105-A-2SX, 105-A-2SY, 105-A-2SZ, 105-A-2TA, 105-A-2TB, 105-A-2TC, 105-A-2TD, 105-A-2TE, 105-A-2TF, 105-A-2TG, 105-A-2TH, 105-A-2TI, 105-A-2TJ, 105-A-2TK, 105-A-2TL, 105-A-2TM, 105-A-2TN, 105-A-2TO, 105-A-2TP, 105-A-2TQ, 105-A-2TR, 105-A-2TS, 105-A-2TT, 105-A-2TU, 105-A-2TV, 105-A-2TW, 105-A-2TX, 105-A-2TY, 105-A-2TZ, 105-A-2UA, 105-A-2UB, 105-A-2UC, 105-A-2UD, 105-A-2UE, 105-A-2UF, 105-A-2UG, 105-A-2UH, 105-A-2UI, 105-A-2UJ, 105-A-2UK, 105-A-2UL, 105-A-2UM, 105-A-2UN, 105-A-2UO, 105-A-2UP, 105-A-2UQ, 105-A-2UR, 105-A-2US, 105-A-2UT, 105-A-2UU, 105-A-2UV, 105-A-2UW, 105-A-2UX, 105-A-2UY, 105-A-2UZ, 105-A-2VA, 105-A-2VB, 105-A-2VC, 105-A-2VD, 105-A-2VE, 105-A-2VF, 105-A-2VG, 105-A-2VH, 105-A-2VI, 105-A-2VJ, 105-A-2VK, 105-A-2VL, 105-A-2VM, 105-A-2VN, 105-A-2VO, 105-A-2VP, 105-A-2VQ, 105-A-2VR, 105-A-2VS, 105-A-2VT, 105-A-2VU, 105-A-2VV, 105-A-2VW, 105-A-2VX, 105-A-2VY, 105-A-2VZ, 105-A-2WA, 105-A-2WB, 105-A-2WC, 105-A-2WD, 105-A-2WE, 105-A-2WF, 105-A-2WG, 105-A-2WH, 105-A-2WI, 105-A-2WJ, 105-A-2WK, 105-A-2WL, 105-A-2WM, 105-A-2WN, 105-A-2WO, 105-A-2WP, 105-A-2WQ, 105-A-2WR, 105-A-2WS, 105-A-2WT, 105-A-2WU, 105-A-2WV, 105-A-2WW, 105-A-2WX, 105-A-2WY, 105-A-2WZ, 105-A-2XA, 105-A-2XB, 105-A-2XC, 105-A-2XD, 105-A-2XE, 105-A-2XF, 105-A-2XG, 105-A-2XH, 105-A-2XI, 105-A-2XJ, 105-A-2XK, 105-A-2XL, 105-A-2XM, 105-A-2XN, 105-A-2XO, 105-A-2XP, 105-A-2XQ, 105-A-2XR, 105-A-2XS, 105-A-2XT, 105-A-2XU, 105-A-2XV, 105-A-2XW, 105-A-2XX, 105-A-2XY, 105-A-2XZ, 105-A-2YA, 105-A-2YB, 105-A-2YC, 105-A-2YD, 105-A-2YE, 105-A-2YF, 105-A-2YG, 105-A-2YH, 105-A-2YI, 105-A-2YJ, 105-A-2YK, 105-A-2YL, 105-A-2YM, 105-A-2YN, 105-A-2YO, 105-A-2YP, 105-A-2YQ, 105-A-2YR, 105-A-2YS, 105-A-2YT, 105-A-2YU, 105-A-2YV, 105-A-2YW, 105-A-2YX, 105-A-2YY, 105-A-2YZ, 105-A-2ZA, 105-A-2ZB, 105-A-2ZC, 105-A-2ZD, 105-A-2ZE, 105-A-2ZF, 105-A-2ZG, 105-A-2ZH, 105-A-2ZI, 105-A-2ZJ, 105-A-2ZK, 105-A-2ZL, 105-A-2ZM, 105-A-2ZN, 105-A-2ZO, 105-A-2ZP, 105-A-2ZQ, 105-A-2ZR, 105-A-2ZS, 105-A-2ZT, 105-A-2ZU, 105-A-2ZV, 105-A-2ZW, 105-A-2ZX, 105-A-2ZY, 105-A-2ZZ	One Mile changed from 06/08/2011 to 06/17/2011. The change was made in the implementation schedule for the milestone. The Statement of Work (SOW) for the milestone was approved by the Regulatory Agency on 06/17/2011. The milestone was approved by the EPA on 06/22/2011.	On Schedule for new sub.	Final Facility Agreement	RAF						
SR-0020 (044)	Submit Remedial Action Performed in FY10 Report	Submit the Remedial Action Performed in FY10 Report	1/15/2011	1/1/2011			Revised EA (R4-4) and EA Data	On Schedule	On Schedule		FEA

This document has been prepared for analysis by process. Every effort will be made to comply with all applicable environmental laws and regulations. While data monitoring systems are in place, the environmental data is not available.



ME-04 EA MILESTONE STATUS BY FINAL QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)

EA Planned EA Milestone Report		FINAL FOURTH QUARTER OF FY 2010 - SITE-LEVEL REGULATORY COMPLIANCE SCORECARD (JULY, AUGUST, & SEPTEMBER 2010)									
MILESTONE FIELD ID	MILESTONE NAME	MILESTONE DESCRIPTION	BASELINE COMPLETION DATE	FORECAST DATE	ACTUAL DATE	EA DATE	STATUS NARRATIVE	VARIANCE NARRATIVE	REGULATORY AGREEMENT NAME	DESIGNATIONS	
04-WY-0210-01-011	Meet Fiscal Year shipping commitments as specified in the STP	Meet Fiscal Year shipping commitments as specified in the STP Treatment Plan	8/30/2010	8/30/2010	8/30/2010	8/20/2010	Addressed by items # 17102011 & 17102010	no variance, date was met as planned	WYDR-299 Site Treatment Plan	EA	
04-WY-0210-01-012	Meet Fiscal Year shipping commitments as specified in the STP	Meet Fiscal Year shipping commitments as specified in the STP Treatment Plan	8/30/2011	8/30/2011		8/20/2011			WYDR-299 Site Treatment Plan	EA	

Site Office: All Other Sites, Central, Coastal, Eastern, Great Lakes, Inland, Midwest, North, South, West, and West Valley.   
 Technology Development and Deployment, Life DAD Fund Deployed, West Valley Demonstration Project

This document has been prepared for multiple purposes. Every effort will be made to comply with all applicable environmental legal obligations, while also ensuring maximum accuracy in environmental data collection.



REGULATORY COMPLIANCE SCORECARD -- SCORING LEGEND	
NOTICES OF VIOLATION (NOVs)	GREEN NO NOVs DURING THE PERIOD (JULY, AUGUST, & SEPTEMBER 2010), AND / OR ALL NEW OR PREVIOUS NOVs RESOLVED DURING THE PERIOD (JULY, AUGUST, & SEPTEMBER 2010).
	YELLOW ≥ 1 NOV (WITH NO IMPACT TO PROJECT COST / SCOPE / SCHEDULE) DURING THE PERIOD (JULY, AUGUST, & SEPTEMBER 2010), AND / OR 1 OR MORE PREVIOUS NOVs (WITHOUT FINES / PENALTIES) NOT RESOLVED DURING THE PERIOD (JULY, AUGUST, & SEPTEMBER 2010).
	RED ≥ 1 NOV (WITH IMPACT TO PROJECT COST / SCOPE / SCHEDULE) DURING THE PERIOD (JULY, AUGUST, & SEPTEMBER 2010), OR ≥ 1 NOV (WITH NO IMPACT TO PROJECT COST / SCOPE / SCHEDULE) DURING THE PERIOD (JULY, AUGUST, & SEPTEMBER 2010), AND / OR 1 OR MORE PREVIOUS NOVs (WITH FINES / PENALTIES) NOT RESOLVED DURING THE PERIOD (JULY, AUGUST, & SEPTEMBER 2010).
<b>NOTE:</b> DOLLAR AMOUNT OF ASSESSED FINE AND/OR DESCRIPTION OF SUPPLEMENTAL ENVIRONMENTAL PROJECT (SEP, OR "IN-LIEU-OF PENALTY" PROJECT) IS ALSO PROVIDED, IF APPLICABLE.	
ENFORCEABLE AGREEMENT (EA) MILESTONE STATUS / THIS QUARTER	GREEN NO EA MILESTONES MISSED DURING THE PERIOD (JULY, AUGUST, & SEPTEMBER 2010), OR ALL MISSED EA MILESTONES ARE RENEGOTIATED DURING THE PERIOD (JULY, AUGUST, & SEPTEMBER 2010), AND NO FINES / PENALTIES ARE EXPECTED.
	YELLOW ≥ 1 EA MILESTONES MISSED DURING THE PERIOD (JULY, AUGUST, & SEPTEMBER 2010), BUT HAS BEEN OR IS BEING RENEGOTIATED FOR ANY OR ALL MISSED EA MILESTONES DURING THE PERIOD (JULY, AUGUST, & SEPTEMBER 2010), AND/OR NO FINAL DECISION HAS BEEN MADE AS TO WHETHER FINES / PENALTIES ARE EXPECTED.
	RED ≥ 1 EA MILESTONE MISSED DURING THE PERIOD (JULY, AUGUST, & SEPTEMBER 2010), AND NO RENEGOTIATION HAS OCCURRED, AND/OR FINES OR PENALTIES ARE EXPECTED.

This spreadsheet has been prepared for analytical purposes. Every effort will be made to comply with all applicable environmental legal obligations, while also maintaining essential functions to protect human health, the environment, and national security.

REGULATORY COMPLIANCE SCORECARD -- SCORING LEGEND		
ENFORCEABLE AGREEMENT (EA) MILESTONE STATUS / NEXT FOUR QUARTERS	GREEN	NO EA MILESTONES FORECAST AT RISK OF BEING MISSED DURING THE NEXT FOUR QUARTERS (OCTOBER 2010 THROUGH SEPTEMBER 2011).
	YELLOW	≥ 1 EA MILESTONE FORECAST AT RISK OF BEING MISSED, BUT HAS BEEN OR IS BEING RENEGOTIATED FOR ANY OR ALL MISSED EA MILESTONES DURING ANYTIME IN THE NEXT FOUR QUARTERS (OCTOBER 2010 THROUGH SEPTEMBER 2011), AND/OR NO FINAL DECISION HAS BEEN MADE AS TO WHETHER FINES / PENALTIES ARE EXPECTED.
	RED	≥ 1 EA MILESTONE FORECAST AT RISK OF BEING MISSED, AND NO RENEGOTIATION HAS OCCURRED OR IS LIKELY TO OCCUR FOR ANY OR ALL MISSED EA MILESTONES IN THE NEXT FOUR QUARTERS (OCTOBER 2010 THROUGH SEPTEMBER 2011), AND/OR FINES OR PENALTIES ARE EXPECTED ANYTIME DURING THE NEXT FOUR QUARTERS (OCTOBER 2010 THROUGH SEPTEMBER 2011).
NON-HIGH-LEVEL WASTE (NON-HLW) WASTE DETERMINATIONS (WDs)	GREEN	WD OR WD IMPLEMENTATION ON SCHEDULE.
	YELLOW	WD OR WD IMPLEMENTATION BEHIND SCHEDULE NO MORE THAN 6 MONTHS, OR AT RISK OF IMPACTING PROJECT COST / SCOPE / SCHEDULE FOR THE WD.
	RED	WD OR WD IMPLEMENTATION BEHIND SCHEDULE MORE THAN SIX MONTHS, OR HAS IMPACTED PROJECT COST / SCOPE / SCHEDULE, OR BECOMES CRITICAL PATH FOR THE PROJECT, OR HAS SIGNIFICANT UNRESOLVED ISSUES FOR THE WD.

This scorecard has been prepared for analysis purposes. Every effort will be made to comply with all applicable environmental legal obligations, while also maintaining essential functions to protect human health, the environment, and national security.

REGULATORY COMPLIANCE SCORECARD – SCORING LEGEND		
LOW-LEVEL WASTE (LLW) DISPOSAL	GREEN	LLW DISPOSAL FACILITY PERFORMANCE ASSESSMENT (PA), COMPOSITE ANALYSIS (CA), AND DISPOSAL AUTHORIZATION STATEMENT (DAS) ARE UP-TO-DATE, OR REVISIONS ARE ON SCHEDULE, WITH NO SIGNIFICANT ISSUES.
	YELLOW	LLW DISPOSAL FACILITY PA, CA, OR DAS ARE UNDER REVISION, AND ARE AT RISK OF IMPACTING THE PROJECT COST / SCOPE / SCHEDULE.
	RED	LLW DISPOSAL FACILITY PA, CA, OR DAS ARE UNDER REVISION, AND HAVE IMPACTED OR HAVE BECOME CRITICAL PATH FOR THE PROJECT COST / SCOPE / SCHEDULE.
NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)	GREEN	NEPA ACTION IS ON SCHEDULE, OR DOES NOT IMPACT THE PROJECT COST / SCOPE / SCHEDULE.
	YELLOW	NEPA ACTION IS AT RISK OF IMPACTING THE PROJECT COST / SCOPE / SCHEDULE.
	RED	NEPA ACTION HAS IMPACTED, OR BECOMES CRITICAL PATH FOR THE PROJECT COST / SCOPE / SCHEDULE.
		"N / A" = NOT APPLICABLE & "N / D" = NOT DETERMINED.
		"EMPTY CELL" = DATA UNKNOWN OR UNAVAILABLE, AT THIS TIME.

This scorecard has been prepared for analysis purposes. Every effort will be made to comply with all applicable environmental legal obligations, while also maintaining essential functions to protect human health, the environment, and national security.

Senator BEN NELSON. Thank you.

There's a significant quantity of uranium-233 stored at Oak Ridge. The material has special security and safety requirements for storage, but it's also potentially useful for medical isotopes to treat cancer. In May 2008 a DOE Inspector General report recommended that the material be retained. Nevertheless, EM is now tasked with disposing of the material. The budget request seeks funding for design in 2011, with the assumption that construction on the disposition facility will begin in 2012 and will cost between \$400 and \$500 million to build.

Is there any effort in DOE to revisit the decision on disposition of the uranium-233?

Dr. TRIAY. We're always poised to revisit that decision. This is an area that, with my work at Los Alamos, I've always understood the concerns of the Inspector General. At the time of the report of the Inspector General, we encouraged our colleagues in the Office of Science, in the Office of Nuclear Energy, to ask again from their cadre of experts, as well as private industry, to see whether there was need for this particular material and to see whether our plans were appropriate.

Even after that last Inspector General report, we were informed by our colleagues in the Office of Science, the Office of Nuclear Energy, that normally have under their purview the radioisotopes that need to be utilized not only in the Department, but also in private industry, that there was no interest in retaining this material and that we should move forward expeditiously to disposition of it. They pointed out to us that the security costs associated with the facility where these materials were, actually adds a liability to the portfolio of the Office of Science.

So I understand the value of radioisotopes, having worked so many years in the Isotope and Nuclear Chemistry Division of LANL. But from what we can ascertain as a result of this particular last analysis that was performed when that Inspector General report was issued, there is no value to this material at this moment, and we were asked to move forward with the disposition of this material.

Senator BEN NELSON. The Defense Nuclear Facilities Safety Board (DNFSB) has raised a number of nuclear safety concerns about the efforts to redesign the waste treatment plant at Hanford. I understand that the basis of the concern is the need to technically understand the operational safety ramifications of the proposed changes. I also understand that there is progress between EM and DNFSB in resolving the changes, including the safety of the pulse-jet mixers.

What's the schedule to resolve these issues and does the DNFSB have all the documentation that it has requested?

Dr. TRIAY. There are two main areas, the pulse-jet mixers as well as the hydrogen generated in pipes and ancillary vessels. With respect to the pulse-jet mixers, we have a commitment for finishing addressing all the remaining issues by June 30. What we have done in that area is come up with a path forward that addresses some of the concerns that the DNFSB has had in terms of accumulation of waste in some of the vessels of the waste treatment plant by, in addition to completing the testing that we committed to completing, also making sure that we have the capability at the waste treatment plant to look into the vessels and make sure that accumulation is not occurring and, when it is occurring, a capability to move the waste out of those vessels and into smaller vessels, where it has been proven that effective mixing can indeed occur.

So we believe that we can work effectively with the DNFSB to address the remaining issues associated with mixing of the waste at the waste treatment plant.

With respect to the hydrogen generation pipes and ancillary vessels, the DNFSB and the Department have discussed the chartering of a group of experts, that actually has been chartered, to look at exactly how we are applying the code dealing with potential

hydrogen behavior in these pipes and vessels. The group of experts' work is coming to resolution and we expect to be able to sit down with the DNFSB and make absolutely certain that they have all of their questions answered.

We are confident that we're going to be able to do just that and that we're going to be able to assure the DNFSB that indeed this fast forward results in safe operations of the waste treatment plant after it starts treating waste.

Senator BEN NELSON. The DNFSB also was worried that the process to assess hazards at the Hanford tank farm and the operating procedures are too complex or unexecutable, which can result in ad hoc changes. Do we have a schedule in place to resolve these issues?

Dr. TRIAY. Absolutely. The field manager of the Office of River Protection is an expert herself on nuclear safety and she has taken an extremely active interest in addressing the issues that the DNFSB has laid out. We have a contractor at the tank farm at Hanford that is the same contractor that has operated the tank farms at the Savannah River Site for many years. So this gives us a unique opportunity to have the same type of procedures and protocols that were used at the tank farms at the Savannah River Site now adapted to the Hanford tank farms. The Savannah River Site tank farms have been operated safely for many, many years, even when we are actually encapsulating the waste already in glass form and we have vitrified a lot of the waste in the tank farms.

So based on that, I am confident that we're going to be able to address the issues presented by the DNFSB. Both the contractor as well as the Federal staff are very committed to effective, efficient, and prompt attention to these issues pointed out by the DNFSB.

Senator BEN NELSON. The EM program as well as other parts of DOE has had to supplement some underfunded pension funds. It's been particularly true at Savannah River Site. Do you see a need to add more money to these funds in fiscal years 2010 or 2011?

Dr. TRIAY. I'm sorry?

Senator BEN NELSON. It's a matter of underfunding. In the past the EM program has had to supplement underfunded pension plans, in other words put more money in to bring them up to the required level.

Dr. TRIAY. We actually, in the Department, have looked at the policy that was promulgated in order to fund pensions, and in 2010 and 2011, we intend to fund the Employee Retirement Income Security Act (ERISA) minimum as long as the fund doesn't fall below 60 percent. I believe that right now, both in 2010 and 2011, we have an appropriate amount of funding delineated in our budget in order to meet the policy of the Department to fund to the ERISA minimum. So the funding request of 2011 is sufficient. The pension plan will be funded to the requirements mandated by law, and in 2010 we actually intend to look at exactly how much funding was designated for pensions, and we are going to be looking at that within the Department to make sure that we put all of the funding that we have to optimal use in 2010. No underfunding in 2011.

Senator BEN NELSON. I urge you to be sure and do that, because any pattern of underfunding only mortgages the future further. So

we'd rather have current requirements currently met and not have to make up underfunding at a later date. It's a budgetary nightmare, because it will come due.

Dr. TRIAY. Absolutely.

Senator BEN NELSON. You mentioned vitrified high-level waste. That's the question of what to do without Yucca Mountain. While the question is being studied for location, in the interim will additional storage facilities have to be constructed at any of the current sites?

Dr. TRIAY. In our portfolio for the EM program, we considered that the waste was going to be stored, after it was encapsulated, in glass for decades. So far, we see minimal impact as a result of a potential delay for moving forward with an ultimate disposal for the high-level waste that is going to be generated as a result of vitrification.

Also, borosilicate glass is an international standard for extreme protection of human health and the environment. So we think that continuing to encapsulate our high-level waste in glass is a robust path forward within the deliberations that the Blue Ribbon Commission will entertain.

Senator BEN NELSON. That concludes my questions. Is there anything that you would like to add to what you've already said in your statement and the answers to the questions?

Dr. TRIAY. Thank you for the opportunity. What I would like to add, sometimes it's not as clear the type of work that the EM program does to facilitate, to allow some of the critical activities of the NNSA portfolio. For instance, when it comes to nonproliferation activities both domestic and international, it is the work of the EM program that in great measure allows the work of the NNSA for things that need to happen in order to secure nuclear materials.

We in the EM program are responsible for the consolidation of all of the plutonium from NNSA sites, as well as EM sites. We in the EM program are responsible for the consolidation of highly-enriched uranium fuel that comes from international efforts to reduce the nuclear proliferation issues. Recently we celebrated the fuel that came from Chile, and indeed that fuel is stored at the Savannah River Site under the purview of the EM program activities.

All of the highly-enriched uranium, all of the uranium disposition as well as plutonium disposition activities are funded by the EM efforts working on the defense portfolio for the country. Our WIPP is the only deep geologic repository that is operational and that takes all of the waste associated with the activities related to anything that we do in the NNSA portfolio associated with plutonium.

So thank you for the opportunity to point out that our work really facilitates in great measure important work of the NNSA sites.

Senator BEN NELSON. Thank you, doctor. We appreciate your testimony.

Thank you so much. With that, we're adjourned.

[Questions for the record with answers supplied follow:]

## QUESTIONS SUBMITTED BY SENATOR JEFF BINGAMAN

## ENVIRONMENTAL CLEANUP

1. Senator BINGAMAN. Dr. Triay, Los Alamos is a National Nuclear Security Administration (NNSA) site and the NNSA directs the cleanup operations there. Does this pose a difficulty for you?

Dr. TRIAY. The budgeting for and accountability of legacy environmental cleanup activities at Los Alamos National Laboratory (LANL) resides within the Office of Environmental Management (EM). However, section 3220 of the NNSA Act, 50 U.S.C. Section 2410, prohibits NNSA employees from being directed by Department of Energy (DOE) officers or employees. As a result, the EM program has the accountability for cleanup activities at LANL without the authority to direct the work. This arrangement has presented management challenges, and EM and NNSA are currently collaborating in the development of recommendations to improve cleanup performance at LANL. The EM program has demonstrated the benefits of clear lines of authority and accountability for the American Recovery and Reinvestment Act (ARRA) cleanup activities at LANL and could be used as a model for the other cleanup work at the laboratory.

2. Senator BINGAMAN. Dr. Triay, would having a separate EM contract for cleanup at Los Alamos be desirable?

Dr. TRIAY. Yes.

3. Senator BINGAMAN. Dr. Triay, I understand that most of the stimulus funds will be used to clean up the old plutonium operations facility at Los Alamos or TA-21. Will you need additional funds in the Los Alamos cleanup budget to continue this effort?

Dr. TRIAY. TA-21 is a Los Alamos Recovery Act project and is currently scheduled to be completed by the end of fiscal year 2011.

4. Senator BINGAMAN. Dr. Triay, the NNSA fiscal year 2011 budget request lists the demolition and decontamination of the old Chemistry and Metallurgy Research (CMR) Replacement facility between \$200 to \$350 million. Do you think this is accurate and will you be directly responsible for it?

Dr. TRIAY. My understanding of the NNSA fiscal year 2011 request for the old CMR facility is based upon the initial preconceptual cost estimate range. No, the Office of EM will not be responsible for this portion of the work at CMR, instead it will be the NNSA's responsibility.

5. Senator BINGAMAN. Dr. Triay, are you aware of any analyses or experiments being conducted by DOE EM at the Waste Isolation Pilot Plant (WIPP) that are directed to high level waste disposition in salt formations?

Dr. TRIAY. No, there are no analyses or experiments being conducted by the Office of EM at the WIPP that are directed to high level waste disposition in salt formations.

6. Senator BINGAMAN. Dr. Triay, what activities does the EM program conduct that support the mission of the NNSA?

Dr. TRIAY. The Office of EM supports critical nonproliferation consistent with the NNSA mission. Specifically EM activities in support of the NNSA mission include operations of:

- Savannah River Site's L-Basin, which stores highly-enriched uranium, including most recently fresh fuel received from Chile by the NNSA and transported to Savannah River for disposition by EM;
- K-Area at Savannah River Site, which stores plutonium from around the NNSA complex;
- H-Canyon at Savannah River Site, the only facility in the United States capable of processing plutonium and uranium for disposition; and
- The WIPP, the world's only deep geologic repository, for disposal of sealed sources and plutonium

7. Senator BINGAMAN. Dr. Triay, how many EM sites has EM cleaned up?

Dr. TRIAY. The Office of EM has completed 88 of 107 sites at the end of fiscal year 2009. We project that we will complete 5 more sites; 1 in fiscal year 2010 and 4 by the end of fiscal year 2011, bringing the total to 93 of 107 sites.

8. Senator BINGAMAN. Dr. Triay, how many sites remain?

Dr. TRIAY. The Office of EM had 19 sites remaining as of the end of fiscal year 2009. We project that we will complete 5 more sites, bringing the remaining total down to 14 sites by the end of fiscal year 2011.

9. Senator BINGAMAN. Dr. Triay, will EM meet its milestones at WIPP and Los Alamos?

Dr. TRIAY. The State of New Mexico is proposed to receive a total of \$417 million in fiscal year 2011 funding for defense environmental cleanup, not including safeguards and security or program direction funding. With these funding levels, the WIPP and NNSA's site at LANL will be able to complete all milestones.

AMERICAN RECOVERY AND REINVESTMENT ACT

10. Senator BINGAMAN. Dr. Triay, what additional work is taking place at Los Alamos as a result of ARRA funding?

Dr. TRIAY. The Office of EM is spending more than \$210 million on additional cleanup work at Los Alamos, much of it for soil and groundwater remediation as well as for deactivation and decommissioning of radioactive facilities. Cleanup of TA-21 is a Los Alamos Recovery Act project and is currently scheduled to be completed by the end of fiscal year 2011.

11. Senator BINGAMAN. Dr. Triay, how many jobs have been created as a result of ARRA funding?

Dr. TRIAY. As of June 30, 2010, the Office of EM has created or saved more than 10,495 jobs directly funded by the Recovery Act.

[Whereupon, at 3:50 p.m., the subcommittee adjourned.]

