

**DEPARTMENT OF DEFENSE AUTHORIZATION FOR
APPROPRIATIONS FOR FISCAL YEAR 2004**

HEARINGS

BEFORE THE

COMMITTEE ON ARMED SERVICES

UNITED STATES SENATE

ONE HUNDRED EIGHTH CONGRESS

FIRST SESSION

ON

S. 1050

TO AUTHORIZE APPROPRIATIONS FOR FISCAL YEAR 2004 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 FOR THE ARMED FORCES, AND FOR OTHER PURPOSES

PART 7

STRATEGIC FORCES

MARCH 12; APRIL 2, 8, 2003



**DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 2004—Part 7
STRATEGIC FORCES**

**DEPARTMENT OF DEFENSE AUTHORIZATION FOR
APPROPRIATIONS FOR FISCAL YEAR 2004**

HEARINGS

BEFORE THE

COMMITTEE ON ARMED SERVICES

UNITED STATES SENATE

ONE HUNDRED EIGHTH CONGRESS

FIRST SESSION

ON

S. 1050

TO AUTHORIZE APPROPRIATIONS FOR FISCAL YEAR 2004 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 FOR THE ARMED FORCES, AND FOR OTHER PURPOSES

PART 7

STRATEGIC FORCES

MARCH 12; APRIL 2, 8, 2003



Printed for the use of the Committee on Armed Services

U.S. GOVERNMENT PRINTING OFFICE

87-329 PDF

WASHINGTON : 2004

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512-1800; DC area (202) 512-1800
Fax: (202) 512-2250 Mail: Stop SSOP, Washington, DC 20402-0001

COMMITTEE ON ARMED SERVICES

JOHN WARNER, Virginia, *Chairman*

JOHN McCAIN, Arizona	CARL LEVIN, Michigan
JAMES M. INHOFE, Oklahoma	EDWARD M. KENNEDY, Massachusetts
PAT ROBERTS, Kansas	ROBERT C. BYRD, West Virginia
WAYNE ALLARD, Colorado	JOSEPH I. LIEBERMAN, Connecticut
JEFF SESSIONS, Alabama	JACK REED, Rhode Island
SUSAN M. COLLINS, Maine	DANIEL K. AKAKA, Hawaii
JOHN ENSIGN, Nevada	BILL NELSON, Florida
JAMES M. TALENT, Missouri	E. BENJAMIN NELSON, Nebraska
SAXBY CHAMBLISS, Georgia	MARK DAYTON, Minnesota
LINDSEY O. GRAHAM, South Carolina	EVAN BAYH, Indiana
ELIZABETH DOLE, North Carolina	HILLARY RODHAM CLINTON, New York
JOHN CORNYN, Texas	MARK PRYOR, Arkansas

JUDITH A. ANSLEY, *Staff Director*

RICHARD D. DeBOBES, *Democratic Staff Director*

SUBCOMMITTEE ON STRATEGIC FORCES

WAYNE ALLARD, Colorado, *Chairman*

JAMES M. INHOFE, Oklahoma	BILL NELSON, Florida
JEFF SESSIONS, Alabama	ROBERT C. BYRD, West Virginia
JOHN ENSIGN, Nevada	JACK REED, Rhode Island
LINDSEY O. GRAHAM, South Carolina	E. BENJAMIN NELSON, Nebraska
JOHN CORNYN, Texas	MARK DAYTON, Minnesota

CONTENTS

CHRONOLOGICAL LIST OF WITNESSES

NATIONAL SECURITY SPACE PROGRAMS AND MANAGEMENT

MARCH 12, 2003

	Page
Teets, Hon. Peter B., Under Secretary of the Air Force and Director, National Reconnaissance Office	4
Ellis, Adm. James O., Jr., USN, Commander, United States Strategic Com- mand	11
Lord, Gen. Lance W., USAF, Commander, Air Force Space Command	34
Cosumano, Lt. Gen. Joseph M., Jr., USA, Commanding General, U.S. Army Space and Missile Defense Command and U.S. Army Space Command	37
Mayo, Vice Adm. Richard W., USN, Commander, Naval Network Warfare Command	42

DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL MANAGEMENT AND OFFICE OF LEGACY MANAGEMENT

APRIL 2, 2003

Roberson, Hon. Jessie Hill, Assistant Secretary of Environmental Manage- ment, Department of Energy	77
Owen, Michael W., Director, Office of Worker and Community Transition, Department of Energy	87

STRATEGIC FORCES AND POLICY

APRIL 8, 2003

Brooks, Hon. Linton F., Acting Administrator, National Nuclear Security Administration	114
Ellis, Adm. James O., Jr., USN, Commander, United States Strategic Com- mand	130
Beckner, Hon. Everet H., Deputy Administrator, Defense Programs, National Nuclear Security Administration	150
Smolen, Brig. Gen. Robert L., USAF, Director, Nuclear and Counter- proliferation, Office of the Deputy Chief of Staff for Air and Space Oper- ations	155
Young, Rear Adm. Charles B., USN, Director, Strategic Systems Programs, Department of the Navy	159

**DEPARTMENT OF DEFENSE AUTHORIZATIONS
FOR APPROPRIATIONS FOR FISCAL YEAR
2004**

WEDNESDAY, MARCH 12, 2003

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

**NATIONAL SECURITY SPACE PROGRAMS AND
MANAGEMENT**

The committee met, pursuant to notice, at 9:30 a.m. in room SR-222, Russell Senate Office Building, Senator Wayne Allard (chairman of the subcommittee) presiding.

Committee members present: Senators Inhofe, Allard, Sessions, Reed, Bill Nelson, and E. Benjamin Nelson.

Majority staff members present: L. David Cherington, counsel; Brian R. Green, professional staff member; Mary Alice A. Hayward, professional staff member; and Gregory T. Kiley, professional staff member.

Minority staff members present: Madelyn R. Creedon, minority counsel; and Kenneth M. Crosswait, professional staff member.

Staff assistants present: Leah C. Brewer, Andrew W. Florell, Jennifer Key, and Sara R. Mareno.

Committee members assistants present: Jayson Roehl, assistant to Senator Allard; Arch Galloway II, assistant to Senator Sessions; D'Arcy Grisier, assistant to Senator Ensign; Russell J. Thomasson, assistant to Senator Cornyn; Elizabeth King, assistant to Senator Reed; William K. Sutey and Douglas Bush, assistants to Senator Bill Nelson; Eric Pierce, assistant to Senator E. Benjamin Nelson; and Todd Rosenblum, assistant to Senator Bayh.

**OPENING STATEMENT OF SENATOR WAYNE ALLARD,
CHAIRMAN**

Senator ALLARD. The Strategic Forces Subcommittee will come to order. This is the first subcommittee meeting for this year in this process; therefore, I just want to keep everything in the proper frame of mind and start on time. Bill Nelson is going to be a little bit late. We are going to make provisions for him to make his opening statement when he shows up. Senator Ben Nelson—we have two Nelsons on this committee; we will have to be careful—is here and ready to go on time. Thank you, Ben.

Senator BEN NELSON. Thank you.

Senator ALLARD. Then I will make my opening comments. I know that the witnesses on the panels we have before us are extremely busy individuals. I think we do ourselves, and we do them all, a favor if we can stay on schedule, so I am going to try and move things along.

The hearing will come to order. We meet today to receive testimony on the space programs of the Department of Defense. I want to note that this is the first hearing that I will chair with Senator Bill Nelson as the ranking member. Senator Nelson—I will welcome him when he shows up—I know you share my keen interest in space issues. I look forward to working with you and your staff.

I am also pleased to welcome the witnesses on our first panel—the Honorable Peter Teets, Under Secretary of the Air Force, and Admiral James Ellis, Commander, United States Strategic Command. Thank you both for taking time out of your very busy schedules to join us here today.

These are extraordinary times. Our Nation faces extraordinary threats. The importance of this hearing rests on the fact that the capabilities embodied in our space systems are absolutely essential in facing and, if necessary, defeating those threats. Space systems are critical to our military for intelligence, surveillance, reconnaissance, early warning, navigation, communications, weather prediction, and, increasingly, to force application.

When our military was called upon to engage al Qaeda and Taliban forces in Afghanistan, our forces acted swiftly and with maximum efficiency and effectiveness. Our forces were engaged in October 2001, and, by November, most of the combat was over, the enemy was routed, and Afghanistan was liberated. We could not have done this without precision munitions, and many of these munitions now rely on signals from the Global Positioning System (GPS) to help guide them to their targets. For example, a special operations soldier would provide coordinates of a target provided by GPS to a pilot in a nearby aircraft. The pilot, whose own location is precisely known because of GPS, would download those target coordinates to its precision weapon. After the pilot released his weapon, the weapon would receive GPS updates to prevent any drift away from the target, the target would be destroyed, and special operations forces and the Northern Alliance fighters would then move on to the next objective.

None of that sequence would have been possible without the capabilities of our space assets and the support of the young men and women who build, launch, and operate these systems. Precisely because they are so valuable, the military services and we, in Congress, have a special obligation to assure that the systems, operations, people, and management processes that undergird these capabilities are healthy and sound. It is a long and complex road to provide these capabilities. We must develop, acquire, launch, operate, and sustain these systems, and train our young men and women to do so. We face challenges in all of these areas.

We are all aware that space programs have not had an unblemished record of successful development. Indeed, last year, one of the witnesses on our second panel, General Lord, contended that all of his major space-development programs were broken. These problems arose over a long period of time and had multiple causes. The

inherently difficult challenges of the harsh and unforgiving space environment, the complexity of the technology, the atrophy of space expertise in the Department of Defense and the military services, and a set of counterproductive incentives imposed by the Pentagon's acquisition system—many of these causes have been recognized for some time. For example, the 2001 Report of the Commission to Assess United States National Security Space Management and Organization stated, "The Department of Defense is not yet on course to develop the space cadre the Nation needs." Many of my friends in the space community believe that this problem had its roots in decisions taken over a decade ago.

To address these challenges, I know that Under Secretary of Defense Aldridge and Under Secretary Teets have instituted a number of changes to improve program coordination, management, and oversight. I will be interested in exploring how these new processes are working.

To address personnel inadequacies, Congress mandated in the National Defense Authorization Act for Fiscal Year 2002 that the Secretary of the Air Force establish a space career field to enhance the service's ability to develop space doctrine, concepts of operation, space systems, and operations-based systems. I know all the services have been addressing space personnel needs. Again, I will be looking forward to determining how much progress has been made and what further congressional steps might be necessary to encourage a more rapid reconstitution of these vital skills.

Finally, I am very much interested, given the problems many of our space efforts have faced in the past, in exploring the fiscal year 2004 budget request. I note, with some concern, that several advanced efforts appear to be delayed compared to schedules we saw last year, including the next-generation global positioning satellite and the space-based infrared system. I know we will certainly discuss these issues today.

Once again, I want to welcome our witnesses. When Senator Nelson arrives, I will recognize him. In the meantime, I will recognize Senator Ben Nelson, if he has any questions or comments.

Senator BEN NELSON. Thank you, Mr. Chairman.

First of all, I appreciate your scheduling this hearing today. Obviously, the issues that are before this subcommittee are extremely important to the national defense. I welcome, of course, my good friend, Admiral Ellis, here today. I think he is a brave man, leaving the banana belt of weather—[Laughter.]

—to come back to Washington, DC, where the weather roles have been reversed with Nebraska. I escape, too, on weekends, because it has been rather mild there compared to here.

I appreciate very much, Admiral Ellis, your willingness to come on this occasion, and, I think, a couple of more occasions over the next several weeks, to talk about the role that Strategic Command plays in the national defense of our country.

Secretary Teets, it is nice to have you back and have this opportunity to learn more about what is happening within DOD in dealing with the threats that we deal with in space.

Mr. Chairman, that is my opening statement, and I suspect that you have some questions you would like to ask, and, at the appropriate time, I will be happy to entertain mine.

Senator ALLARD. Okay, Senator Ben Nelson, I will go ahead and call on the panel to make some remarks. When the ranking member shows up, we will stop your testimony and ask him to give a few opening remarks.

Secretary Teets and Admiral Ellis, we will let you proceed, and we will start with Secretary Teets. I appreciate your joining us. I appreciate your service to the country, both of you. I would like to compliment you both on what I feel is a good job. We look forward to continuing to work with you in a positive way.

Secretary Teets.

STATEMENT OF HON. PETER B. TEETS, UNDER SECRETARY OF THE AIR FORCE AND DIRECTOR, NATIONAL RECONNAISSANCE OFFICE

Secretary TEETS. Thank you very much, Mr. Chairman, and thank you for the opportunity to come before your subcommittee today.

I would also like to say I am honored to sit on a panel with Admiral Ellis. I have gotten to know Admiral Ellis over the course of this last year reasonably well. He is a person of the highest integrity and capability, and it is an honor for me to be present with him.

As you said in your opening remarks, Mr. Chairman, never has there been a time, really, when our national security space systems have been as important or critical to our warfighting efforts and also our ability to collect intelligence from space. I feel that in this kind of an environment, it is terribly important that we properly resource space systems, operations, and acquisitions, as well, and that we properly develop a future that will allow us to continue to take advantage of our asymmetric advantage that we have with our space assets.

I am pleased to say that if we look at the President's 2004 budget and if we look at it from a virtual major-force-program point of view, there is something on the order of an 18-percent growth in the President's 2004 budget request from that which was appropriated in fiscal year 2003. I think that is a very appropriate increase.

We have spent the course of this last year working hard to focus on leadership and focus on joint organization, if you will, across national-security space, an organization that would allow us to have insight and knowledge of what is going on in the space world in not only the Air Force, but also in the Army, the Navy, and the Marine Corps. Frankly, it is also important for us to bridge across the intelligence community because the lines of distinction between military warfighting space systems and intelligence gathering systems are certainly becoming blurred.

As a result, I think we have made some good progress, but there is much left to be done. I have established, for this coming year, a list of some eight priorities, and I have submitted a written statement to the subcommittee, which I hope to have entered into the record.

Senator ALLARD. Without objection, so ordered.

Secretary TEETS. I thought I would just take a couple of minutes here to just quickly tick through those eight items that we are fo-

cusing effort on and which I do believe that the President's 2004 budget supports.

The first item on the list is to ensure success in our mission operations because of the criticality of it. This year represents an extremely important year for space operation. We have scheduled some 14 space launches this year, and they need to be conducted with great success. I am pleased to report to you that this year we have already had three successful space launch missions. The most recent launch was earlier this week, when a Delta 4 Evolved Expendable Launch Vehicle (EELV) successfully launched our DSCS satellite, and that is going well.

The second priority is to fully integrate space operations into warfighting and national intelligence collection capabilities, and that is an ongoing effort. We are better integrated today than we have ever been, but we have more progress to make on that score.

Third, I do have a focus on getting our space acquisition programs back on track. I know you mentioned that we have had some difficulty in space acquisitions, and that is true. We have made some significant progress, I think, in changing the way we are acquiring space systems, and we are making progress there. We need to continue to focus on that effort.

Next is a drive, on my part, frankly, to pursue operationally responsive assured access to space. Assured access to space is critical for these systems that we are talking about, and I am fully supportive of the concept that we have for two independent-as-possible, expendable launch vehicles. At the same time, I would recognize that those EELVs, while more operationally responsive than any before them, are still not operationally responsive enough to really support ongoing future warfighting kinds of operations.

You mentioned, in your remarks, the desire to develop this team of space professionals. I share that belief and have placed a strong focus on that. General Lord, whom you will hear from a little bit later, is putting the final touches right now on a professional space strategy, which will allocate resources, which will define precisely how the space cadre will be developed within the Air Force. But this development of the space cadre goes beyond Air Force channels; it also goes to Navy, Army, Marine Corps, and, frankly, intelligence-community capabilities, as well, and I think we have a wonderful opportunity to build a very professional team of space professionals.

The next priority is to pursue innovative capabilities. We will spend significant amounts of money on research and development in the search for breakthrough technologies, which can continue to build our asymmetric advantage.

Because of the value of these space assets, I do believe the time has come for us to also put some focus on enhancing our space control capabilities. When I say "space control," I really mean, first of all, space situational awareness, an awareness of whether or not our space assets are under attack. I also mean defensive countermeasures, and, yes, I think it is time to start thinking about offensive countermeasures, as well.

Last, I would conclude with my eighth priority, which is, I think, a strong need to focus our space, science, and technology resources and programs. It turns out that there is a lot of activity going on

in space research and technology in a lot of different organizations. AFRL, Air Force Research Laboratory, has a strong program. Out at the NRO, we have an advanced systems and technology directorate that is doing some wonderful research in technology. The Defense Advanced Research Projects Agency (DARPA) has more activity going now in the space arena than they have had in years, and we need to embrace that. Of course, the Naval Research Laboratory does some great work.

In addition, we are finding ways to build partnerships with NASA. NASA does some wonderful, innovative, and creative work in the space/science arena that we need to also make ourselves aware of. So that last item, as I say, is to focus space science and technology resources in the program.

With that, sir, I will conclude. I thank you, again, for the opportunity to be here, and I look forward to your questions.

[The prepared statement of Secretary Teets follows:]

PREPARED STATEMENT BY HON. PETER B. TEETS

INTRODUCTION

It is my distinct honor to appear before the subcommittee today representing the world's greatest air and space force, and to join my operational counterpart regarding space activities, Admiral James Ellis, Commander, U.S. Strategic Command. You have previously heard from the Secretary of the Air Force and the Chief of Staff about the state of affairs of the Air Force as a whole. The "Top 4" of the Air Force—the Secretary, the Chief of Staff, the Vice Chief and I—are of one mind regarding our collective vision of a total air and space force providing global reconnaissance and strike across the full spectrum of operations in the service of this great nation. Given the focus of this committee, and my role in overseeing National Security Space activities as Under Secretary of the Air Force and Director of the National Reconnaissance Office (NRO), I will concentrate my remarks today on the eight priorities I have set for our National Security Space efforts for 2003. These priorities serve to shape the fiscal year 2004 budget for our space programs, and—as they are all important to our space efforts—they do not have any particular ranked order. They are: (1) ensure mission success in space operations, (2) fully integrate space capabilities for warfighting and national intelligence, (3) get space acquisition programs on track, (4) pursue operationally responsive assured access to space, (5) develop a team of space professionals, (6) pursue innovative capabilities for national intelligence and defense priorities, (7) enhance space control capabilities, and (8) focus space science and technology resources and programs.

SECTION 1—ENSURE MISSION SUCCESS IN SPACE OPERATIONS

Our space assets now are more important to warfighters, more important to the intelligence community, and more important to our ability to win current and future conflicts, than they ever have been before. Space capabilities are integral to modern warfighting forces. They provide critical surveillance and reconnaissance information, especially over areas of high risk or denied access for airborne platforms. They provide weather and other space and earth-observation data, global communications, missile warning, precision navigation, and guidance to troops on the ground, ships at sea, aircraft in flight, and weapons en route to targets. All of these space capabilities enable the tremendous success our joint warfighters achieve during combat operations.

To support these critical national security activities, ensuring mission success in space operations is of vital importance—and we anticipate a very busy year for national security space operations. We have 12 national security space launches scheduled for 2003, compared to only 1 conducted in 2002. In addition to activities at launch bases, this increased launch rate leads to a heightened state of readiness at our ground stations, additional initial on-orbit checkout and housekeeping functions, and greater challenges to integrate those 12 new spacecraft into existing constellations. These launch operations include actions to sustain military satellite communications with one Milstar and two Defense Satellite Communications Systems (DSCS) launches this year. The first of the two DSCS satellites was just launched this past Monday evening on board a Delta 4 EELV. We conducted a successful

launch of a GPS IIR in January. We have two more IIR launches scheduled in 2003, and summer 2004 we will launch the first modernized GPS IIR-M. This new IIR-M will add new civil and military capabilities and is the first step towards improving GPS services to both the military and civil users. We also have a projected launch for the Defense Meteorological Satellite Program (DMSP) this summer as well as a Defense Support Program (DSP) satellite early next year, and, in addition to these launch activities, we continue to actively modernize and upgrade our launch and test ranges on both coasts. Concurrent with all of these activities is the critical need to keep on-orbit capabilities at peak performance. All of these events are vital to national security, and we will make every effort to ensure their success.

SECTION 2—FULLY INTEGRATE SPACE CAPABILITIES FOR WARFIGHTING AND NATIONAL INTELLIGENCE

There is a commonality between our intelligence collection activities and our warfighting needs. A good example is the Air Force's Space-Based Infrared System-High (SBIRS-High) satellite in development, which will replace the veteran DSP platform. It will perform the missile early warning mission, and also provide extremely valuable additional capabilities. SBIRS-High will have two very highly capable infrared sensors capable of collecting large amounts of information useful to the intelligence community. In addition, it will significantly contribute to the Theater Ballistic Missile warning mission.

There is also a significant amount of information our constellations of NRO satellites collect on a daily basis that is crucial to warfighting operations. We have made great progress over the decades in expanding the range of those exploiting these space capabilities from a small set of strategic users to multiple Government agencies and virtually the entire warfighting force. But we need to do more. Our goals for improved integration include providing communications, environmental sensing, and precise position and timing information to support a "common operational picture" of the battlespace, and facilitating cross-platform command, control, and communications. One way we will accomplish this is through programs like the Combatant Commanders Integrated Command and Control (CCIC2S) Target System Architecture in Cheyenne Mountain, which will provide an integrated battle management system delivering a fused battlespace picture to strategic and theater decision-makers.

SECTION 3—GET SPACE ACQUISITION PROGRAMS ON TRACK

Our goal is to create an acquisition process that is both credible and agile. We have made progress in this direction with our new 03-01 space acquisition policy, which I signed into interim guidance this month. This new process recognizes the inherent differences of space systems. It allows us to reduce our timeline, while maintaining the required depth of review. It enables us to manage risk by looking for challenges early on. It eliminates program management bureaucracy, giving our program managers the responsibility and the resources to manage their programs. We expect there will be some continuing risk in our programs. Our job is to manage those risks by giving our people the necessary tools and ability to do so.

One tool we can give them is a world-class independent cost estimation capability. Our vision is to form a National Security Space Cost Assessment Team to provide a useful, accurate and timely independent cost estimate with common methodology in support of space acquisition. The team would consist of experts knowledgeable on the unique challenges facing space programs. The Director of the Office of the Secretary of Defense (OSD) Cost Analysis Improvement Group (CAIG) and I are working together to accomplish this task. He has also agreed to lead the National Security Space Cost Estimating Team.

Another valuable resource to reduce program risk is management reserve. We want to give our program managers the flexibility to meet the unknown challenges that arise in virtually every program. Such resources are not intended to meet unforeseen requirements, but to address technical challenges. This will enable us to provide greater stability in our programs, reducing risk and increasing our ability to deliver on time and on budget. Further, a dedicated, fenced reserve does not just help one program—it helps our entire portfolio of programs. Currently, we pull money from a stable program to solve problems in an unstable program, and then we ask for more money to fix the initially stable program. In other words, we will break one program just to fix another. This is not how a good business runs; we must make these changes or we will continue to experience delays, overruns, and instability in our acquisition programs.

We have been successful in getting our major space programs back on track. The SBIRS-High program successfully completed its rebaselining in January 2003. In

that program, stronger government oversight has replaced Total System Performance Responsibility (TSPR), and Earned Value Management System (EVMS) enhancements have combined industry best practices with increased program office supervision. I personally chair a quarterly meeting with General Lance Lord (AFSPC/CC) and company presidents, ensuring consistent leadership involvement in the program. We have introduced contract improvements to more effectively reward positive performance, and added numerous new incentives for effective management, systems engineering, timely delivery of capabilities, and cost performance. While challenges still remain, I have much more confidence in SBIRS-High than I did a year ago.

SECTION 4—PURSUE OPERATIONALLY RESPONSIVE ASSURED ACCESS TO SPACE

Last year was a pivotal year for space launch—both of our new Evolved Expendable Launch Vehicles (EELV), the Atlas family and the Delta family, had their first successful launches in 2002. While I am encouraged by their success, each of our launch providers is suffering due to the current weakness in the commercial launch marketplace. Since maintaining two launch providers is critical to assuring access to space for our national security programs, we will continue to grow our EELV capability for near-term assured access. The Government has four EELV launches scheduled for calendar year 2003. We have budgeted \$163.9 million for assured access initiatives in fiscal year 2004, \$538.8 million across the Future Years Defense Program (FYDP), including: (1) infrastructure sustainment, which covers facilities, critical skills, maintenance, leases and supplier readiness; (2) critical component engineering, which improves reliability of critical components from common suppliers or components that have been historically problem or risk areas, (3) pre-post mission engineering, which provides new capabilities tools or resources to increase effectiveness of EELV practices and processes, and (4) RL-10 engine producibility, which involves investment to increase the producibility and reliability of the RL-10 engine, common to both the Atlas V and Delta IV vehicles.

Our EELVs are the best expendable launch vehicles the world has ever seen, but they still lack the responsiveness necessary to ensure our ability to rapidly replenish critical on-orbit capabilities. Today we still talk about time on the launch pad in terms of weeks, perhaps months, to prepare a satellite for launch. If we intend to have operationally responsive assured access to space, we need to find ways to bring that cycle time from weeks and months down to hours and days. One way is to pursue simpler, lower-cost small expendable launch systems. Accordingly, we are pursuing \$24.4 million for Operationally Responsive Spacelift in fiscal year 2004, \$233.8 million across the FYDP, and are planning a lower-cost responsive spacelift technology demonstrator in fiscal year 2007.

The other aspect of operationally responsive assured access to space comes in the form of reusable spacecraft, or reusable launch systems. I believe the Nation needs to embark on a course to an eventual fully reusable Single-Stage-to-Orbit launch capability. The capability may be a long way off, and there will certainly be intermediate steps, but we need to begin to chart the path now. I plan to engage NASA, the Defense Advanced Research Projects Agency, other DOD laboratories, and the broader space community in developing a technology roadmap to do just that. This roadmap will guide investing in a portfolio of research projects and technology demonstrations in propulsion, materials and structures, with increased funding beginning in fiscal year 2005.

SECTION 5—DEVELOP A TEAM OF SPACE PROFESSIONALS

I know that General Lance Lord considers developing the space workforce a high priority item at Air Force Space Command, and he is putting the finishing touches right now on his space professional strategy. I am confident we will see some excellent ideas, plans, and resources brought to bear on this issue.

In the meantime, we have taken a number of steps within the Air Force to attract and retain top talent. We introduced a Critical Skills Retention Bonus for scientists and engineers, similar to the bonuses we offer pilots, to increase retention in those career fields. We are establishing new requirements for advanced education, including courses for all space professionals and advanced space training for specific mission areas. We are also using the Naval Postgraduate School and the Air Force Institute of Technology to build a joint program using the particular strengths of each school to allow space professionals to receive a graduate education spanning a broad spectrum of space activities.

I also recognize these efforts are not and must not be limited to just Air Force personnel. We will need space professionals in all services and agencies—and in our civilian and industry workforce—to exploit space effectively in the interests of na-

tional security. I will encourage the other services and agencies to join us as we begin to build this initial “space cadre.” In doing so, we will actively engage with all the services to meet their mission and development needs.

SECTION 6—PURSUE INNOVATIVE CAPABILITIES FOR NATIONAL INTELLIGENCE AND DEFENSE PRIORITIES

One focus of this priority is on the development of breakthrough technologies that would produce new sources and methods for collecting intelligence. Our goal is transparency—we want the ability to see everything and know everything, while simultaneously denying our adversaries both the ability to do the same, and the knowledge that such capabilities are being used against them. We want to always be one step, or more, ahead of our adversaries—to be first to see, first to understand, and first to act. To achieve this ambitious goal, we look to technological advances to preserve our asymmetric advantage in information superiority against the full spectrum of threats and adversaries.

In addition to the push for new sources and methods, we have two other very innovative, creative, technology-pushing initiatives underway. The first is the Transformational Communications Architecture (TCA). TCA will combine upcoming spaceborne communications systems (Advanced EHF, Wideband Gapfiller Satellite) with future systems (Transformational Satellite, or T-SAT) that will leverage new technologies such as laser communications and internet-based protocols to dynamically distribute communications amongst users. The ultimate goal is to remove SATCOM bandwidth and access as constraints on the warfighter. We anticipate this new architecture will increase available bandwidth from 10 to 100 times existing capacity—all of which will be essential to persistent ISR such as Space-Based Radar (SBR) and advanced Unmanned Aerial Vehicles (UAVs). The President’s budget includes \$439 million for TCA in fiscal year 2004, \$12.5 billion across the FYDP, with a T-SAT first launch targeted for calendar year 2009/fiscal year 2010.

The second initiative is the SBR program, which will give warfighters the ability to surveil as well as reconnoiter deep into denied areas, day or night. SBR will be part of a larger mix of air, space, and ground ISR assets, all of which together have the potential to revolutionize warfighter command and control. In the budget, the \$274.1 million for SBR in fiscal year 2004 continues technology risk reduction activities while completing concept definition, with \$4.4 billion across the FYDP in pursuit of a fiscal year 2012 first launch.

SECTION 7—ENHANCE SPACE CONTROL CAPABILITIES

I described earlier how our space systems give our warfighters and intelligence analysts a very significant capability advantage. There is little doubt in my mind that our potential adversaries have taken note of this, and that, in the future, our space capabilities may be threatened by them. We must prepare to protect our advantage in space by developing space control capabilities.

The first ingredient for successful control of space is awareness of the space environment: natural phenomena, spacecraft “traffic,” and potential threats (whether natural or manmade) to our space systems. We have taken steps to increase our space situation awareness capabilities, including the standup of a Space Situation Awareness Integration Office in Air Force Space Command, and significant funding for space surveillance assets over the next 5 years. An example is our Space-Based Space Surveillance (SBSS) satellite program, which will augment ground-based space surveillance capabilities. The first launch of SBSS is planned for fiscal year 2006, accelerated 4 years earlier than in the fiscal year 2003 PB. We have also budgeted \$134.8 million for the Air Force Spacetrack modernization program in fiscal year 2004, with \$1.5 billion over the FYDP.

Effective space control also requires protection of our space capabilities, a mission area we call Defensive Counterspace (DCS). An example of our efforts in this area is the Rapid Attack, Identification, Detection, and Reporting System (RAIDRS), planned for initial operational capability (IOC) in fiscal year 2008. RAIDRS will enable detection, reporting, identification, location, and classification of attacks against valuable space assets.

Achieving effective space control also requires us to think about denying the high ground to our adversaries through Offensive Counterspace (OCS). With the integration of space capabilities across the spectrum of our own warfighting operations, we have been paving the road of 21st century warfare, and others, cognizant of the asymmetric advantages our space systems give us, will soon follow. We currently have two OCS projects underway. The first is the Counter Communication System (CCS), a capability intended to disrupt satellite-based communications used by an enemy for military C3, and scheduled for first delivery in fiscal year 2004. The sec-

ond is the Counter Surveillance Reconnaissance System (CSRS), intended to impair an enemy's ability to obtain targeting, battle damage assessment, and information by denying their use of satellite imagery with reversible, non-damaging effects. CSRS is currently in the initial design phase, with operational units scheduled by fiscal year 2007. Our commitment to DCS and OCS is \$91.4 million in fiscal year 2004, and approximately \$635 million over the FYDP.

SECTION 8—FOCUS SPACE SCIENCE AND TECHNOLOGY RESOURCES AND PROGRAMS

If we are to truly transform our warfighting and intelligence operations, we must continue to invest in and focus our space science and technology (S&T) efforts. Much of what we have accomplished in National Security Space to date stems from past S&T investment and development. Sometimes apportioning resources to S&T development can be difficult—such development requires stable long-term investment and typically does not provide immediate benefits to current programs. But we remain committed to investing today for our future capabilities—we must push the technology envelope.

Investment alone will not ensure that the United States military and intelligence community has preeminent future space capabilities. We must improve our S&T planning to ensure we: (1) encourage an operational pull that conveys to the S&T community a clear vision of the capabilities we need for the future; (2) address the full spectrum of future needs in a balanced and well-thought out manner; and (3) determine ways to demonstrate and spin-off promising technologies to programs.

Another ingredient critical to effective S&T development is collaboration. We have a number of outstanding organizations contributing to space science and technology development, including the Air Force Research Laboratory, the Naval Research Laboratory, and the NRO's Advanced Science and Technology directorate. By bringing these organizations together, and working with other agencies such as DARPA and NASA, we can move forward faster without duplicating effort.

CONCLUSION

Space capabilities are vital to the current and future warfighting force structure and to our national intelligence collection efforts. They are inherently global and uniquely capable of supporting our global interests and responsibilities. Likewise, as the world changes, our ability to understand events, to shape security relationships, to project power, and to deter and/or compel adversaries will increasingly depend on space. These circumstances collectively present us all with a tremendous responsibility—a responsibility to do the right thing for the future of space, and to ensure those critical capabilities are there, and on-time. It is our commitment to effectively and decisively deliver these capabilities for the good of the Nation.

Senator ALLARD. Thank you for your testimony.

Now I will call on the ranking member of the Strategic Forces Subcommittee on Armed Services. In matter of introduction, this is our first meeting, Senator Nelson. Welcome, and I look forward to working with you in a partnership on this particular subcommittee.

STATEMENT OF SENATOR BILL NELSON

Senator BILL NELSON. Congratulations, Mr. Chairman, on your chairmanship of this most important subcommittee on a subject area that is extremely important to the interest and the defense of the United States.

I would just summarize by saying that a few of the issues that I want to look at are, as the Secretary has just mentioned, assured access to space, space surveillance, and situational awareness, the overall approach to the acquisition of space systems, and then the challenges for the future, which would be transformational communications, space-based radar, satellites, the role of space in the future, and the future of manned spaceflight. So I am really looking forward to digging into this with you.

Thank you for your offer of partnership. Years ago, I chaired a similar committee in the House. My ranking member and I both agreed that space is not a partisan issue. Space is something that

you approach from the interest of the country. So I am looking forward to that with you.

Senator ALLARD. I appreciate your comments, Senator Nelson.

Senator Inhofe just joined us. Do you have any brief comments?

Senator INHOFE. No, let us get on with it.

Senator ALLARD. Okay. I like this guy. He says, "Get on with it."
[Laughter.]

Admiral Ellis, we will now start with your testimony, if you would, please.

**STATEMENT OF ADM. JAMES O. ELLIS, JR., USN, COMMANDER,
UNITED STATES STRATEGIC COMMAND**

Admiral ELLIS. Thank you, Mr. Chairman, Senator Nelson, distinguished members of the committee.

It is an honor to appear before you again today representing the outstanding members of the United States Strategic Command and our components, men, women, and civilian alike.

I, too, have a prepared statement that I would ask to be submitted for the record.

Senator ALLARD. Without objection, so ordered.

Admiral ELLIS. Thank you, sir.

As my presence here indicates, and as you know well, it is a new United States Strategic Command since I last appeared before this subcommittee. The new command is a reflection of the clear guidance the President gave the Department to challenge the status quo and envision a new architecture of American defense. It is a reflection of the recommendations of the Space Commission, the Quadrennial Defense Review, and the Nuclear Posture Review, and it is also a reflection of the new international security environment we must all work to effectively address together.

The new United States Strategic Command was created, first and foremost, to provide responsive, integrated, and synchronized combat capability and support across geographic boundaries. Our very success will, in many ways, be reliant upon our ability to operate to, from, in, and through space.

I am convinced that the alignment of responsibility for our Nation's on-orbit capabilities under the same unified command that now has global responsibilities in the areas of missile defense integration, communications, intelligence, and global strike, holds great promise for the continuing and accelerating operationalization of space.

Thanks to the leadership and efforts of this committee and a host of talented Americans, including Under Secretary Teets, sitting beside me, we are the world's preeminent space-faring nation, and I am committed to ensuring that we retain and advance that position and the technological advantages it affords us.

It has been an extraordinary 5½ months since the new United States Strategic Command was established. We have been working closely, on the one hand, with the broad space community, spanning Government and industry, to ensure we continue the growth in both the economic benefits and the warfighting capabilities that our space assets provide. On the other hand, we have also been working closely with the regional combatant commanders engaged

in the war on terrorism or planning and conducting forward operations around the globe.

Specifically, over the last few months, I have traveled to each of the launch complexes, our critical gateways to space. I have walked the ground and better understood the infrastructure and operational challenges associated with those facilities. I have met with industry, NASA, and military space leadership and joined the Partnership Council, including Secretary Teets, Administrator O'Keefe, General Lord, and Dr. Sega, to build on those relationships. I have participated in the Nation's most innovative space war-gaming efforts to date.

The Command has also deployed space, intelligence, planning, and information operations expertise to the regional combatant commanders. We have optimized communications bandwidth and GPS performance in support of ongoing operations, and we continue to provide missile warning for the Nation and our forces in the field. Importantly, we are also engaged in the demanding work of charting the course for meeting our future warfighting needs.

There are many opportunities ahead, and I am committed to working with our strong and growing team of partners to address each one. We will assist in crafting not only a vision, but a clear and detailed course of action in each area.

Opportunities to move our Nation forward that we will address together include assured, responsive, and affordable access to space; safe and effective launch ranges; persistent space surveillance and space control capabilities; physical protection of our on-orbit assets and their accompanying global network of ground stations and communication links; and development and maintaining, as you have noted, a cadre of highly trained space professionals.

As we meet the challenges in these areas, we will then be able to more effectively address warfighting needs, which include robust communications architecture, persistent intelligence collection, precision navigation and weapons guidance, and missile warning and missile defense.

Mr. Chairman, it is an honor to represent the men and women of the United States Strategic Command and its components represented in the following panel, all of whom are working diligently today to ensure the most effective space capabilities for tomorrow.

It is also a privilege to join Secretary Teets in this hearing. We are partnering through formal councils and, more importantly, on a regular and growing basis at all levels through our organizations. We will continue to work with all those other space professionals who play an integral role in the defense of our Nation and prove the combat effectiveness of our modern joint warfighting forces.

Thank you very much for your attention, and I welcome your questions.

[The prepared statement of Admiral Ellis follows:]

PREPARED STATEMENT BY ADM. JAMES O. ELLIS, USN

Mr. Chairman, Senator Nelson, and distinguished members of the subcommittee, it is an honor to appear before you representing the outstanding men and women of United States Strategic Command. The President has given all of us in the Department of Defense clear guidance to "challenge the status quo and envision a new architecture of American defense for decades to come." The new U.S. Strategic Command is a clear product of that revolutionary and continuing effort. Today, the fin-

est soldiers, sailors, airmen, and marines—representing active duty, Guard, and Reserves—joined by a cadre of talented civilians, are building an entirely new command, instrumental in fighting the war on terrorism and focused on reshaping the Nation’s military capabilities for the demands of the 21st century.

Capitalizing on the historic work of our predecessors, we have made tremendous strides in the short time since the key elements of U.S. Space Command and U.S. Strategic Command were reshaped into the new U.S. Strategic Command. Specifically, we:

- Created an entirely new unified command, while streamlining headquarters management and supporting the establishment of the vitally important U.S. Northern Command.
- Provided world-class deployed and reach-back space, intelligence, planning, and information operations expertise to the regional combatant commanders either engaged in the war on terrorism or planning for potential operations around the globe.
- Successfully supported the initial launches of both the Atlas V and Delta IV, a major step in sustaining assured access to space for the next decade.
- In accordance with Presidential direction in Unified Command Plan Change Two, assumed four global missions previously unassigned to any combatant commander. These missions capitalize fully on our space systems and will give us a powerful role in shaping our future capabilities in support of the joint warfighter.
- Developed new partnerships with NASA, the National Security Agency, the Missile Defense Agency, and the Intelligence Community in order to better satisfy the Nation’s defense needs in the 21st century.

Each of these ongoing efforts is important to our future, but represent only the first steps. They are a foundation for aggressively pursuing, with our strong and growing team of defense and agency partners, our next set of challenges and opportunities. I welcome the opportunity to address the subcommittee on the policies and programs supporting our command’s efforts, and particularly, our important space-related missions and responsibilities.

THE CONNECTION BETWEEN SPACE OPERATIONS AND STRATEGIC FORCES

Our success in developing strategic space-based capabilities such as missile warning and survivable communication links, coupled with a strong nuclear deterrent, contributed in many ways to a peaceful end to the Cold War. From 1985 to 2002, U.S. Space Command made tremendous progress in enhancing on-orbit capabilities, while simultaneously expanding their application from the purely strategic arena to the tactical battle space. The warning of Scud launches during Operation Desert Storm and the broad application of the GPS to navigation and weapons guidance are but two examples of how the space community transformed our on-orbit capabilities into combat tools employed by commanders at all levels, increasing their warfighting effectiveness. The combat power, networked systems, and global reach of our military today are a tribute to the contributions of America’s space program and U.S. Space Command’s diligent work over the course of 17 years.

In 2002, following a series of high-level studies that included the Space (Rumsfeld) Commission, the Quadrennial Defense Review, and the Nuclear Posture Review, the President and Secretary of Defense directed the creation of a new unified command to effectively and efficiently anticipate and counter the diverse and increasingly complex global threats our Nation will face for the foreseeable future. These threats to our homeland, our allies, and our interests abroad range from conventional military capabilities to the asymmetric and indirect dangers of cyber attack, weapons of mass destruction (WMD), and terrorism—each designed to circumvent U.S. strengths and exploit any vulnerabilities on the ground, in the air, at sea, and in space. These threats are global in scale and often transcend geographic or regional boundaries.

The new U.S. Strategic Command was established October 1, 2002, to address these very threats. The command is chartered to pursue an integrated, trans-regional approach to both deterrence and warfighting, and to further strengthen our complementary and supporting relationships with the regional combatant commanders, each of whom retain the full responsibility for the regional challenges within their respective area of responsibility (AOR). Initially assigned responsibility for space and computer network operations and nuclear deterrence, on January 10, 2003, the President expanded the command’s role to include four additional missions previously unassigned to a unified command. These include global strike planning and execution; integration of Department of Defense information operations (IO); global missile defense integration; and oversight of command, control, commu-

nications, computers, intelligence, surveillance, and reconnaissance (C⁴ISR) in support of strategic and global operations. These newly assigned missions will broaden our global supporting role, further strengthen our Nation's deterrent posture and bring focused responsibility and authority to our space and information operations missions.

The vision for U.S. Strategic Command is exciting. It requires re-thinking, operationalizing, and, in some cases, building from the ground up, every mission in our portfolio. Fortunately, the experience gained from carrying out our space operations and our nuclear deterrent roles will facilitate development of our newly assigned missions. The warfighting focus and cutting edge technology of our space and information operations missions, the rigor and exactness of nuclear planning, and the robust command and control for our operational forces, translates directly to the missions now assigned to the command. I am convinced the alignment of our new missions under the same command with responsibility for the Nation's on-orbit capabilities holds great promise for the continuing operationalization of space, and will serve as the foundation we will build upon to achieve success in all our mission areas.

OUR OPERATIONAL SPACE FOCUS

The United States is the preeminent space-faring Nation in the world. Space operations have evolved to far more than an American military center of gravity. It is now an economic force, intricately woven into almost every facet of our lives—farming, weather prediction, resource management, communications, finance, transportation and recreation. Entire new industries have been created around space applications, and approximately \$100 billion U.S. are invested in space assets today. While the U.S. has spent over half a trillion dollars on space programs since 1958, current projections indicate that same amount will be invested globally in just the next 5 years. The message is clear: the U.S., and in many ways all nations, increasingly rely on platforms operating in the medium of space; that reliance will continue to increase dramatically in the years ahead.

As the Nation's designated space warfighter, U.S. Strategic Command is committed to bringing a focused operational perspective to our on-orbit capabilities. From a special operations soldier on horseback navigating by GPS to our global communications architecture providing intelligence and command and control around the world, never again will this Nation fight without significant contributions from space. Our satellite systems are essential, not just enabling, to each of our disparate missions, and they underpin many of the distinct technological advantages we have over our potential adversaries. U.S. Strategic Command will work diligently to ensure the extraordinary global communication, navigation, surveillance, weather, and missile warning capabilities we have and are pursuing for the future, will provide dominant, war-winning contributions to the Nation.

SPACE SUPPORT TO THE WARFIGHTER

Winning the war on terrorism remains the Department's top priority, and space operations continue to play an integral role in our global efforts. Since the moment the President arrived at Offutt AFB on September 11, 2001, the men and women of U.S. Strategic Command and its predecessors have provided support in all areas of our expertise—space, IO, intelligence, planning, and communications. Specifically, we:

- Provided a continuous Space and Information Operations Element presence at U.S. Central Command, enabling immediate access to space-related and IO capabilities.
- Optimized bandwidth allocation in support of operational deployments, working with the regional combatant commanders and making recommendations to the Joint Staff to better maximize the communications capabilities available to forces in the field.
- Assured peak GPS performance for precision strikes through our GPS Enhanced Theater Support program, reducing the number of sorties required and minimizing collateral damage.
- Provided federated intelligence support to multiple regional combatant commands, using space systems to conduct battle damage assessment and intelligence analysis, and lead the intelligence community-wide effort to find and characterize underground facilities in Afghanistan.

Although successful in each of these endeavors, U.S. Strategic Command is striving to even further refine our support to the warfighters. We are developing a single team of professionals that bring the full suite of our global capabilities—space, missile defense, planning, communications, IO, strike, and intelligence—to the joint

warfighter in an even more integrated fashion. We are also taking concrete steps forward in developing our newly assigned missions that will be integral to global warfighting, to ensure we continue to stay one step ahead of our adversaries.

Command, Control, Communications, and Computers (C⁴)

In the fast-paced and complex international security environment of the 21st century, U.S. warfighters must have access to superior information to conduct decisive operations. U.S. Strategic Command provides oversight and authority for many of the systems and missions that serve as the enablers for the Nation's defense, including responsibilities in the command and control, communications, computers, intelligence, surveillance, and reconnaissance (C⁴ISR) arena. Although C⁴ISR represents several related and essential capabilities, we are deliberately parsing out the acronym into its key elements to better address the very different challenges in each area. Under the Unified Command Plan, the command is assigned the role of tasking and coordinating C⁴ in support of strategic force employment. Our objective is to provide the means to integrate, synchronize, coordinate, and convey information to support superior decision-making and tasking at any level from the President to the front-line warfighter.

The events of September 11, 2001, illustrate the need to improve our national command and control architecture. We are working with our partners at U.S. Joint Forces Command, the Defense Information Systems Agency (DISA) and the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (ASD/C³I) to craft a new national-level C⁴ system that provides improved information flow, rapid decision making, and dramatic improvements in our current bandwidth capability. While this is important for all missions, it is imperative for the global strike and particularly, the integrated missile defense missions, where data gathering, decision-making, and execution must occur within minutes. Your continuing support of the communications initiatives such as the Transformational Communications Architecture will enable the Department to dramatically improve our critical national level and joint warfighting capabilities.

Intelligence Surveillance and Reconnaissance (ISR)

U.S. Strategic Command is also tasked under the Unified Command Plan to plan, coordinate, and integrate intelligence, surveillance, and reconnaissance (ISR) for the Department of Defense in support of global and strategic operations. We are working closely with our partners in the National Intelligence Community to move away from Cold War military force collection strategies and toward the creation of the processes and systems necessary for comprehensive, synergistic, and flexible contingency ISR operations. We see great value in assisting the warfighter in determining the optimum use of scarce collection assets by focusing on ISR information requirements versus specific platforms. This will enable us to better maximize and prioritize the capabilities of our collection systems, whether space-based, air breathing, at sea, or on the ground, and integrate their collection with critical human intelligence and technical data to meet the needs of both the warfighter and the national decision-maker. It will also enable us to better assemble integrated, synchronized strategies and architectures that provide persistent, actionable, predictive intelligence and streamlined dissemination. We look forward to working closely with the Intelligence Community as they develop systems such as the Future Imagery Architecture (FIA) and SBR that will play a large part in our intelligence collection capabilities of the future.

Missile Defense

The danger posed by weapons of mass destruction and their delivery systems is clearly one of our Nation's top concerns, and U.S. Strategic Command is actively partnering with the Missile Defense Agency to provide an additional level of protection for our homeland, our allies, and our forces in the field. As General Myers noted recently before this committee, missile defense is inherently a multi-command and multi-regional task, and, as the Missile Defense Agency acquires our missile defense systems, U.S. Strategic Command will bring a warfighter's focus to most effectively and efficiently integrate and operationalize the system on a global scale. We are currently developing a global missile defense concept of operations and battle management architecture to provide the full support needed by the regional combatant commanders to defend their theaters, including the ballistic missile defense of the continental United States by U.S. Northern Command.

Ballistic missile defense has evolved from an effort focused on mid-course intercept of ballistic missiles to an integrated, multi-layered, cross-AOR approach to achieve an Initial Defensive Operations (IDO) capability by late 2004. A critical element of our Nation's global missile defense capability will be detailed and effective tactical warning, which we will continue to provide to national leadership and re-

gional combatant commanders. U.S. Strategic Command currently supplies sensor information for the missile warning component of integrated tactical warning and attack assessment, and we appreciate your support of the systems that will improve our warning capabilities in response to changing threats and expanded intelligence requirements. The Space-Based Infra Red System (SBIRS), appropriately funded in the President's budget, is a prime example.

ASSURED ACCESS TO SPACE

Assured access to space is the precursor to all our on-orbit capabilities, and is clearly vital to our national interests. It ensures freedom of access to, through and from space, and the ability to deny interference with these actions and capabilities. As the heritage systems Titan II and IV, Atlas II, and Delta II near the end of their lives, the Evolved Expendable Launch Vehicle (EELV) program remains the Department's chosen option for ensuring the ability to safely and responsively launch orbital assets. Although the contraction in the commercial launch market has changed the business case for EELV, it remains a promising avenue, as demonstrated by the recent successful launches of both vehicles.

As we have seen in our Nation's ongoing war on terrorism, we may not always know when or where around the globe our next operations will occur. Surprise will continue to be a part of the international security environment, and it is prudent to have the flexibility designed into not only our weapons systems, but also our communications and intelligence architectures. Uninterrupted, responsive access to space is critical to ensuring the responsiveness necessary to replenish or augment our critical capabilities on-orbit.

Inextricably linked to assured access is maintaining viable gateways to space. Our east and west coast ranges continue to provide safe and effective spacelift and test and evaluation services to military, civil, and commercial users, and we must work with our partners in Government and industry to continue to search for the most effective and fiscally responsible strategies to ensure they remain adequate for the long-term. I am personally committed to the health of these vital facilities, and look forward to being a part of the discussions on the long-range vision for our launch complexes.

ENHANCING SPACE CONTROL

Space will continue to be a realm we share with industry, our allies, and increasingly, our adversaries. While access to space is clearly a vital national interest, space control is the means by which to assure it. Importantly, the same flexibility and freedom of action the U.S. currently maintains in the terrestrial, maritime, and aerial environments, consistent with international law and customs, is the goal of U.S. Strategic Command's space control efforts. While the U.S. enjoys significant military and economic benefits from our current lead in space communications, navigation, and remote sensing, threats may well emerge to challenge these interests.

From the coalition victory in Operation Desert Storm through the recent conflicts in Kosovo and Afghanistan, the United States enjoyed space dominance because it controlled the "higher ground," because it possessed superior technologies or strategies, and in all honesty, because its adversaries simply did not exploit space, or act to negate U.S. space systems. The U.S. cannot rely on adversaries to cede this same advantage in the future.

Future adversaries may threaten any component of space systems—the satellite, the ground segment, or the link between the two. Even the less technically advanced nations and non-state actors may employ techniques such as electronic jamming or attacks against ground facilities. U.S. Strategic Command's role is to ensure the U.S. fully meets these challenges, providing uninterrupted access to space and on-orbit capabilities. One avenue we will use to accomplish this is through our active role in U.S. military, commercial, and scientific launches, and through military representation to U.S. national agencies, commercial endeavors, and international organizations for matters related to military space operations. Another avenue to ensure our satellites, communications links, and ground stations remain operational, is maintaining and enhancing our physical protection of these vital assets. U.S. Strategic Command is identifying critical components and defining the most effective ways to safeguard our capabilities on-orbit and on the ground.

A crucial aspect of our on-orbit security is ensuring space situational awareness through enhanced surveillance capability and improvements to our global sensor network. The security of our Nation's space systems is of utmost importance; success in this top priority will ensure a comprehensive and responsive ability to monitor our on-orbit systems.

DEVELOPING SPACE PROFESSIONALS

Success in any of our missions depends on our number one asset—our people. Maintaining the culture of excellence in highly technical space operations depends on recruiting, training, and retaining the best and the brightest. We will also need to develop an entirely new set of skills, leveraging our air defenders and space operators, to build a cadre of missile defense experts. I fully support General Lord's efforts at Air Force Space Command to chart a course for space professional development, as recommended by the Space Commission. I also applaud Lieutenant General Cosumano's personal management of the Army's dedicated space operations officer career field, as well as Vice Admiral Mayo's Space Cadre Initiative within the Navy.

Additionally, I appreciate the continued emphasis Congress places on raising the overall quality of life for the men and women in uniform and their families, which contributes in innumerable, very tangible ways to the defense of our Nation.

ADDITIONAL ASSIGNED MISSIONS

In addition to these important missions, U.S. Strategic Command is already taking steps to mature the nascent global strike and information operations missions assigned just 2 months ago. As we build to these new taskings, the interrelationships and interdependencies among all our missions are increasingly apparent, and we will leverage the capabilities we have on-orbit to maximize our joint warfighting effectiveness in each area.

Global Strike

Space capabilities will dramatically enhance U.S. Strategic Command's newly assigned global strike mission, which extends our long-standing and globally focused deterrent capabilities to the broader spectrum of conflict. The incorporation of advanced conventional, non-kinetic, and special operations capabilities into a full-spectrum contingency arsenal will enable the command to deliberately and adaptively plan for and deliver rapid, limited-duration, extended-range combat power anywhere in the world. This innovative approach to global strike will provide a wider range of options to the President and the regional combatant commanders in responding to time-critical global challenges, and I encourage your support of innovative programs such as the Common Aero Vehicle (CAV).

Information Operations

Delivering on the promise of information operations is one of U.S. Strategic Command's top priorities. This newly assigned mission area promises to dramatically improve our offensive and defensive capabilities, which could very well reduce the number of weapons required in our arsenal and the force size required in future conflicts. Quite simply, I believe that effective, integrated IO comprises the next revolution in warfighting, and U.S. Strategic Command's objective in our new role as the integrator of DOD information operations is to bring a joint perspective to improvements in the capabilities provided to our national leaders and warfighters in the field.

OPTIMIZING OUR ORGANIZATION

Serving as robust stewards of our space and nuclear missions while simultaneously developing our newly assigned missions and capabilities is a demanding task. We are flattening and shrinking the overall organizational structure of our headquarters to work more effectively and efficiently. Additionally, with the help of the services, we are developing new relationships to fully use DOD-wide capabilities and expertise, while not duplicating in our headquarters what other professionals already do so well.

As we design concepts of operations for the globally-focused and increasingly operational U.S. Strategic Command, we are pursuing innovative concepts for new service relationships that employ the capabilities resident in other organizations that U.S. Strategic Command can tap for unique skills and capabilities. U.S. Strategic Command is fortunate to have strong relationships with many national agencies, and as we move forward in each of our new mission areas we will need even stronger ties to both our current and new agency partners.

CONCLUSION

Combat readiness and combat support remain the top priorities for U.S. Strategic Command, and the capabilities we have on-orbit are an integral part in achieving mission success. While 2002 was a year of new thinking and new concepts, 2003 and 2004 will be years of execution. Under the umbrella of our revised mission set, we

are taking the first steps in the evolution of our strategic capabilities, and we embrace the challenge of delivering on the promise of better meeting the Nation's global warfighting needs.

Never before has such a broad array of missions been combined under one combatant command, and we are aggressively building the right teams, the right organizational structure, and the right plan to move confidently from concept to tangible combat capability. We will leverage our space, information operations, strategic planning, and regional support heritage to become a more globally focused operational headquarters, better able to provide the combat capabilities required by warfighters and our national leaders. All of our challenges and opportunities will require a team effort, inside and outside the command, and we look forward to working with you and our many partners to adequately meet the challenges that lie ahead.

I appreciate your continued support of the men and women of U.S. Strategic Command and the unique and essential contributions they continue to make to our Nation's security. I look forward to reporting our progress to you in the future as we continue to build our Nation's space capabilities under the new United States Strategic Command.

Thank you, and I welcome your questions.

Senator ALLARD. Thank you both for your testimony.

Now we will proceed to two rounds of questions for this panel, and then we will just follow the same procedures that we have in the Armed Services Committee. You will get a notice on your 5 minutes, and we will just move on. Then we will get the second panel up and proceed to ask them questions.

Let me start off with you, Admiral Ellis. You are commander of Strategic Command, and, ultimately, you are the consumer of the space expertise developed by the services in their own space career fields. The question is, have you been consulted on and have your views been solicited on the appropriate requirements or elements of a space career field?

Admiral ELLIS. Mr. Chairman, that is an excellent question. The answer is yes. I am personally involved with each of the service components. As they, in their own individual and very service-specific ways, address the way ahead, my role is to bring a joint character and a joint flavor to their optimization of our space cadre. This is to ensure that the billet structures, the organizational alignment that is increasingly a part of our joint warfighting approach, reflect the skills and the capabilities that are imbedded in our space cadres so that they are better equipped, the components are better equipped, to tailor those programs very specifically to support both their service and our joint requirements.

I have met with General Lord on this issue, and we have discussed it. General Cosumano is very personally involved in overseeing and expanding the FA40 Space Cadre Program that the Army has put together. Admiral Mayo has a cadre initiative of his own that he is beginning as we focus on these essential requirements. Obviously, under the Navy piece, we also continue to grow our partnership with our Marine components. For the first time, as you may be aware, the Marine Corps now has an established component in support of MARFOR space physically in residence at U.S. Strategic Command. The services are getting a great deal of encouragement from me to press ahead, and I am offering my joint warfighting perspective on these efforts as they pursue them in their individual ways.

Senator ALLARD. Thank you.

Secretary Teets, you referred to this issue of assured-access funding in the President's budget, and I do believe that you agree with me that we do not, at this point at least, just want to rely on one launch provider.

Secretary TEETS. Right.

Senator ALLARD. We are looking at the budget, and there is only funding provided for 2 years. After that, we do not have any funding noted in the budget. I wonder if you would comment on that.

Secretary TEETS. Yes, sir. I have worked closely with Secretary Aldridge to identify resources that would be used going forward to ensure that we can continue to maintain two separate, independent families of launch vehicles. As you say, relative to the infrastructure sustainment item, the President's budget in 2004 contains money for it. Our plan in 2005 also contains money for it. As we move forward and see the EELV program developing, see the commercial marketplace evolving, my plan would be to continue that as long as necessary. That would mean outyear funding would be flowing into that up until the point in time when a viable commercial marketplace exists that can sustain their operations as they had originally planned them.

Senator ALLARD. You are right, we had planned on a stronger commercial market at this particular point in time.

Secretary TEETS. Correct.

Senator ALLARD. There has been a small wedge of funding put in there to help companies sustain the program. Could you elaborate any further on how you expect that wedge to work? I know they are saying that they may need more money than was provided in that wedge funding. I wonder if you would respond to those concerns.

Secretary TEETS. Yes, we will be keeping a close eye on it. In addition to the infrastructure sustainment, we have allocated some funds, actually across all future years, for critical component engineering and pre- and post-mission engineering. In addition, we are looking at meaningful ways that we can even improve on the assured access characteristics of the two families. For example, one of the critical components on both Atlas and Delta are the fact that they both use the RL-10 engine developed by Pratt Whitney. That is flown on the Centaur. It also flies on the Delta.

If we can move in a direction to make some prudent investments that will allow us to be resilient from that single-point failure in a more meaningful way than we are today, I think it would be worthy. Similarly, we will be looking at other technology investment activities which can enhance the assured-access nature of these two vehicle families.

Senator ALLARD. Admiral Ellis, do you want to comment on this issue of assured access from your operator's perspective?

Admiral ELLIS. Mr. Chairman, obviously, from an operational perspective, this is critical to our future and to the enhancement of our capabilities in space. We have pursued a launch-on-schedule approach rather than a launch-on-demand capability. As we are increasingly reliant on space systems and perhaps, in a more responsive way, need to be able to replenish constellations and employ new concepts, some blending of those capabilities will likely better serve the needs of the Nation. That is where Secretary Teets is tak-

ing us, addressing how we can reduce from months to days, if not hours, in terms of our responsive capability. All of those enhancements are critical to the way ahead, and we fully support that effort.

Senator ALLARD. Let me call on ranking minority, Senator Bill Nelson.

Senator BILL NELSON. Thank you, Mr. Chairman.

When we get down to the point of just using the Delta 4 and the Atlas 5, suppose you were denied the use of those two pads. How are we getting to space?

Secretary TEETS. Sir, we do have capability at Vandenberg for those missions that could be launched from Vandenberg, but I would say if we were denied two pads on the east coast, we would be severely hampered in our space operations.

You will notice that in the President's 2004 budget, there is an initiative to start moving in the direction of a truly operationally responsive launch system, and the first thrust of that effort will be for a small launch system, pressure fed, LOX-kerosene kind of technology, low cost. It would be capable of launching satellites in the 500- to 1,000-pound class weight capacity and would do it in a truly operationally responsive way by allowing us to take this small vehicle to essentially a concrete launch pad, erect with it a mobile crane, attach the necessary spacecraft and load it with mobile propellant tanks—tanker trucks, so to speak—and launch and achieve what Admiral Ellis just referred to as being able to decide on a launch and actually achieve a launch in hours and days, rather than weeks and months.

Senator BILL NELSON. That system would be ready when?

Secretary TEETS. We would like to test fly it in 2007, and we intend, even this year, to initiate a competition for a system. I have been briefed by several people on several competing kinds of systems that would achieve the kind of characteristics that I described earlier, and so what we would like to do this year is run a competition, select the most promising of these endeavors, and then fund it in a way that development could be demonstrated in 2007.

I should tell you that also not only will it be operationally responsive, but it will be low recurring cost. There are some of the systems that people are trying to design with a target in mind of \$3–4 million per launch. If we could achieve anything like that, it would be a real boost for our Nation's space program, because all of a sudden we could have demonstration satellites of lightweight, advanced-technology systems and do it on a wide basis and a frequent basis.

Senator BILL NELSON. Test fly in 2007, so it would not be operational until 2009 or 2010.

Secretary TEETS. Probably correct.

Senator BILL NELSON. For payloads that are 500 to 1,000 pounds.

Secretary TEETS. Yes, to start.

Senator BILL NELSON. Okay, between now, 2003, and 2010, until you have that capability, your only backup access to space then would be the space shuttle if you were denied the pads after you get down to just the Delta 4 and the Atlas 5. Is that correct?

Secretary TEETS. Yes, sir.

Senator BILL NELSON. So what do you plan with regard to making sure that you have assured access to space vis-a-vis the shuttle as the backup?

Secretary TEETS. As it relates to the shuttle, we plan to engage NASA, in a meaningful way, to understand their plans going forward in light of the Space Shuttle Columbia tragedy. We will be staying in lockstep with Sean O'Keefe and with the NASA people to understand what the recovery plans for space shuttle operations are. As Admiral Ellis also mentioned in his earlier remarks, we do participate with NASA in a partnership council, and we have meaningful interchanges on how we can share technology and leverage each other's capabilities.

To date, there have not been plans for DOD to make use of shuttle operations. The question asked is a valid one. If both Atlas and Delta launch pads were down, shuttle would provide our only access. That is true.

Senator BILL NELSON. Admiral, your comments?

Admiral ELLIS. Yes, sir. I would echo what Secretary Teets has noted. The thrust of your question, I think is, "How do we conduct an analysis of our space access and systems, writ large, that examines carefully, as noted on the issue of the RL-10, potential single-point failures?" Included in that has to be the infrastructure that is essential to guaranteeing that access.

I have begun a fairly detailed study that addresses our systems and how they can best be sustained and protected. Clearly the infrastructure that you described needs to be a part of that.

Senator ALLARD. Senator Inhofe.

Senator INHOFE. Thank you, Mr. Chairman.

Let me ask a short question to Admiral Ellis and then a longer one for both of you to respond to. There is a lot of discussion, not on this subcommittee, but on our full committee, about problems we are having right now with our lift capabilities, our refueling, and our tanker capabilities. We are looking at now a lease of perhaps the first 100 767s, but we never talk about bombers. Right now, our B-1s are going to be reduced from 92 to 60. Our B-52s are over 40 years old. We only have 20 to 21 B-2s. What kind of future plans do you think of, Admiral Ellis, in terms of replacing some of these bombers?

Admiral ELLIS. Sir, we have shifted gears here in the direction of the strategic side, in the classic sense, and I am very much aware and follow closely the Air Force's bomber road map, as I know you do, to look to the way ahead. We are interested in all three of the elements of the active bomber force, because with the new mission for global strike, the B-1 is introduced back into the equation from our perspective, in its conventional role. We are following closely all of the upgrades associated with each of those platforms—the avionics, the navigation capabilities, the weapons carriage capabilities, and the like that are essential to sustain that—while we begin to focus on what the next generation of air-breather platforms ought to look like.

Clearly, that is in the conceptual phase. It is not a near-term deliverable, but it is one that we intend to participate in shaping the requirements for, both from the classic former United States Stra-

tegic Command mission and the new missions that have been assigned to us with global support on the conventional side.

Senator INHOFE. After the tragic loss that we sustained not long ago, I think I would particularly compliment our colleague and former astronaut, Bill Nelson, on the way he handled these things. I think one of the things that we need to renew is something we talked about way back when I was in the House. I am talking about back 10 years ago or so in the House Armed Services Committee. Future wars are going to be fought in space on the control of space. You asked the access question. It is very significant, very important. But we have kind of been lacking in that discussion here recently, and I think we need to get back to that.

In 1998, I was critical of the President when he vetoed, line-item vetoed, three space programs. They were the Clementine II program, the Air Force space plane program, and then the kinetic kill antisatellite interceptor. Can you give us a status on these programs, how significant you think they are, and how they fit into this discussion?

Secretary TEETS. If the question is directed to me, I would be pleased to provide an answer. We have no plans to restart Clementine II. With respect to the Air Force space plane, we have an interest in looking at that kind of an initiative and perhaps in a future year will restart it. As it relates to the kinetic kill ASAP vehicle, I really do not know of any plans that we currently have underway for it.

Senator INHOFE. At the time that took place, in 1998, there was a lot of discussion. What I would like to ask you to do is be as specific as you can in answering that for the record, something that you could submit to us.

Secretary TEETS. Yes, sir, I would be happy to take it for the record.

[The information referred to follows:]

Secretary TEETS. The Clementine II program was restructured into the XSS-10 program following the overturn of the fiscal year 1998 line-item veto. The original Clementine II asteroid rendezvous mission required a unique set of operational capabilities that were not applicable to most military space applications. With the restructure, the focus of the microsatellite technology development program shifted to satellite servicing, including proximity operations and resident object inspection. The XSS-10 program was funded with the fiscal year 1998 line-item veto funds plus congressional add funds appropriated from fiscal year 1999 to fiscal year 2001. The Fiscal Year 2001 Authorization Bill directed the Secretary of the Air Force to reallocate funds from within Program Elements 0602601F and 0603401F to fund completion of the XSS-10 satellite and provide support for launch and operations. XSS-10 was launched on January 29, 2003, on the Global Positioning System Mission IIR-8; the planned 24-hour mission was executed on January 30, 2003. Mission results were outstanding with all primary objectives achieved. Lessons learned are being transitioned to other micro satellite programs, such as the follow-on XSS-11 program.

The Air Force space plane, officially known as the Military Space Plane (MSP), is a concept for a reusable launch vehicle system comprising four major components: the Space Operations Vehicle (SOV)—a fully reusable launch vehicle; the Space Maneuver Vehicle (SMV)—a reusable upper stage and satellite bus; the Modular Insertion Stage (MIS)—a low-cost expendable upper stage; and the Common Aero Vehicle (CAV)—a gliding maneuverable reentry shroud. Program funding provided prior to the fiscal year 1998 line-item veto was primarily used to develop this system concept and to support the flight test of the X-40 demonstrator system. The successful flight test of the X-40 at Holloman Air Force Base led to a partnership agreement with the National Aeronautics and Space Administration's (NASA) Marshall Space Flight Center's Future X Program Office to modify NASA's SMV-like X-37 dem-

onstrator to address military utility requirements. A portion of the fiscal year 1998 line-item veto funds was applied to the X-37 cooperative effort when released in fiscal year 1999; the Air Force applied core science and technology funds in fiscal years 2000–2002 to meet this commitment and also provides a deputy program manager for the X-37, co-located at NASA Marshall.

The remaining fiscal year 1998 line-item veto funds were applied to the SMV and MIS preliminary development efforts and systems concept studies. Congressional funds targeted for the SMV and MIS (as the “Upper Stage Flight Experiment (USFE)”) were subsequently received in fiscal years 2000 and 2001. The earlier systems concept studies identified critical rocket propulsion technology needs, resulting in the application of fiscal years 2000 and 2001 SMV funding to the development of the high performance Advanced Reusable Rocket Engine (ARRE) required for a militarized system. ARRE preliminary design was completed in fiscal year 2002, and component fabrication and testing of the developmental engine is nearly complete. Hot fire testing of the injector and combustion chamber is scheduled for the summer of 2003, completing the funded effort. The USFE funding was applied to the development of a MIS demonstrator, including the demonstrator design, fabrication, and captive fire ground test. The assembly of the USFE composite structure was completed in March 2003 and the captive fire test is scheduled for June 2003 at Stennis Space Center.

In addition, the Air Force has continued low-level investment in SOV technologies over the last few years. The fiscal year 2004 President’s budget request provides for a significant increase in funding for the advancement of SOV technology. Technologies include thermal protection systems, flight structures, tanks, avionics, operability, and mission planning issues. Early in 2002, the Air Force and NASA concluded their joint Reusable Launch Vehicle 120 Day Study. Following this, the Joint Requirements Oversight Council validated the Operationally Responsive-Spacelift (ORS) Mission Needs Statement. With the full support of NASA, Air Force Space Command in its ongoing ORS Analysis of Alternatives is currently exploring the requirements related to the Air Force space plane. We expect results early next year, leading to a demonstration effort to explore key technologies. Additionally, the fiscal year 2004 President’s budget includes funding for the development and launch of a small launch vehicle in fiscal year 2007 to demonstrate capabilities to meet ORS requirements.

Finally, the Army’s Kinetic Energy Anti-Satellite (KE-ASAT) program last received Department of Defense funding in fiscal year 2001. Funded efforts will result in construction and testing of three flight-qualified interceptors that upon completion will be stored. At this time, there is no current or planned funding for this program in the Future Years Defense Plan (FYDP).

I recently had the opportunity to visit with executives of Davidson Technologies in Huntsville, Alabama, to discuss their work on the KE-ASAT program, and I was impressed with their progress to date. Although our current emphasis in the area of space control is on reversible effects, I intend to discuss this program’s capabilities with Admiral Ellis and General Lord, and we will continue to review our requirements for this and similar systems.

Senator INHOFE. Thank you, Mr. Chairman.

Senator ALLARD. Thank you, Senator Inhofe.

Senator Ben Nelson.

Senator BEN NELSON. Thank you, Mr. Chairman.

Admiral Ellis, as I have stated previously, I consider you the right person to be leading Strategic Command at this point in time, and I want to ask you today a question I asked you last fall. In October 2002, with the new Strategic Command stood up, you felt that the merger of the two commands was going smoothly. Now that this transition has had several more months associated with it, it probably is not complete—transitions are never fully complete—has it been successful? Is there anything that this subcommittee could do to help in that transition?

Admiral ELLIS. Thank you, Senator, for your compliments and for the question. The answer, of course, is that it has been very successful, and, indeed, is going faster in some areas than we originally anticipated. We have been able to bring together very quickly organizational concepts that draw on the tremendous skills and tal-

ents of elements of both former commands and bring them together in ways that offer a great potential and opportunity to address problems in a global context rather than historic stovepipes, for example.

The involvement in very specific responsibilities associated with the space area that I detailed in my opening oral statement are just examples of the issues in which we have already been actively involved and have had some influence. The list is, of course, much broader than that. We are now a part of many of the fora in which Secretary Teets and I share oversight of next-generation space-based platforms, the missile-defense integration effort, as we move forward towards operationalizing that in the next 20 months, and many other operationally focused areas. One area is ISR, which the chairman mentioned in his opening statement, the intelligence, surveillance, and reconnaissance concepts for the future. So we are in with both feet.

The good news is that, as is always the case, people rise magnificently to the challenge. When we brought the organizations together and we were able to offer the new opportunities to areas to make contributions, people responded enthusiastically on both sides of the former commands. As we complete the process of bringing the command together here in the spring, I anticipate that that is only going to increase.

In terms of specific support, I think you have all given that. You have understood the objective and have been supportive of the goals that were a part of the merger and understand the potential value on which the command is already delivering, and we thank you for that.

Senator BEN NELSON. Thank you.

Now, turning attention just a little bit, in addition to being the combatant commander for U.S. Strategic Command, you are also the DOD manager for manned space flight support. Your responsibilities include astronaut rescue and recovery, contingency landing sight support, payload security, medical support coordination of airlift and sealift for contingency operations, as well as other support services required in the event of a shuttle emergency. Also, under normal conditions for a shuttle, where you do not have an emergency, it is my understanding you receive and validate NASA requests for support and elect the proper DOD support for specific missions.

Obviously, following the unfortunate Space Shuttle Columbia tragedy, could you discuss for the record the role that STRATCOM, Strategic Command, played in the immediate aftermath of the Space Shuttle Columbia tragedy and also what the role is through the course of the ongoing investigation?

You will have to submit something for the record. Our time does not permit you to go into full detail at this point.

Admiral ELLIS. Yes, sir, I would be delighted to do that.

[The information referred to follows:]

You can be proud of the contributions that Brigadier General Pavlovich, my deputy at DOD Manned Space Flight (DDMS) support operations, and his team, were able to accomplish almost immediately after the tragedy, and the follow-on support to Admiral Gehman, who leads the continuing mishap investigation.

DDMS members at the Support Operations Center at Patrick Air Force Base, Florida, quickly implemented the Catastrophic Event Checklist, immediately acti-

vated national search and rescue teams, coordinated military aircraft, and provided personnel at three recovery sites located in Texas and Louisiana. It was a truly fine performance by a group of highly trained professionals.

U.S. Strategic Command established the DOD Columbia Investigation Support Team (DCIST) to collect, analyze and preserve data from a variety of assets to support the investigation. In parallel, STRATCOM was authorized direct liaison authority with the National Imaging and Mapping Agency, National Reconnaissance Office, and other agencies for the collection and preservation of data relating to the loss of the shuttle.

We have reviewed our early actions after this tragedy both internally, within the STRATCOM Headquarters, as well as externally. We plan to advance the lessons we have learned to strengthen our support to NASA. We will work this through all the means available including the Partnership Council, where together with Mr. Teets and General Lord, we can expand DOD support, as appropriate, to NASA as they strive to return to flight.

Senator BEN NELSON. I appreciate that, and I know my colleague from Florida has been deeply concerned on a personal level as well as on a professional level and, as part of this committee, would be, I am sure, equally interested in that information, as well.

Secretary Teets—my time is expired. Thank you. [Laughter.]

Senator ALLARD. Time flies when you are having fun, does it not?

Senator BEN NELSON. It sure does. [Laughter.]

Senator ALLARD. We will proceed now with a second round.

I would like to start my second round of questioning with the SBIRS program. We have had some problems in the past with the SBIRS program, getting it put in place. I will address my first question to Admiral Ellis. Things were going well, and now we are seeing that there is a break between the second and third satellites on SBIRS, and these are geosynchronous satellites. I am concerned about this 2-year break that we have in there. I just would like to ask you, Admiral Ellis, if you are satisfied you had appropriate input prior to the Air Force's decision to defer the launch of those satellites three, four, and five.

Admiral ELLIS. Thank you for the question, sir. Obviously there was a great deal of consultation associated with a decision of that magnitude, both with the Air Force and other elements within the senior department leadership. SBIRS is absolutely critical to our way ahead. It is far more than a replacement for DSP. It offers us opportunities that we have never had before, in terms of support for the warfighter and ISR and technical intelligence and battle-field characterization, that are truly unique. While I always avoid the use of the word "transformational," if anything has the potential to merit that term, it is the SBIRS constellation.

But the short answer to your question is, we are satisfied that this is a plan that is executable, that will satisfy our immediate needs to continue to modernize that constellation, and that will give us the ability to assess the performance of the first two systems and then to modify and deploy the follow-on vehicles, and we are supportive of that plan, as structured.

Senator ALLARD. If, by some unfortunate circumstance, one of those first two launches would fail, that puts us really on the edge. It does not give us much margin. We have 2 years, and it seems to me that it leaves ourselves kind of short supply there. That would concern me. Secretary Teets, maybe you want to respond to that.

Secretary TEETS. I would be pleased to. Because of the very concern you are expressing, Senator Allard, we are looking right now

at whether we can work with our supplier base to get long-lead material and parts—I will say “spares”—for the first two vehicles, which, if they are successfully built and deployed, those same parts then could be applied to vehicles three, four, and five in order to ameliorate the effect of a gap in production.

Now, Admiral Ellis mentioned the upside of causing this break, where we can have an opportunity to evaluate performance on orbit for the first two satellites and then make adjustments, as necessary, for the buying of satellites three, four, and five. If we can find the right way to buy long-lead parts and protect ourselves from a potential for a gap in this production, we would be wise to do so, and so we are in the process of looking at that right now with our prime contractor, Lockheed-Martin.

Senator ALLARD. Good.

On space-based radar, Secretary Teets, we have—as I understand—a space-based radar program manager’s office in Los Angeles, and then the deputy’s office in Virginia. Do you think this is a sound or practical arrangement? People keep mentioning to me that they think this is a recipe for failure when you separate the office out that way. I would like to have you address that concern.

Secretary TEETS. Thank you, Mr. Chairman. I would be happy to address that.

We are very much in the process right now of formulating our strategy for how the space-based radar program will be put into place. This is a program that is going to be enormously important to the national security community. It will be important to both the warfighting element, all services, of course, but also the intelligence community.

The fact is that a space-based radar that we are envisioning will provide persistent looks at ground mobile targets. It will also provide that same persistent look in terms of the capability to image the surface with synthetic aperture radar.

Clearly, in my view, space-based radar is a very transformational program. Again, forgive the use of the word “transformational.” But this is a system that will bridge the intelligence community and our warfighters and serve the needs of both. We would be remiss if we did not take advantage of the capability and the expertise that has built up over the years in all of that community in order to properly acquire, design, develop, field, and operate our space-based radar system.

This system we are describing is a multi-billion-dollar kind of system, and we need to get it right. There is expertise and experience in Northern Virginia that can be brought to bear. I am working very hard right now with General Arnold, in El Segundo, as well as with the National Reconnaissance Office in Northern Virginia to try and craft the right way to bring the skills and the talents of people to bear that will maximize the probability of success for this system as we architect it and then acquire it and then operate it.

Senator ALLARD. Senator Nelson.

Senator BILL NELSON. I want to go back to the SBIRS program because part of the problem there is software, is it not?

Secretary TEETS. Software has been a problem. A year ago, we found ourselves in a situation where the SBIRS-High program

needed to declare a Nunn-McCurdy breach. Part of that difficulty that we were experiencing did have to do with development of the ground software system.

We have put in place a restructure of that program with our prime contractor, Lockheed-Martin, and progress on ground software development has been excellent. We are currently experiencing a bit of a problem with electromagnetic interference in the first highly elliptic orbit vehicle payload that is being delivered, and we have experienced a couple of month's slip. But I will say that the SBIRS-High program has done an excellent job of restructuring and focusing on the difficult tasks at hand.

Senator BILL NELSON. Aside from the electromagnetic problem, what is the problem? Is it not enough people? Is it poor management? Is it unclear requirements, too much reuse of software? What is it?

Secretary TEETS. In terms of the current state of that program, in roughly the spring of last year, we did restructure that program. Up to that point in time, yes, we were having problems with systems engineering and we were having problems with management control. We had an intensive effort underway to change and restructure the SBIRS-High contract. Lockheed-Martin stood up, as the prime contractor, and we changed some of the clauses in the contract, we changed some of the total system performance responsibility activities, and we restructured the program office in Los Angeles under Colonel Mark Borkowski, reporting directly to General Brian Arnold. All of that activity resulted in the need to add resources to the program and define a new schedule that could be implemented. Progress over the course of this last year has been excellent, with the one exception that I mentioned, which is this electromagnetic compatibility problem that we are experiencing on the first EO payload delivery.

But software development milestones are moving ahead as planned in the restructured contract, and we are making excellent progress on the program, as a whole.

Senator BILL NELSON. Is it according to those milestones that you are going to know if the program is not going well in the future?

Secretary TEETS. Yes, that is clearly the intent of the restructured program—to identify milestones along the way that will give us an early warning signal that things are amiss.

Senator BILL NELSON. Admiral?

Admiral ELLIS. I want to add my support to the program concept—one of the other ways in which we can monitor not just the milestones, of course, but the technological issues that you describe, as well. One of the goals that I have set for my organization is to ensure that while we oversee the joint requirements perspective, we also be technologically knowledgeable enough in certain critical developmental systems so that we understand the implications of their successes, or lack thereof, as they meet or proceed along their milestone chart.

We are committed to understanding the technical pieces that have to come together at the right time in order to achieve success at the milestone; so, at the earliest time, we can identify areas in

which additional focus may be required. We view that as one of our oversight functions.

Senator BILL NELSON. Admiral, earlier, the chairman had asked about space-based radar. I want to ask you about the Navy's space surveillance system and part of our space surveillance network. It is being transferred to the Air Force in 2004. I am curious, are you involved in this review? When is it going to be finished?

Admiral ELLIS. I am not involved directly in the transfer. That is a service-to-service effort, as you are well aware, sir. We are aware of the criticality of the so-called "fence," as it is known in the space business, the Navy space surveillance sensor, and its essential contribution to our ability to know what is going on on-orbit. It is essential to our situational awareness. Its modernization and upgrade are necessary to further enhance that so that we know fundamentally, first, what is going on on-orbit so we have a better ability to deal with those eventualities when they occur. There was a modernization plan associated with that that the Navy has been pursuing for a number of years.

My understanding is that the transfer is taking place, but the funding issues associated beyond the normal operations and maintenance, the sustaining the upgrade piece of that, are still under review. We view the upgrade of that capability as essential to give us the situational awareness that is so important to our ability to review and to react to what is and to anticipate, actually, what is going on on-orbit.

Senator ALLARD. Senator Nelson, you and I are the ones remaining. I have two or three questions more I would like to ask, and I thought we would wrap it up with this panel.

Senator BILL NELSON. I have a few more questions, sir.

Senator ALLARD. Very good.

Senator BILL NELSON. You go ahead and just take as much time as you want.

Senator ALLARD. We do want to leave enough time for the second panel, so I thought maybe a couple or three more questions from both of us.

On space and science technology, Secretary Teets, in your written testimony and here orally, also, you mentioned the need to improve our science and technology planning. One of the questions we were asked, that was posed at one time, was, "Who is coordinating all this?" At one time, the response was, "A lot of people are coordinating it," which indicated to me there may not be anybody that is coordinating it. What outcomes do you see in the current planning and coordination process?

Secretary TEETS. We are just in the process, Mr. Chairman, of setting up that kind of a coordinating activity, and we are electing to set it up under the cognizance of the National Security Space Integration Office under General Bob Kehler. It is a natural point of focus because General Kehler's office does have representation from the intelligence community as well as from each of the services; so it is a truly joint kind of an organization looking across bridging items across these various stove-pipes, if you will.

What we are planning on doing is giving General Kehler the necessary resource so that he can look across AFRL, DARPA, the NRO's Advanced Systems and Technology Directorate, and the

Naval Research Laboratory, and see where are there duplications, where are there leverages where we can take advantage of the resources and apply them in a way that will maximize our return from space science and technology development.

Senator ALLARD. One other question I have here, and the other two questions, actually, are on space management organization. In last year's authorization, Secretary Teets, the act required a report on a plan by the Secretary of Defense to provide oversight of defense space programs by appropriate offices in the office of the Secretary of Defense. What is the status of that report? Do you know when it will be in?

Secretary TEETS. Mr. Chairman, I need to take that one for the record. I do not know the exact status of that report, but I would be happy to do so and get the answer to you.

[The information referred to follows:]

The report was delivered to Congress on 27 March 2003 by the Office of the Secretary of Defense.

Senator ALLARD. One other question I had here, as Under Secretary of the Air Force and Director of NRO, you have the overarching responsibility of coordinating classified and unclassified space efforts. This is a challenge, and I would like to know how you are addressing that and what kind of progress you are making in that regard.

Secretary TEETS. Yes, sir. The answer to the question also applies, in large part, to this organization I just mentioned, National Security Space Integration Office, headed up by General Bob Kehler. In this case, there is another organization involved, as well, and that is the National Security Space Architects Office, headed up by Army Brigadier General Steve Ferrell. Both of those organizations are joint organizations in the sense that they have multi-service participation and intelligence community participation, as well. Both organizations are looking across the entire spectrum of activity there. I rely upon those two organizations to help me in doing the proper integration.

Senator ALLARD. Senator Nelson.

Senator BILL NELSON. Mr. Chairman, I want to return to the Navy space surveillance sensor. We were talking, when we last talked about this, about modernizing defense by replacing the current system with an X-band radar. Do either of you think that terminating the proven system is going to be counter to the recommendation of the Space Commission that our country needs to improve space situational awareness? Is the termination going to diminish space situational awareness?

Secretary TEETS. I would be pleased to take that one on first. The answer is, we need to find the right way ahead with space situational awareness, where we increase it and improve it. As it relates to the Navy fence, it is true that activity has been shifted over to the Air Force. It came over with the necessary O&M funding to continue it. There is, however, a strong desire to upgrade it to S-band capability. As Admiral Ellis indicated earlier, the issue of funding for that upgrade is under review and consideration right at the present time.

But I can tell you that I do believe it is absolutely necessary that we maintain the fence and that we upgrade the fence. We need to augment our space situational awareness capability in major ways.

Senator BILL NELSON. Mr. Secretary, does this mean, by shifting it to the Air Force, that the Navy's not going to be involved?

Secretary TEETS. I think that fundamentally is the case, yes. I think the Navy has decided, in this case, to not continue to operate and maintain the fence. The Navy will certainly continue to be interested in the results of space situational awareness, and they will be provided. The Air Force will pick up the ball.

Senator BILL NELSON. Admiral, how do you feel about that?

Admiral ELLIS. Sir, as I said earlier, the space situational awareness is absolutely essential to our way ahead. While there are studies and reviews that are attempting to characterize how best to proceed—I think the Secretary has said it as well as I have heard it said—this is absolutely essential for the future. We must have an enhanced and increased capability on-orbit. If defense is going to be part of that, it will have to be suitably upgraded or modernized.

As the joint customer, I am going to just evaluate the organizational alignment on the basis of performance. It is possible that by bringing it under a single service, all of our surveillance capabilities may allow for some efficiencies and synergies along the way, but the metric, from a joint warfighting perspective, is going to be how well they accomplish the mission once the transfer is done and the realignment is complete.

Senator BILL NELSON. Mr. Secretary, I want to ask you about GPS. Why is there no funding for GPS 3 in the fiscal year 2004 budget?

Secretary TEETS. Senator Nelson, we have, in development for subsequent production right now, GPS 2R modifieds—that is to say GPS 2RM—and GPS 2F, which have improved anti-jam capability over and above our currently fielded system. As we look through the projected lifetimes of those satellites, we found that if we bridged 2003 money across 2004, as well—I think there is about \$60 million of 2003 money that was appropriated for GPS 3—we could defer spending until 2005 and still achieve a 2012 first-launch capability. That 2012 first-launch capability for GPS 3 does, indeed, provide for a reasonably conservative continuum of replacement launches.

Now, having said that, I want to also say that we are in the process right now of doing a study to look at what it would take to accelerate that 2012 first-launch date in order to get the even more improved anti-jam resistant GPS in place earlier. We are in the process of doing that study right now, and I would hope within 60 days to have a crisper answer to your question.

Senator ALLARD. I would like to follow up on that last question of GPS. The French are putting out a GPS also, and I understand it is on the same wavelength. I think that creates some special problems for us, and maybe you want to comment on that.

Secretary TEETS. It does. We are in intense discussions now. As a matter of fact, my Deputy for Military Space, Bob Dickman, is in Brussels today at a GPS/Galileo conference discussing the very item that you are mentioning. It is important for us to work with

the European space community to make certain that the Galileo system that they have under development does not interfere with our GPS capability. We are in the process of doing that.

Senator ALLARD. Thank you. We have just had two members join us, Senator Sessions and Senator Reed.

Senator Sessions, do you have any comments you want to put on the record and any questions before we wrap up on this panel? We have a second panel coming up.

Senator SESSIONS. I do not, Mr. Chairman. I want to thank these leaders for their work. Secretary Teets and Admiral Ellis, you have both done an excellent job. I know, Admiral Ellis, you have been doing some real reorganizational efforts while we are trying to fight a war and doing some changes, and I salute you for that.

There is just no doubt whatsoever that the ability of our forces to be successful on the battlefield is dependent upon dominance in space, and I think we need to be looking at that constantly. If there is anything that threatens that, we ought to meet that threat and maintain that dominance.

Senator ALLARD. Senator Reed?

Senator REED. Thank you, Mr. Chairman. This is an opportunity to ask questions?

Senator ALLARD. Yes, we have pretty well finished the questioning round. Obviously, if you want to ask questions or make a statement for the record, you have an opportunity to do so.

Senator REED. Thank you, Mr. Chairman. Thank you, Secretary Teets and Admiral Ellis.

Let me ask just a few questions. First, last year, Mr. Secretary, when you were questioned with respect to space and weapons, you stated that, "I believe that weapons will go into space; it is a question of time. We need to be at the forefront of that." Can you just elaborate on the current policy of the United States with respect to weaponization of space? Have there been any significant changes in the last few years?

Secretary TEETS. I think there have not been changes yet implemented in terms of that policy, but I think policy is under review at the current time and could conceivably change.

In the statement that I made earlier today, I think the time has come for us to push hard on the issue of space control. That will involve some things that are currently within our capability, like space surveillance, attack warning systems, and even some defensive counterspace kinds of measures that we can take. But I, for one, believe that the time has come for us to consider a change in policy which would allow us to have some offensive capability, as well.

Senator REED. Mr. Secretary, the Space Commission unanimously concluded, "The U.S. has an urgent interest in promoting and protecting the peaceful use of space." Is that inconsistent with your introducing offensive weapons into space?

Secretary TEETS. I think not, because I am not advocating the use of those weapons unless our forces are threatened or put under attack by an adversary's system in space. What I do not want to do is be the victim of a space Pearl Harbor and find that at some point in the future, when we are as dependent on our space systems as we are for effective warfighting capability, we lose them

because of an enemy action and find ourselves having no capability to preclude an enemy's use of space assets.

Senator REED. I think, in listening to your comments—and I appreciate it is a very serious topic and you address it in a serious and substantial way—that at this juncture in history, we are one of the few powers that really has the capability of effectively weaponizing space, just as we were once one of the few powers that had the capability of deploying atomic weapons and nuclear weapons. There is a logic that it might be attractive to us now, but if others copy that, then we could be in a worse situation. I know you are considering that, also.

Secretary TEETS. Yes, sir.

Senator REED. Admiral Ellis, as the head of STRATCOM, you have the responsibility for the global command and control of U.S. strategic forces, including integrated missile defense. You have an important stake in decisions that are involved in that with respect to missile defense, the global capabilities. The President has made a decision, apparently, to deploy. I think prior to his deployment decision, your recommendation was not for deployment in 2004. Is that correct?

Admiral ELLIS. I do not recall the conversation or the context, sir. We set a goal for deployment of the initial operational capability in October of next year, and the President has characterized the limited scope of that effort as part of a continuing developmental process, led by the Missile Defense Agency, that will extend, of course, well beyond that.

Our role in that is to assist in the operationalization of what has up to now been a development program, and that includes concepts of operations, that includes command and control structure, and that includes the details that certainly would be essential to making that a completely effective system once the development is complete.

Senator REED. One of the issues here is at what point would the operational test-bed become deployment. I would think, though, that if it is a deployed system, then your role would be critical, then it would be within your responsibility. Is that fair?

Admiral ELLIS. The concept, as I mentioned, for its employment is under development—the operational concept, if you will. But clearly there will be an interest, since it is now global missile defense and not just regional or national missile defense, on each of the combatant commanders who have a statutory responsibility for the defense of their area of responsibility. Northern Command, certainly that is the United States of American and North America, and the regional combatant commanders are also interested in how we blend together all of the layers or levels of systems that could contribute to that.

That is our role, to make that architecture common, to have common concepts of operations, to have interoperability across theaters to ensure that there are no seams in what you rightly characterized as essentially a global capability, and then provide that to regional combatant commanders as it is currently structured for their use, if required.

Senator REED. Thank you. Just one quick thought. In 2004, do you anticipate that you will have an operational system that you will be integrating globally, even if it is declared a deployment?

Admiral ELLIS. The system goals, ambitious as they are, indicate that there will be a limited operational capability in this developmental system when it is in place by the fall of next year. Clearly as we move beyond that, there will be additional refinements and elements that will contribute as follow-on concepts that could contribute to this layered defense delivered. But initially, yes, sir, it is our intent to have in place the operational elements that could use this development capability should the need arise in defense of the Nation.

Senator REED. Thank you, sir.

Senator ALLARD. I would like to thank Senator Nelson—Bill?

Senator BILL NELSON. Mr. Chairman, I have a bunch of questions that I will submit for the record.

Senator ALLARD. Yes.

Senator BILL NELSON. I have one or two that I need to ask.

Senator ALLARD. Go ahead.

Senator BILL NELSON. We were talking about assured access to space, Mr. Secretary, and we talked about that new vehicle that you were developing to operationally test in 2007. What we did not talk about are exploring with NASA future alternatives to the space shuttle and what DOD funding might be allocated to that.

Secretary TEETS. Yes, sir. I do believe we are very interested in discussing that entire situation with NASA. Again, as NASA builds its plans going forward, following the Space Shuttle Columbia tragedy, we are anxious to work with NASA to understand what their plans are and how we can work together to further mutual objectives having to do with assured access to space.

Senator BILL NELSON. You and I have had private conversations on this, and I think it is getting to the point of decision-making from the standpoint of assured access to space. Exactly how much is DOD going to participate in the development of new technologies for a follow-on vehicle that would be a vehicle that DOD could use, including perhaps other agencies as well as NASA? We are going to need to have some further discussions.

Admiral Ellis, in your position as the Commander of Strategic Command, you have the operational responsibility for the deployed missile defense system. How have you coordinated with the MDA and how will you coordinate in the future to ensure that your operational considerations are included in those missile defense systems?

Admiral ELLIS. That is a great question, sir. Obviously, as General Kadish and his team at the Missile Defense Agency continue to work the developmental efforts of this, we are very closely linked with them through a longstanding relationship that we had in former U.S. Space Command that is now part of the United States Strategic Command. I speak at his conferences. We work in each of the major policy groups that oversee developmental decisions, and we, together, are crafting milestones that will support fully his need for the command and control architecture, the organizational alignment, and the training and location of key operational nodes. All of those decisions which have to be in place, as I said in my

colloquy with Senator Reed, have to be in place by the fall of next year. We are very mindful of the aggressive timeline that we are on and are moving equally aggressively to meet it.

Senator BILL NELSON. The full committee, Mr. Chairman, is having a hearing on missile defense system in about a week, and that might be something that we might explore further at that point, on the operations.

Finally, Mr. Secretary, we have read in the papers about utilizing some of the ICBMs and putting a conventional warhead on the top of it as a means of having additional punch instead of a nuclear warhead. What discussions have you had or would be needed with other countries about these non-nuclear ICBM programs?

Secretary TEETS. I have not had any discussions with anyone on that subject, really. I do know that, of course, there are certain ICBM assets that are being retired now, and, as far as I know, the plan there is to put them into storage for the indefinite future.

Senator ALLARD. Yes, the Peacekeeper.

The President announced that they are going to discontinue the Peacekeeper and then just go with the Minuteman.

Senator BILL NELSON. Right.

Senator ALLARD. I want to thank the panel for your time and for your willingness to share your thoughts with this subcommittee. We wish you well. You are both doing a good job, and keep it up.

Now we would like to call on the second panel. It consists of Gen. Lance Lord, Commander of Air Force Space Command; Lt. Gen. Joseph M. Cosumano, Jr., Commanding General, U.S. Army Space and Missile Defense Command and U.S. Army Space Command; and I would also like to welcome Vice Adm. Richard Mayo, United States Navy Commander, Naval Network Warfare Command.

Gentlemen, thank you for joining us. When you are all set and ready, we will proceed in the order in which I introduced you. General Lord and then we will go to Lieutenant General Cosumano and then Admiral Mayo.

Whenever you are ready, General Lord.

**STATEMENT OF GEN. LANCE W. LORD, USAF, COMMANDER,
AIR FORCE SPACE COMMAND**

General LORD. Thank you, Mr. Chairman. It is an honor, on the part of all the members of Air Force Space Command, to have the opportunity to appear and testify.

I have also submitted a written statement, and I respectfully request that it be entered into the record.

Senator ALLARD. We will make that a part of the record.

General LORD. Sir, thank you and the whole committee for your support.

In my brief comments here, I would like to outline our three important roles at Air Force Space Command as the major command. First off, it is my job to help oversee the almost 40,000 men and women officers, enlisted, professionals, plus a great group of civilians and contractors who help train, organize, and equip our space and ICBM forces. That is really my major command role. Then we present those forces and their capabilities, and that is our component role. We do that through Admiral Ellis and his support as the combatant commander and, in turn, his support for the other com-

batant commanders. Lastly, we support Secretary Teets in his role as the DOD and the executive agent for space in serving as our under secretary.

Recently, our Air Force has refined its core competencies in three things that really strike to the things that we are doing in space. One is really developing airmen. We think our space professional strategy and our cadre development is really a significant aspect of that and certainly has harmonized well with the Air Force program. I certainly would, if you wish, talk a little more about that later on. I think one of the keys to integration across black and white space is really developing the right cadres to think about those issues. That would help, as well.

Second, the Air Force has gotten better with transitioning technology to the warfighter, the tools of combat capability that you have recognized and the subcommittee has so expertly talked about how important it is to protect those assets, not only in supporting Operation Enduring Freedom today, but developing the systems of space and ICBMs for the future.

I had an opportunity to visit Southwest Asia the week of Thanksgiving, and in my history in this business where we have seen space capabilities be pushed where we developed, now they are in a pull mechanism from theater. People want as much space capability as we can possibly deliver and to help integrate across all theaters. We have shifted gears from space-capability push to space-capability pull, and they are certainly integrated with the users, certainly in Southwest Asia and I know across all the combatant commanders.

The integration of the Space and Missile Systems Center into Air Force Command—thus now the procurement arm of our Air Force space acquisition resides in our command—has been a major step forward. It is certainly a recommendation of the committee that was acted on in October 2001, and I am proud to report that that is maturing in big ways.

Lastly, as we integrate operations, we are experts in ICBM and space, but really we want to be skilled in the airline and sea business because we see space as key to joint employment as we work together here with our colleagues in the Army and the Navy and the Marine Corps, as well.

We are convinced, as you pointed out, that our environment is changing and our missions continue to grow in their importance, and we want to build the foundation with our space priority to make sure that we can fully exploit that. We feel that the space and ICBM capabilities are key to our asymmetric advantage, and we want to keep them that way.

Sir, thank you very much for the opportunity to appear, and I look forward to your questions.

[The prepared statement of General Lord follows:]

PREPARED STATEMENT BY GEN. LANCE W. LORD, USAF

Mr. Chairman and members of the subcommittee: On behalf of the outstanding men and women of Air Force Space Command (AFSPC), thank you for this opportunity to appear before you today. Our airmen and civilians are a key part of the world's greatest integrated air and space force, and we are proud to be a part of our Nation's defense. From the missile fields in the Great Plains to remote locations around the globe, in-place or deployed as part of an Air and Space Expeditionary

Force, the commitment of our men and women to the Nation's security has been exceptional. I would also like to thank all of you for your continuing support.

Our command has three important roles. The first is to organize, train, and equip our space and intercontinental ballistic missile (ICBM) forces—our role as an Air Force Major Command. The second is to present those ready forces and their capabilities in our role as a component to U.S. Strategic Command. Finally, we support the Air Force in its role as DOD Executive Agent for Space. I appreciate this opportunity to tell you about the things our Command is doing in these areas, and I would like to frame my remarks in terms of the Air Force's recently refined core competencies: developing airmen, bringing technology to warfighting, and integrating operations.

DEVELOPING AIRMEN: THE HEART OF COMBAT CAPABILITY

Our highest priority is our people. In-place or deployed, people are our most important asset and the key to mission success. Because of this, we have a continuing need to recruit, retain, equip and train our entire force.

We appreciate the role the members of this committee have played to improve their quality of life. The Fiscal Year 2003 National Defense Authorization Act reflects the country's confidence in and concern for the men and women who serve in our Armed Forces. We are grateful for the many important quality of life improvements such as pay raises, health benefits and greater educational opportunities this year's Act provides. All of these are key to helping us retain and recruit the quality force our Nation needs.

As our Nation's dependence on space continues to grow, the Air Force must meet the challenge of developing the right people to acquire, operate, and employ military space capabilities. A strong, proactive space professional development program is essential to safeguarding our Nation's leadership position in space and our way of developing airmen. The Space Commission's recommendations and subsequent Secretary of Defense direction provided an opportunity to more deliberately focus our space professional development, and we have done just that.

We have developed the Air Force's Space Professional Strategy that describes a structured approach for developing space professionals. Our strategy is comprehensive and provides a blueprint for better addressing the training, education, and experience needs of our space professionals. At the same time, it recognizes the unique roles these officers, enlisted members and DOD civilian employees play in the national security space arena. Additionally, this strategy addresses the varied disciplines required of the space professional team—a team that accomplishes the complex functions required to take ICBM and space systems from concept to employment.

We have been actively refining this strategy since I took command. In fiscal year 2003, we have begun the harder task of implementing the initiatives identified in the strategy—initiatives that center on the force's education, training and experience needs. Given the importance and complexity of professional development, we recognize this is a long-term commitment but it's the right thing to do—for our mission and for our country. We have the best space and missile operators and acquirers in the world and we will continue to improve on that standard of excellence.

TECHNOLOGY-TO-WARFIGHTING: THE TOOLS OF COMBAT CAPABILITY

Today, our space systems engaged in current operations are excellent examples of bringing technology to the warfighter—our second core competency. For instance, AFSPC communications experts deployed in support of Operation Enduring Freedom to establish satellite data links for the Air Force Predator system that reduced the "sensor to shooter" time to single-digit minutes. Today, we have over 1,000 personnel deployed, and our people, in-place or deployed, work to deliver combat effects. Our missile and space capabilities are global in their reach and provide the asymmetric advantage we enjoy today.

One result of implementing the Space Commission recommendations is the integration of the Space and Missile Systems Center (SMC) in Los Angeles into AFSPC. This has had profound effects on the way our command brings technology to warfighting. We are now responsible for both the acquisition and operation of our space and missile capabilities. For example, we recently set up the Space Superiority Program Office at SMC to acquire the counterspace systems that Under Secretary Teets mentioned. With acquirers and operators in a single command, we have identified a mission need, generated requirements, begun the acquisition process and will eventually deploy, operate, and sustain these systems.

Secretary Teets has talked about our priority programs. AFSPC will work to ensure that these acquisition programs stay on track, that our requirements for new systems are stable and that we look hard at new ways to put technology to use. In addition to the Global Positioning System, Space-Based Infrared System-High, SBR, Transformational Communications Architecture, assured access and space control programs, we will ensure that this Nation maintains a credible force of safe, secure and ready ICBMs. Our ICBMs underpin our deterrent posture, and we thank you for your continuing support in our efforts to modernize them. While the Nuclear Posture Review requires us to maintain the current fleet of Minuteman IIIs until 2020 it also directs the Air Force to plan for a follow-on system. This fall we will start an analysis of alternatives to determine the best course for that effort. This is even more important as we begin the second year of our 3-year program to deactivate the Peacekeeper system this October.

Technology is advancing rapidly, and it is clear that we must continue to develop and field the systems that provide our warfighters the combat capabilities they need.

INTEGRATING OPERATIONS: MAXIMIZING COMBAT CAPABILITIES

Our space capabilities are an integral part of all our combat and humanitarian operations, and they are essential for success in the fast-paced environment of the 21st century. Today, we operate as a Joint force and, in addition to our expertise in space and missiles, we must be well versed in air, land and sea operations. That way, we can ensure we provide forces and capabilities combatant commanders need in an integrated manner to generate effects when and where they need them.

There were significant changes to the Unified Command Plan last fall. With missions additional to those of U.S. Space Command (USSPACECOM) and the previous U.S. Strategic Command (USSTRATCOM), USSTRATCOM is a new command with global focus and strategic reach. They are now responsible for military space operations, computer network operations, information operations, strategic warning and intelligence assessments as well as global strategic planning. The space capabilities AFSPC provided to USSPACECOM 24/7/365 remain the same; the competency relationship is different. Today, we are their Air Force component for both space and ICBM operations. To that end, we have recently activated a command center in our headquarters to manage the flow of orders from STRATCOM to our Numbered Air Forces. Through this competency relationship, we provide our capabilities to joint warfighters from all commands, around the globe.

CONCLUSION

We believe AFSPC missions will continue to grow in importance as the Nation responds to current and emerging threats. Through our core competencies, AFSPC will help build the foundation necessary to fulfill our National Security Strategy goals of assuring our allies and friends, dissuading future military competition, deterring threats against our interests, allies and friends, and decisively defeating any adversary if deterrence fails. We will serve a central role as the space capabilities that are both an economic and military center of gravity to our Nation become ever more important.

We continue finding new ways to improve our unique capabilities and integrate them into our military missions. As we develop more advanced systems, we must invest the necessary resources, energy and intellectual capital to protect our vital interests and sustain the asymmetric advantage that allows us the freedom to operate in the medium of space. We appreciate Congress' continued support of our people as well as your support to maintain our high state of readiness. With your help, we will ensure our space and ICBM forces continue to play a key role in our Nation's defense.

Again, I am honored to appear before you and look forward to your questions.

Senator ALLARD. Thank you.
General Cosumano.

STATEMENT OF LT. GEN. JOSEPH M. COSUMANO, JR., USA, COMMANDING GENERAL, U.S. ARMY SPACE AND MISSILE DE- FENSE COMMAND AND U.S. ARMY SPACE COMMAND

General COSUMANO. Thank you, Mr. Chairman.

It is an honor for me to represent the men and women of the United States Army Space Command and United States Army

Space and Missile Defense Command here this morning before the subcommittee.

I will make a few brief opening remarks, and I have a prepared statement for the record, Mr. Chairman.

Senator ALLARD. Without objection, your prepared remarks will be a part of the record.

General COSUMANO. Thank you, sir.

General COSUMANO. Members of our command are employed worldwide and also in the United States in Operations Noble Eagle and Enduring Freedom, and there are three main points I would like to emphasize this morning for the subcommittee.

Today, the Army is at war and transforming at the same time. We are transforming to an objective force, a more deployable and flexible force, and the key enabler for that force is space. We believe that we must have space if we are to see first, understand first, act first, and finish decisively.

Second, Mr. Chairman, integration of space activities and programs into our Army is very important, and we have done a lot of work in the last 2 years. We developed a space cadre of operational officers who are deployed at each one of our major commands. We have looked at our space organizations and we have revamped those space organizations so that they can better sustain combat operations.

We have deployed Army space support teams. These are people who bring space down to the warfighter in each one of our major combat formations. We continue to structure Space and Missile Defense Command and Army Space Command to meet the demands of the four new missions that you heard Admiral Ellis talk about, as we are the Army service component to the new Strategic Command.

Finally, our command is a cradle-to-grave organization composed of elements that perform combat development, material development, as well as operations, allowing us to move products quickly to the warfighter.

While our friends in the Air Force and Navy focus on space constellations and providing those types of services, we, in the Army, leverage their investments and focus on ground stations such as the Grenadier Brat, Blue Force Tracking System used in Afghanistan, the Tactical Exploitation System, Intelligence Processing Ground Station, and the Joint Tactical Ground Stations, a ballistic missile early-warning system. These are but a few examples of the technologies and products of this command.

Mr. Chairman, I would like to conclude by saying that our soldiers are our most treasured assets, and we are making great strides in the development and fielding of the space capabilities that will help them accomplish their missions. We are proud to be a full partner in the national security space community.

Mr. Chairman, thank you and your subcommittee for your support. I look forward to your questions.

[The prepared statement of General Cosumano follows:]

PREPARED STATEMENT BY LT. GEN. JOSEPH M. COSUMANO, JR., USA

INTRODUCTION

Mr. Chairman and members of the subcommittee, on behalf of the soldiers and civilians of the U.S. Army Space and Missile Defense Command (SMDC), thank you for the opportunity to appear before you today. I also consider it a privilege to be counted in the ranks with Secretary Teets, Admiral Ellis, General Lord, and Admiral Mayo. I appear before this subcommittee as the Army proponent for space and as the Army Service Component Commander to U.S. Strategic Command. In our Title 10 role, we lead the Army in the effort to man, train, and equip Space Forces. We develop space concepts, doctrine, organizations, material, training programs and personnel, and integrate space capabilities into nearly everything the Army does.

Mr. Chairman, as we speak, men and women of SMDC are deployed within the U.S. and around the world in the global war on terrorism. Their mission is to ensure the Department of Defense, the Army and the Combatant Commanders have access to all the benefits of space. I am proud to represent them. They are our highest priority.

The last 2 years have been very busy for our space mission, due to increased demands for our capabilities and working to implement the Space Commission's findings as directed by the Secretary of Defense. My remarks today will cover efforts in the transformation of the Army, integration endeavors, development of a space cadre and finally, some key technologies, which enhance the Army's space capabilities in support of our Nation's warfighters.

ARMY TRANSFORMATION

Army Transformation represents the transition from a threat-based cold war design to a more strategically responsive, capability-based force to meet threats in an uncertain future. Today, we are simultaneously engaged in the war on terrorism, Operations Enduring Freedom and Noble Eagle and in Southwest Asia. Make no mistake, however, we simultaneously continue the transformation process. Space is critical to our success. The ultimate result will yield an Army that is dominant and strategically responsive.

Space is our "High Ground" for conducting global operations, and often our first sensors and communications supporting rapidly deploying joint military forces. The Transformed Army must have this critical space-based support if we are to "See First, Understand First, Act First and Finish Decisively." The Army, as part of a Joint Space Force, will do its part to ensure we have assured access for U.S. and coalition forces, and when directed, to deny space to our enemies.

As the Army Service Component for USSTRATCOM, SMDC is the single point of contact for employment of Army Space Forces that directly support warfighting commanders with space-based imagery, intelligence, weather, missile warning, communications and other products. We have Army Space Support Teams providing space products and expert advice on the capabilities and use of space systems to Army, Corps, and Division staffs. From all over the globe, they "reach back" through classified communication systems to our home station operations center at Army Space Command. They also pull advanced imagery products from Spectral Operations Resource Center, also in Army Space Command. Our Mission Management Center, which oversees the use of thousands of Blue Force Tracking Systems, is providing significant command and control to our joint warfighters. All our early warning systems are deployed or are standing by.

It's hard to imagine, but "a day without space" for our military forces as well as our commercial and civil sectors, would emphasize our total reliance on space. We would be limited in the areas of intelligence, surveillance and reconnaissance. We would also be reduced to primitive missile attack warning. Global positioning and long-range communications would be non-existent. The affect on our economy and National Security would be devastating. Our focus over the past year in developing the concept for space operations in support of the Objective Force has been to ensure that the Army, from Legacy to Objective Force, will never experience "a day without space." We have leveraged to the maximum extent possible—high payoff areas, which are focused on assuring access to space and space products.

INTEGRATION

The Army recently formalized its doctrinal concepts for Space Operations in support of the Objective Force, which outlines our essential tasks for Space Operations and how space support is provided to the Objective Force. The Army, with SMDC as the proponent, has established the Space Operations Officer Corps to address interim and Objective Force Space Cadre requirements. To that end, SMDC is devel-

oping a number of initiatives that will bring space literacy training to all members of the Army, including the Officer Education System. The system has undergone structural changes resulting in an expansion of the education process for Army space officers and the development of joint space training opportunities with the Air Force. SMDC has taken the initial steps for developing the officer corps and is working on processes to identify, educate and train enlisted and civilian personnel. Work remains to be done as future systems are derived and the soldiers required to man them are identified. The ability to perform these tasks is enabled by SMDC's unique structure.

SMDC's organizational construct is designed to create unity of effort, synergy, and integration across the mission areas for the Army. The Command is composed of research, development and acquisition, combat development and operational organizations. This "cradle to grave" approach links the Combatant Commander's desired capabilities to the development of requirements and fielding of these capabilities. We can take transitional operational concepts to the fielding of solutions more responsively, more efficiently and at less cost. We achieve this by leveraging resources from outside the command and through established relationships with other Army, Joint and non-DOD agencies. In this case, "the whole is indeed greater than the sum of its parts."

The Army has five military tasks that must be met by Joint Space Forces if the Army's Objective Force is to truly meet its full Strategic, Operational, and Tactical Capabilities. These tasks are especially critical during the early phases of a military operation from home station to entry into a theater of operations. They become just as significant later when the fight is over and we are conducting Stability and Support Operations and transitioning to civilian authorities.

First we must "Support increased deployability and reduced in theater footprint" of Army Forces. We accomplish this by deploying only the combat forces and logistics forces that must be in theater to conduct operations. We leave back in our Home Station Operations Centers, the planners and thinkers that can do their job out of theater, and we "reach back" to them through the Global Information Grid and particularly Global Satellite Communications or SATCOM. The Advanced Wideband System, Advanced EHF System and the Transformation Communication Systems represent the pathway to full Objective Force communications, connected by the Joint Tactical Radio System.

Next is to "Enable situational understanding off the ramp." The Army of today needs time once they arrive in theater to gain understanding of the environment and enemy actions that we will encounter. The Objective Force is built to deploy and employ directly into operations with little to no pause from leaving the ship or aircraft that brings us into theater. This requires that situational awareness and understanding begins the instant we are alerted at home station, builds continuously through deployment and as we conduct entry operations either in a hostile or permissive environment. Space-based environmental monitoring for weather, mapping, and terrain analysis is provided today by the Defense Meteorological Support Program (DMSP). Other space-based weather systems, such as the National Polar-orbiting Operational Environmental Satellite System (NPOESS) will contribute to those missions in the future. LANDSAT and other commercial systems provide us terrain data. Together they supply the initial information required to understand climate and terrain in a distant land. Next, support from the NRO's National Systems, augmented by imagery from commercial satellites, gives us even greater detail and information on enemy activities and conducting intelligence preparation of the battlespace. The SBR is the next critical step forward in enhancing our force by giving tactical forces persistent views of the battlefield, to include the most accurate levels of terrain information needed for mapping. The Army strongly supports the development and fielding of SBR, and will continue to be the Air Force's closest partner in its development.

GPS and its integration into our systems is the key to the next essential task, "Support precision maneuver, fires, sustainment, and information." It is GPS that gives us the common grid that all systems must use to achieve networked and precision operations. Knowing exactly where forces are around the world will allow us to save lives through blue-force tracking, destroying the enemy faster with precision maneuver and engagement, and supporting our forces more efficiently through knowing exactly where sustaining items need to be and when they are needed by the customer. GPS, as it is doing to our commercial activities, is the critical underpinning of precision operation, to include its timing signal, which is critical to networked communications. Today's GPS is good, but GPS block III will give us the 1-meter accuracy our Future Combat System requires, and from a more jam-resistant and reliable GPS signal.

“Enable information and decision superiority” simply means we have more and better information than our enemy, and can make the right decision faster. Certainly being able to collect and move information is a part of this equation, but we must also ensure the enemy “sees last, understands last, acts last, and loses” by attacking his information systems, making him “deaf, mute, blind, and confused.”

The joint nature of space requires that the Army become a more active partner in the development of space requirements that enable units of action and units of employment to achieve information superiority. In the same manner, the Army can no longer assume that the U.S. will maintain space superiority. Space control capabilities are essential to ensure that an adversary’s use of space is denied at the appropriate time and place when required. We must never allow U.S. Forces to have “a day without space.” The Army is developing ground-based space control negation systems that will be synchronized with efforts by the Air Force and Navy in a traditional role as we have in air defense, missile defense, and now space defense.

Protect force during all phases of the operation. Only space systems can provide the early warning of theater ballistic missile attack that will allow our forces to take cover, and cue Army missile defense systems to engage in-bound enemy missiles. The Space-Based Infrared System (SBIRS) will give us significantly more accurate launch points of enemy missiles, and more accurate and timely impact points of these missiles saving lives and allowing efficient use of missile defense systems. The Army strongly supports the continued development and fielding of SBIRS. Protection also means defeating the enemy’s use of space systems for communications and intelligence, surveillance and reconnaissance. As mentioned in the previous essential task, defeating our adversaries’ use of sensors and communications is a mission the Army knows well. In the past, we have done that against ground threats, then against air threats, and now against threats in space. This is not a new mission for the Army, just a new medium from which to operate.

Our space forces integrate with land, sea, air, and even cyber-based capabilities to provide the information demanded by our warfighters. What is important is that these capabilities are brought together as part of a robust system that enables information and decision superiority—which allows us to dominate across the full spectrum of military operations.

TECHNOLOGIES TO SUCCEED

We are conducting the research, development, and acquisition functions that are developing and bringing to the warfighters new space-based technologies, much faster and more efficiently than is possible using normal procurement procedures. The Army conceived the Tactical Exploitation of National Capabilities Program (TENCAP). Our Army Space Program Office (ASPO), using TENCAP acquisition procedures, has rapidly developed and fielded to Army, Navy, Marine, Air Force, and Special Operations Forces the Grenadier Brat Blue Force Tracking system. This equipment allows us to know precisely where our military units are on the battlefield, right down to the individual person or platform. ASPO also, within a few years, developed and fielded the Tactical Exploitation System, which is one of the most advanced intelligence, and information integration systems currently supporting our forces. This system will become the “heart” of the Distributed Common Ground Station—Army.

Our role in the Ground-based Midcourse Defense System (GMD) strongly links us with the efforts of the Missile Defense Agency. The Army supports the Defense Department’s Ballistic Missile Defense System (BMDS) efforts to develop, test, and deploy ballistic missile defense programs designed to protect America, its deployed forces, and its friends and allies. As the lead service, the Army has been preparing for GMD deployment for some time. We are prepared to deploy and operate the GMD component in September 2004 in support of National Security Presidential Directive-23 (NSPD-23).

With regard to our Army Space Control efforts, we provide enabling technologies to support the Objective Force and Future Combat System. As the largest user of space products, the Army requires timely and assured access to space systems and subsequent denial for our adversaries. From providing continuous surveillance to the integration of space sensor data into battlefield operating systems to the negation of our adversary’s space capabilities, Space Control initiatives are a key component of our overall strategy.

Our strategy also includes the Army Space Exploitation Demonstration Program formed to exploit space-related capabilities by closely linking technology to the warfighter. This program reacts to expedited requests for emerging technology through rapid prototyping. Some recent examples have been the Low Earth Orbit Position and Reporting Device (LEOPARD), the Space Operating System (SOS), and

the Space Support Element Toolset (SSET). Recently, a number of the SSETs have been deployed and more are being built to fulfill requirements.

Our space partners in the Air Force take the lead on the design, acquisition, launch, and operations of satellites, while Army Space Forces focus on the user ground-segment, and how to best use these capabilities. The Defense Support Program satellites and the Joint Tactical Ground Station are an existing example of this Army, Air Force and Navy partnership that will continue into the future with the fielding of the SBIRS, and our Multi-mission Mobile Processor. The Space-Based Radar, another example, will use the Distributed Common Ground Station—Army as its downlink to the user community. The Army's development of Ground-Based Space Control negation systems will protect joint forces from the enemy's use of space.

CONCLUSION

Mr. Chairman, the Army is on point for the Nation, fighting the war on terrorism, preparing for operations in Southwest Asia, and deterring aggression throughout the world while transforming to meet future threats. We are making great strides in the development of our Objective Force Space cadre to carry their missions. Soldiers are our most treasured asset.

The Army is proud to be a full partner in the national security space community as we continue to protect our forces, our American citizens, and our allies. Mr. Chairman and distinguished subcommittee members, thank you for your steadfast support. I look forward to your questions. Thank you.

Senator ALLARD. Admiral Mayo.

STATEMENT OF VICE ADM. RICHARD W. MAYO, USN, COMMANDER, NAVAL NETWORK WARFARE COMMAND

Admiral MAYO. Good morning, Mr. Chairman, Senator Nelson, distinguished members of the subcommittee. I am Vice Admiral Dick Mayo. I am Commander of the Naval Network Warfare Command. I have submitted a statement for the record, which I hope you will accept.

Senator ALLARD. We will make that part of the record, sir.

Admiral MAYO. I am glad for this opportunity to address the subcommittee, and I look forward to your questions.

Space has long been and remains a critical enabler for naval warfighting. The Navy has been in the forefront of operationalizing space from the Global Positioning System through the earliest tactical satellite communications to the Classic Wizard System and to bringing realtime targeting to the cockpit and in-flight weapons.

Some people say that the Navy is disengaging from space, and that is absolutely wrong. The Navy needs space-based capabilities today more than ever. To realize our vision of Sea Power 21 and its three pillars of Sea Strike, Sea Shield, and Sea Basing, the Navy needs space for increased situational awareness, speed, precision, and lethality. The Navy/Marine Corps Team wants to operationalize space and bring it to every level of operations. Our transformation to a capabilities-based Navy, which is represented by Sea Power 21 and what we call FORCEnet, is critically dependent upon the joint capabilities we get from space. The Navy's contribution to space has been reflected and is reflected in such major programs as the Mobile User Objective System satellites, various DOD satellite terminal systems, and innovate space-smart people.

A guiding principle of the Rumsfeld Commission Report was to formalize what our Chief of Naval Operations then called "an operationally and technically savvy space cadre," experts you could call who could advocate Navy requirements in the joint community and the joint program offices and to continue to advance the

operationalization of Navy for the fleet. We have moved to identify those people, certify their expertise, and strengthen their identification as a valuable group of professionals.

The establishment of Naval Network Warfare Command is Navy's response to recognize the importance of space to operational capability. We have aligned NETWARCOM under the fleet in clear recognition of the need to concentrate network and space operations at that level. NETWARCOM also serves as the functional component to U.S. Strategic Command for network space operations and information operations.

Our dependence upon space is absolutely critical. To that end, space control is an arena and an area which we think needs much further attention. The Navy offers unique capabilities in that regard, and we have already offered a capability to U.S. Strategic Command in support of space control.

I would like to introduce Major General Kevin Kuklok, the Assistant Deputy Commandant for Plans, Policies, and Operations. Both of us stand ready to answer any questions you have about space and the Navy/Marine Corps team. Thank you very much.

[The prepared statement of Admiral Mayo follows:]

PREPARED STATEMENT BY VICE ADM. RICHARD W. MAYO, USN

Mr. Chairman and members of the subcommittee: Good morning, I am VADM Dick Mayo, the Commander of Naval Network Warfare Command located in Norfolk, Virginia. NETWARCOM is the newest Navy "type commander" working for Admiral Bob Natter, Commander, Fleet Forces Command, responsible for organizing, training and equipping forces that operate the Navy network. Additionally, I am the Navy functional component commander to the Commander, U.S. Strategic Command for space, information operations, and network operations.

The Navy supports the changes that were recommended and have been implemented by the Rumsfeld Commission report. Based on the Rumsfeld report, Navy has conducted our own internal review that was led by Adm. (Ret.) Smith. Space-based sensors and platforms have never been more important to the success of naval operations and our future success is dependent upon them. I will comment on the importance of space to naval operations, what we are doing to implement the changes that were addressed in the Rumsfeld and Smith reports and the importance that space will play in achieving the U.S. Navy's Sea Power 21 vision.

NAVY ROLE IN SPACE

Space can no longer be viewed as a separate entity, or even a separate medium. It must be a fully integrated part of our warfighting capability. Space is the backbone of naval network centric warfare, providing communications, precise timing, positioning, and battlefield characterization. Space also provides critical real time intelligence, and surveillance information for naval combat operations. The stand up of NETWARCOM has combined space operations with networks and information operations, and resulted in a coherent end-to-end architecture that allows us to fully optimize the use of space-based capabilities today and in the future. Navy is fully in step with the joint community here. NETWARCOM also serves as the Navy functional component to USSTRATCOM for information operations and network operations.

Navy's priorities and direction in space are quite clear. Our job is to integrate the essential enabling capabilities provided by space systems across and throughout our naval forces, at every appropriate level. Because space is truly joint, we intend to lead where appropriate, fully participate in, and influence the outcome of joint deliberations on space capabilities to solve our toughest problems, enable naval transformation, and better serve the combatant commanders.

SPACE CADRE

Key to Navy's continued engagement with the newly aligned DOD space organization, and to ensure that Navy space equities continue to be represented, we are developing a core of space experts, the Space Cadre. This is a group of innovative mili-

tary (both Active and Reserve) and civilians that have expertise in space system requirements, acquisition, S&T, and operations.

As the Air Force executes its Executive Agent responsibilities for space, the Navy will stay engaged by ensuring that qualified Navy space experts are in leadership roles, where appropriate, under the guidance of Secretary Teets, the Under Secretary of the Air Force. This “cadre” of naval space experts will help shape joint space policies, strategies, requirements, S&T development, acquisitions, and operations.

Navy’s current involvement includes: our leadership of the joint Mobile User Objective System (MUOS) development and acquisition, which is the new system that will replenish our narrow-band communications satellite system and provide critical communications to mobile forces; our support of the development of future acquisitions, such as the Space-Based Radar for ground moving target indication and leadership at the National Reconnaissance Office (NRO) Communications Directorate and the Transformational Communications Office by Rear Admiral Rand Fisher. Additionally, we are committed to aligning our terminal procurement with the development and procurement of DOD Satellite Communications resources.

SPACE OPERATIONS

The earliest Navy role in space operations was surveillance of potential enemy reconnaissance satellites. Surveillance of and from space over the years has successfully become a Joint and a Strategic capability of which the Navy is a proud participant. We continue, for the time being, to operate the Navy Space Surveillance Sensor (the “fence”) and are awaiting the Air Force recommendation on whether it should be continued as a part of the space surveillance network.

While over the years Navy’s role in space has become predominantly satellite communications, we are continuing to explore new operational applications where Navy combines the capabilities of space with our advantage of at sea mobility. Navy developed WINDSAT (launched on 6 January) that will provide sea surface wind speed and direction directly to ships at sea. We will continue management of vital UHF satellite communications and look forward to flying the Mobile User Objective System in the 2008 timeframe. The real challenge in front of us is how to continue to integrate space capabilities into naval combat capability to support Fleet and Joint forces.

SERVICE INTEGRATION

In addition, NETWARCOM has taken a leadership role to strengthen the relationship with the Air Force across all information technology, information operations, and space domains, with the goal of sharpening interoperability. The location of NETWARCOM in Norfolk, VA, was chosen because of its proximity to the Fleet and the numerous joint commands in the area. In concert with the Air Force Command and Control and Intelligence, Surveillance, Reconnaissance Center located at Langley, AFB, we are collaborating on Air Force/Navy ISR architectures; Distributed Common Ground Station interoperability; and supporting each other in establishing the operational requirements for Transformational Communications, Space-Based Radar, and Space-Based Infrared systems. Additionally, we have met with the Army and Air Force to support Joint Forces Command in establishing and experimenting with Joint Command and Control systems for the evolving Standing Joint Task Force Headquarters concepts.

SEA POWER 21 AND SPACE

Space-based capabilities are vital to the success of the Chief of Naval Operations’ Sea Power 21 Vision. It calls for a fully netted force, capable of working in a joint and coalition environment, and going it alone when necessary. Sea Power 21 will enable the Navy to become a capabilities based Navy. My part in Sea Power 21, in partnership with Rear Admiral Zelibor, is making FORCENet a reality. FORCENet will enable all of Navy’s combat capabilities—Sea Strike, Sea Shield, and Sea Basing. FORCENet will link our weapons, platforms, sensors, C2 systems, and our people, into a netted force capable of responding with unprecedented precision, speed and lethality. The products we get from space are absolutely critical to achieving this capability. The capabilities of space are fundamental to FORCENet and to Sea Power 21.

CONCLUSION

My highest priority is to transform naval organizational processes and culture to fully integrate the warfighting capabilities that space systems present to our warfighters.

Space-based products must be integrated into the development of new operational concepts, such as the Global Information Grid, network centric warfare, and Sea Power 21. NETWARCOM's ability to operate and develop future space needs, and my execution of FORCEnet must be synchronized with Fleet warfighting requirements and the emerging global needs of combatant commanders. This is my challenge, as the commander of NETWARCOM. I appreciate your continuing support as the Navy presses forward to make Sea Power 21 reality.

Once again I thank you for this opportunity, and will be happy to answer any questions.

Senator ALLARD. Thank you all for being willing to testify before the subcommittee, and thank you for your testimony.

I just want to make sure that we have all the coordinated effort going on between the various branches of our defense, as far as space is concerned, so I will start out with you, General Lord. Would you outline to me what career path you are developing for the Army and Navy, as well for the Air Force? I know the Air Force is doing a lot. I want to see what you are doing as far as the Army and Navy are concerned.

Then, the next follow-up question I would like to have you answer also is, are there some common schools and some common resources to develop this space cadre from all the branches? Also, how are we going to rate space officers when they serve in this joint space billet?

General LORD. Yes, sir, I am delighted to answer your question. I think it is a very appropriate one with respect to the space cadre. It is important to note that I think we are often, with a good strategy here, coordinating with Brigadier General Rick Geraci, who is the Army Space Command guy in Colorado Springs. We are also working with our Navy counterparts as we put our Air Force space cadre program together because we do not want to just do something that solves the Air Force issue. It ought to be able to be mapped over to the Army, the Navy, and the Marine Corps, and also to our friends in NASA and certainly reach out and grab the folks in the National Reconnaissance Office and space people wherever they serve in the military department. We will do that both for officers and enlisted.

What we have done is put together a program that looks in three different areas—operations, acquisition, and the mission support areas we have talked about. The President's budget in fiscal year 2004, at \$10 million, supports the beginning of our initial development for courses and initial places for people to serve as we develop not only job experiences but the courses and the training that will help people form their intellectual, if you will, bona fides in the space business when we are working them up through the system.

We have offered opportunities, and people in the Army and the Navy are taking advantage of now attending courses at our schools. An inherent part of what we are doing is going to also harmonize with the Air Force efforts under the Chief and the Secretary, Secretary Roche, and General Jumper, as well, to re-look and re-energize systems engineering and the excellent initiatives under my old command, Air University. We will be working with the folks at Air Education and Training Command, along with the Air Force Insti-

tute of Technology and also the Naval Postgraduate School to put together an integrated program with great support so that not only do we work the Air Force and the space part of this and the other services, but we also have the critical engineering skills and systems engineering that will help us work the problems that Dick Mayo and Joe have talked about, as well as Admiral Ellis and Secretary Teets. That is living and prospering and being able to handle and develop in this space situation awareness defensive and offensive counterspace missions of space control. We will need the systems engineering talent. We will need people developed in that program.

What we want to do is start the path. This is going to take us throughout the 5-year defense program, I think, to really get it fully entrenched. Our first steps are in fiscal year 2004. With your continued support, we will be able to do that.

Our formal announcement of the strategy, once approved by the Secretary of Defense, should be within the next days, I would hope, as we get the full strategy laid out for everybody to see.

Senator ALLARD. Did you respond to the part of the question of how we are going to rate the space officers?

General LORD. I am not sure in a rating, per se. I consider myself a space officer, and those who serve will go through our initial schools and get rated, if you will. They will become space professionals as they develop their capabilities.

We looked at—as you had asked us to do in the past—different models for doing that. One is the nuclear Navy model. I think we have taken some of the best kinds of attributes of their program as well as we have looked at the folks in the Army and the Navy, and we are going to put those together and get the best of all those systems to do that.

But we will get initial skills. We will get certified and continue to work our bona fides as they work their way through not only job experiences, but actual training that goes with that.

Senator ALLARD. Admiral Mayo, how do you track space expertise in the Navy? Are space subspecialties adequately linked with the Navy's areas of functional expertise?

Admiral MAYO. Thank you for the question, Mr. Chairman.

We have done quite a bit to really power up our identification of the naval space cadre in the aftermath of the Rumsfeld Commission. We have formalized it. We have put a flag officer at the Navy staff in charge of it. We have identified those officers in the Navy who have the critical operations and skills, space operations and engineering skills, to be part of our cadre. We have identified the number of billets. There are 775 officers in the Navy with the skill and talent, 250 billets. We have added precept language for selection boards to select people with these skills so that we can continue to advance our Navy professional work in the area of space.

As General Lord mentioned and alluded to, we have initiated a program with the Air Force Institute of Technology and with the Naval Postgraduate School to exchange officers so both services can better understand each other's efforts and learn and prosper together.

Lastly, in the Navy, we have integrated the Reserve and active space expertise with about 250 enlisted and officer experts in our

Reserve community. We have fully integrated them with our active-duty space cadre so that we can gain the maximum expertise and leverage from all of our naval assets.

Senator ALLARD. General Cosumano, I note that your space career field functional area 40 is a subset of the Army's information operations career fields. Space and information are rather obviously different. What are the advantages and disadvantages of this arrangement?

General COSUMANO. Thank you for the question, Mr. Chairman. We have several functional areas as a part of this information operations career field. As it turns out, space is an enabler for all those functional areas that are part of that career field. In fact, without space, you really do not have a global context when you are prosecuting warfare.

It gives us a great advantage in that we share information across those functional areas as a part of this one career field. We developed this career field over 2 years ago, and we have been proceeding with this Functional Area 40 for over 2 years. We worked closely with the Air Force in designing the curriculum, the syllabus for training our space operations officers. All our space operations officers are certified and wear the Air Force Space Operations badge. We have been working very closely with our friends in the joint community to do this.

In summary, I think if we did not include space as a part of the information operations career field, we would not be able to leverage this area called space control, one of the components of Space Information Operations.

Senator ALLARD. Thank you.

General COSUMANO. Thank you, Mr. Chairman.

Senator ALLARD. Senator Nelson.

Senator BILL NELSON. Thank you, Mr. Chairman.

Senator SESSIONS. Mr. Chairman, I would like to submit some questions for the record. I have another appointment I have to go to and would like to congratulate General Lord, General Cosumano, and Admiral Mayo for the work that they have done. I know well just how critical space dominance has been to us in the last few years, and will be if conflict breaks out in Iraq.

Thank you, Mr. Chairman.

Senator ALLARD. Thank you very much. On the panels, we have had several members express that they wanted to submit questions. If we could just ask the panel members to get back with us in 10 days, we would appreciate it.

General LORD. Yes, sir.

General COSUMANO. Yes, sir.

Senator ALLARD. Thank you, Senator Sessions.

Senator Nelson.

Senator BILL NELSON. Thanks, Mr. Chairman.

General Lord, I think two of the most important assets for the country are the western and the eastern test ranges, and yet the funding for the launch ranges has decreased significantly. I want to know why. I also want to know why the Air Force has walked away from the range modernization—not little, but big time—in 2004, for RDT&E, lessening spending by \$43 million and, in other

procurement, lessening spending by \$72 million. Share with us what is the thinking of the Air Force.

General LORD. Yes, sir. Thanks, Senator Nelson.

I had a chance Saturday night to go down and sit on the launch console with General Pavlovich and the folks at the 45th. My background is that I was a launch range commander of the 30th, so I can pledge to you that we do not want to make our space-lift ranges a limiting factor in our access to the space equation, I guarantee you that. I had a chance to sit down with those folks and go through a countdown. We did not launch on Saturday night. We did launch just last night, if you know—or the night before last—the Delta 4.

What we did is, we reshaped the Range Standardization Automation program. We also have taken away what we used to call RSA and have replaced it with a recapitalization and an improvement program that I think takes a look at what we need to do and what we need to deploy on the range. We bumped up—by the way, in 2004 we have an increase in the O&M funding for the ranges, both the west and east coasts. We have tried to reshape our program and make the critical things be available when they need to be to put on the range to continue to launch in a safe and effective manner.

I have looked at the range safety part of that. I mean, I am familiar with the missile flight control business. I have looked at what they have done. I have looked at the interim steps we have with our first, what we call, FOV, the flight operations verification, work that will replace the existing missile flight safety strings. Then regarding our plan for the next step, I have looked at the plans and scheduling folks and the things that we have added. I think we are on a prudent course. We will continue to watch this very closely.

I need to tell you, sir, that we had bought things before, and we let them sit on the dock. We did not put them on the range. Therefore, I am committed, along with the folks on the west and east coasts, to install the equipment, get it on the range, and make sure that we continue to improve and upgrade. We are following through on that, sir, and we are committed to making the launch ranges be everything they need to be to complement our assured-access-to-space strategy.

Senator BILL NELSON. I know you are committed, and I just want to help you because I think that one of the easiest places to cut when you start looking for money to cut is the ranges. I do not think that these cuts are prudent, just like I do not think some of the cuts on the modernization in the launch procedures for NASA are prudent. They cut out a system—albeit, it had gotten way too expensive—called CLCS in the launch process. But it seems like we always do that in trying to fund, when budgets are tight. I am going to be on this as we get on into the process of authorization.

Senator ALLARD. Senator Nelson, I share your concerns on this and want to try and be helpful with you on this particular issue because I know it is important to you, and we want to make sure that we are doing the right thing in that regard.

Senator BILL NELSON. Mr. Chairman, these are huge hits. In 2003, for example, the RDT&E funding was \$106 million, and they

are whacking that by \$43 million. The OPAF, which is procurement, in 2003 was \$153 million, and they are whacking that by \$80 million. You are talking about some rather substantial whacks.

Senator ALLARD. Some real dollars here, that is right.

Senator BILL NELSON. Like half. In the case of RDT&E, they were whacking that by \$43 million. So you are talking about whacking it by almost half, RDT&E and OPAF.

General Lord, let me ask you, is the deferral of the GPS 3 going to impact your ability to provide GPS service to the troops and civilians who rely on it every day?

General LORD. Sir, we are going to make that initial launch capability in fiscal year 2012. We are committed to that, as the Under Secretary spoke to you about that. We are looking at bridging from 2003 to 2004, and then, as he said, we may even be able to shoot for an earlier capability with GPS 3. Now, we are committed to the modernization, and we are going to step up to that in both the 2R and the 2RM; the next launch will be 29th of March, scheduled this month. We just launched one earlier this year, and we will continue to populate that constellation.

I will tell you, we have that constellation screwed down pretty well, we are certainly supporting our warfighters over there right now, and we will continue to do that. My view is that we will continue to modernize the constellation and push hard on GPS 3, maybe do it earlier. I hope we can.

Senator BILL NELSON. Mr. Chairman, with your permission, I need to step out and make a quick telephone call, and I will be right back.

Senator ALLARD. Sounds great, Senator.

I have a number of questions. I want to follow up a little bit on the SBIRS questions and will address this one to you, General Lord. We talked a little bit on the previous panel about this break in production that we have on the satellites, on SBIRS, just after we have had all these programs and gotten them straightened around. Frankly, I am concerned about what that is going to do to program risk, how it is going to affect costs, and what it is going to affect with continuity in the manufacturing process. I would like to hear what the Air Force's assessment of the operational risk of this delay would be.

General LORD. Excellent question, sir. I think, as Secretary Teets said earlier, a year ago was a different story. I am convinced, having sat in several different senior level reviews, also with the Under Secretary and with our contractor, that we have the A-team on board in all aspects, from the Government as well as from the contractor, Lockheed-Martin. Our program manager, Mark Borkowski, and Miles Crandall of the Lockheed-Martin team, are working very well together. We have intentionally reviewed this, and we will continue to do that.

If we can continue that approach and work the mitigation strategy that the Under Secretary outlined with procuring spare pieces, et cetera, I think we will be able to bridge from GEO 2 to 3, 4, and 5.

I will tell you, on the operational side, sir, we have sat down and we have laid out for the next 10 years the capability that will be derived from the constellation plus the ground processing that we

have, and we are delivering on specific blocks of capability. We validated that with Admiral Ellis, and that is the warfighting application we are going to get. We are meeting those requirements, as well. This is a full-court press to deliver that, and it is not going to stop until we get the final operational capability.

Senator ALLARD. I am just really concerned we do not set this program back because we worked hard to debate on this side. It was not easy to get it back on track.

I am looking at it from a manufacturing standpoint. How is this company going to keep this expertise on their payroll for 2 years? I do not think they can. It looks to me like you are putting us in the position where they move on to other projects and then you have to bring in a whole new bunch of workers and people in charge of the program—you have to reeducate and retool them back up again after a 2-year lapse. It seems to me that it is rather inadvisable.

General LORD. Yes, sir. I know exactly what you are saying and how you feel about that, and, as I said, we are working out the mitigation strategy. I would be happy, as we work that, to provide it for the record if you like and keep you informed as we go on how we are doing on the mitigation efforts so that we do not have a break that substantially affects the program.

Senator ALLARD. I would very much appreciate that.

[The information referred to follows:]

AFSPC MITIGATION STRATEGY FOR MINIMIZING THE IMPACTS OF 2-YEAR DELAY IN START OF GEO 3-5 AND THE ASSOCIATED PRODUCTION BREAK

The decision to slip GEO 3-5 2 years to the right was a very difficult decision to make. The slip was based on an assessment that we would not need the additional satellites until later in the decade. From an experience perspective, OSD also believed it was prudent to have more familiarity with producing and testing the first two GEO satellites before we made commitments to buy the following three. Later procurement of those three offers opportunity to include "lessons learned" from the earlier satellites into the later ones.

Nonetheless, from an acquisition risk perspective, the delay has two potential impacts. First, it may induce production breaks at many of the vendors who produce the satellites. Those production breaks can result in additional costs to restart the production line. We have accounted for that risk in our long-term budgetary planning. In addition, we are working to identify other critical vendors and assess their risks. In many cases, these vendors may have other work, which will provide reasonable continuity. We are also maintaining options—as yet unfunded—to procure additional Highly Elliptical Orbit (HEO) payloads—any such procurement would also serve to mitigate production gaps.

Second, delay in procurement of GEO 3-5 creates a risk in the event we need spare parts for GEOs 1 or 2. If GEO 3 were available sooner rather than later, its production could provide critical spares for one of the earlier satellites, if needed. But with production delayed, we would not have access to GEO 3 hardware to cover contingency sparing. The mitigation for this is to identify and procure critical spares. We are in the process of making that identification. Depending on the extent of the requirement, we may need out year budget adjustments to cover the new spares—but I believe we have time to make the decision beyond fiscal year 2004.

Senator ALLARD. General Lord, Secretary Teets stated that the possibility of accelerating GPS 3 is being studied. What is the status of this study, and when will it be completed? Then what are the advantages and disadvantages of such acceleration?

General LORD. We took a meeting with Secretary Teets 2 days ago. We owed him the information. I talked to our folks. Within a week, we are going to come back with what we think would be the impact of that. It is going to cost money to accelerate, and we will

look at some preliminary estimates on what it might cost. I am not ready to announce those until we take a harder look. We have Al Ballinger, our program manager, plus General Arnold with SMC. We will work that, and we should know within the next week to 10 days.

Senator ALLARD. Now, in space science and technology, General, the Air Force Research Lab reports to Air Force Materiel Command. Are you comfortable that you have sufficient input on the Air Force Research Lab space science and technology efforts?

General LORD. Yes, sir, I am comfortable. We met earlier, within the last week, with General Les Lyles, the Commander of Air Force Materiel Command, and then Major General Paul Nielsen, the Commander of the Air Force Research Lab, and went through about 5 hours of briefings and every dollar in the Air Force space S&T program and our linkage with, in the most part, Kirtland Air Force Base and the labs there as they relate to our process.

What we have done in Air Force Space Command in our integrated planning process is, we have identified where we need basic and applied research. We can trace that back from our needs and our deficiencies in our integrated planning process right to the dollars that are being spent in basic research. We have a good connectivity there, as well as with Dr. Tony Tether and DARPA and also working under Secretary Teets, as he said, putting together the whole team to look at S&T across not only the intelligence communities, but also what we are doing in the Air Force Research Lab and also with DARPA. Periodic meetings with Tony Tether and what they are doing in DARPA is going to pay off for us, as well.

I think we have our arms around the overall program, and it will become more and more focused as particular areas get emphasized.

Senator ALLARD. Admiral Mayo, in regard to space science and technology, are you satisfied with the role that the Naval Research Lab plays in science and technology efforts?

Admiral MAYO. Senator, thanks very much. Most definitely. They have been a leader for a long time in innovation, bringing innovation and transformation to space. As I alluded to in my opening verbal testimony, such things include bringing realtime data to the cockpit, in-flight weapons, initial satellite communications systems, and initial efforts to help in Global Positioning System.

I think the S&T effort that Naval Research Lab is involved in is very significant, and we have focused the effort for this upcoming year in an agreement with the Air Force and DARPA to work in the area of microsats. We look forward to that very innovative, hopefully creative work.

Senator ALLARD. We still have some time here, and I want to talk about space management organization. General Cosumano, I do not want you to feel left out here. [Laughter.]

General COSUMANO. I appreciate that, Mr. Chairman. I will be glad to respond to those other questions, too, if you want to ask me.

Senator ALLARD. If you have a response to those other two questions, please step in.

General COSUMANO. I do.

In terms of the last series of questions on science and technology, the Army Research Lab, the Space and Missile Defense Technical

Center, as well as the Army Space Program Office are really three key organizations that the Army leverages as we work with our partners both in the Air Force and the Navy to get those products to the warfighter. As I said, we have really focused on technologies that have to do with providing those capabilities to the warfighters. We focus on ground stations many times. In coordination with NASA, we are also involved in other technologies such as hypervelocity technologies in our Space and Missile Defense Technology Center. We are a partner in this S&T arena, too, and we are a full player.

Senator ALLARD. Let me get to the question now on space management organization. Are you satisfied, General Cosumano, with what the new acquisition oversight processes related to space systems provide? Do they provide your services adequate input and insight into space programs?

General COSUMANO. Mr. Chairman, we are at this point, we certainly are. We have worked very well with our friends in the Air Force as the executive agent.

We, as I said, do not have the resources that the Air Force has, in terms of space, and so we leverage their capabilities. I think my wife said it best when we were watching TV one night and I was trying to explain it to her. She says, "Oh, I get it. The Air Force is the cable company, and the Army buys television sets." In many cases, that is true. They fly and maintain the constellations and have a huge investment in space. We leverage those capabilities, we ask for premium cable service at the point on the ground where we want it, and we get it.

Senator ALLARD. Very good. My time has expired.

Senator Nelson. I am sorry.

Senator Reed.

Senator BILL NELSON. Go ahead and let Senator Reed and then I will follow up.

Senator REED. Thank you, Mr. Chairman. Thank you, Senator Nelson.

General Lord, Secretary Teets suggested that there is a growing momentum to weaponize space. Do you think it is inevitable that it will happen and happen within a short period of time?

General LORD. Thank you, Senator Reed, an excellent question. I think we all realize that there is a difference between weaponization and militarization in space. Space has certainly been militarized as an economic as well as a military center of gravity for our country, and we are critically dependent upon that.

I agree with what Secretary Teets said. I think that we need to maintain a balanced approach to that. I think offensive kinds of capabilities in space are important to enforce our ability to use ours and act as a deterrent against others to interfere with our capabilities. I think we will have to think carefully about how we proceed in that area. But I think a balance should be maintained among the space-control area, space situational awareness, which is critical, defensive counterspace measures to protect ourselves against the vulnerabilities, and then offensive counterspace capabilities when we need it to not only dissuade others from trying to do something, but be able to protect our assets.

Senator REED. You have identified one line of demarcation, which is those defensive measures that you put up to protect satellites, even self-contained defensive measures, which I think probably roughly falls into what most people assume is this militarization of space, if not weaponization. When, however, you cross the line to offensive weapons, I think it raises concerns. Do you think that we will inevitably have to put offensive weapons into space?

General LORD. I think that that day may come. I think it is not a matter of if; it is when somebody is going to try to perturb our asymmetric advantage in space, if you will, or try to interfere with that, and then I think we have to be able to enforce that and use the capabilities.

Now, in all our war games and all the things we look at as we do simulations, et cetera, the high value of those assets certainly is recognized as a premium, and we will take prudent steps as we go there.

Senator REED. General Cosumano, do you have any thoughts on this, since the Army has a significant role?

General COSUMANO. Thank you, Senator, for the question. Yes, sir, we do. We lump this under the mission area called space control. Many times you can control your access to space and deny the adversary's access to space with airborne systems or ground systems. Oftentimes we can accomplish that mission of space control and really do not need to get into that business in outer space itself. The Army, thus, is pursuing, with the Air Force as the lead, a series of programs to do just that.

Senator REED. Thank you. Admiral Mayo, any thoughts you might have?

Admiral MAYO. Definitely, sir. Space for the Navy, being forward deployed almost all the time, provides us our connection. Space provides us our content of absolutely critical key combat information for the battle space. Space, therefore, is absolutely critical. It is going to become even more critical in the future as we try to become a capabilities-based Navy, capable of dealing with any kind of an emergent threat for the President. That kind of reliance and critical dependence upon space makes space control that much more important to us. As I said, we have contributed to this capability for STRATCOM, and I would be happy to go into this any further in a closed or classified session. It is absolutely critical.

Senator REED. Thank you very much.

One final follow-up question. It strikes me that the technology to get into space is getting such that many people who could not compete years ago can compete now. In a simpleminded way, if you can access the computer and you can get into a network, you might even be able to influence our satellites in space, et cetera. As we go forward—and I think this has to be borne in mind when we start thinking about what we can do in space—the threshold for other people to do things in space has been lowered dramatically, which should have some influence on your decisions about weaponization, militarization, and what you put up there. Is that a point that you are considering, General Lord?

General LORD. Absolutely. We want to maintain the asymmetric advantage that we have and continue to protect that and deny somebody using that against us. That is a key to our continued suc-

cess in being able to support both economic and military operations. We want to maintain that advantage. But living and deterring in an asymmetric environment requires a different set of rules, I think, and different theology, if you will, about how you think about that. We certainly want to maintain our advantage of that and work all aspects of that.

I do not want to be redundant, but I think that the three pillars of space control are important to space situation awareness: understanding what is in the environment, the defensive measures to protect yourself against that, and then, lastly, offensive counterspace to protect your assets and deny somebody using those against you. Yes, sir.

Senator REED. Thank you very much. General Cosumano, Admiral Mayo, thank you.

General COSUMANO. Mr. Chairman, may I comment on that point Senator Reed made?

I think it is important to realize the emergence of gray space, the commercialization of space. As a panel, we certainly work through our wargames and under the leadership of the Air Force.

Just as scale, just 20 or so years ago, there were about 250 satellites in orbit; and of those 250, about a quarter of those were commercial types of satellites, primarily communications satellites. Now there is over a thousand satellites, and about half of those are commercial satellites that not only have communications capabilities, but imaging capabilities. The ability, therefore, to do a left-hook, so to speak, in Operation Desert Storm today is very problematic. I just want to emphasize that there is another dimension in space control that we have to worry about.

Senator REED. Thank you, General. It is an important point. Thank you very much.

Thank you, gentlemen. Thank you, Mr. Chairman.

Senator ALLARD. Senator Nelson.

Senator BILL NELSON. Thank you, Mr. Chairman.

Admiral, does the transferring of the Navy space surveillance fence to the Air Force signify a policy change for the Navy?

Admiral MAYO. Sir, after the Rumsfeld Report, we huddled a lot in the Navy about what is the Navy's future role in space. Our decision, with leadership, was to concentrate on the operationalization of space, to do those things that we thought were core, and to continue to do those things which were core.

We felt that space surveillance and our previous operation of a fence could best be rationalized with the Air Force as executive agent and the number of sensors that they have. We also felt that a study should be done of the queued and unqueued sensors to see how it could all come together most efficiently. We did that work. We made that dialogue. Then the program decision memorandum came out last year. We feel that this is in the best interests of DOD. We are committed to making it work.

I would say that we have 59 highly experienced civilians who run the fence today. Pending the outcome of Secretary Teets' decision based on the Air Force input, those people can be used as best as possible. They are very well qualified.

Senator BILL NELSON. General Lord, perhaps in another setting, I wish that you would share with us your ideas, your plans, for the protection of the ground systems on the GPS.

General LORD. Yes, sir. I would be delighted to do that. I have just taken a look at that, and I will be happy to share those with you in a separate meeting.

[The information referred to follows:]

HIGH FREQUENCY ACTIVE AURORAL RESEARCH PROGRAM (HAARP)

Senator Bill Nelson and his staff will be briefed in the near future on the protection of the Global Positioning System ground stations.

The briefing contains details regarding the current level of protection afforded the ground-based portion of the Global Positioning System as determined through an end-to-end review of space security systems. It further addresses the impact to the warfighter and the U.S. in general if the Global Positioning System is lost. It details the current security and provides a way ahead to enhance ground station security and overall Global Positioning System sustainment.

Senator BILL NELSON. General Cosumano, with regard to the Air Force's decision to eliminate funding for the GPS 3 in the 2004 budget, were you consulted?

General COSUMANO. Thank you for the question, Senator. Yes, sir, we were consulted, and we agree with the acquisition strategy that has been laid down. Based upon the technical issues in the program, we think that the current strategy that has been laid before the committee and before the Department minimizes the risk.

Senator BILL NELSON. I would like all three of you to address a concern that all of us should have about the ability to train and retain space professionals. What are each of your services doing, and what are your obstacles?

General LORD. I will go ahead and start. Thank you, Senator. Excellent question.

I look at this as a space career manager for all of the Air Force across both our officers as well as our enlisted and our civilian professionals. We have worked hard on all aspects. I would say, within a couple of percentage points on our officers and enlisted, we are in pretty good shape across the averages with respect to space professionals in our enlisted corps as well as our officers. The only place we really have significant problem is in our mid-level engineering expertise in our program offices. I have lots of lieutenants, but not captains, majors, and lieutenant colonels, who are the heart of it. We are working hard to build new engineers and attract and retain those that are leaving us or have chosen to do that. I think we may have turned the corner on that, as well.

I will tell you that your interest and the committee's interest and certainly any interest in the business speaks volumes to them about how important it is to be committed to the business.

General COSUMANO. Senator, in the Army, we began this space operations career field just 2 years ago, so it is really early on to see the impact. We have had some promotion boards, and we are consistent with the Army average in promoting those space operational officers.

Where we do need work, though, is in our enlisted career field as we try to pull together intelligence specialists, the communicators, and other military occupational specialists into a skill identifier that identifies each of them as a space-smart enlisted person.

We have not done that yet. That is on our books to do this year, and we are working that very closely.

Senator BILL NELSON. Remember that it was the Army that got us into space in the first place with the Redstone missile, after the Vanguard would never get off the pad.

General COSUMANO. Yes, sir, I had that in my script, but I, in deference to my friends up here, took it out.

General LORD. It is burned into our memory, sir. [Laughter.]

General COSUMANO. Thank you for that comment, Senator.

Admiral MAYO. Senator, if I may add—and thank you to the Army—but with respect to the cadre, as I have said about the Navy's efforts to formalize, as you have indicated, we have appointed a flag lead on the Navy staff to address this need to retain and keep these kinds of folks. We have identified the billets, the people. We have put precept language in being for selection on boards so that these kinds of folks can be selected.

The Navy emphasis on the operationalization of space is clearly reflected in our Sea Power 21 vision, where we absolutely need all of the capabilities that we can get from space.

I see, in the years ahead, the integrated theater missile defense, the importance of networks, the importance of information operations, and the big mission area of global strike. I think U.S. Strategic Command will become more and more of a magnet for our best and brightest of all services, and I think that that is really going to help us keep the kinds of folks that you referred to.

General LORD. Sir, if I might, I would like to add just a little bit more to that. One of the things that we have done, and I know this is something the Army and the Navy have thought about, as well, is that we have a healthy component of Guard and Reserve folks involved in the space business that really complements the total force and is a way to capture and retain that talent. Down in Florida, on the console in the range flight there in the 45th wing, we have Guard folks who have worked hard. We have the 310 Space Group and the Reserve that is involved in all of our missions in space. We have a good balance of not only active, but total force capability, as well, across the states and the mission areas. We have not only on the active side, but also in the Guard and Reserve, the capability to keep and retain those talents that are critical to our capability.

Senator ALLARD. I think that is a great approach, to also include the Guard and Reserve on those. I think those are important parts of the program.

General COSUMANO. Mr. Chairman, may I comment on that, just for a moment? We activated, this past year, the 193rd Space Support Battalion as a part of Army Space Command Colorado National Guard. In fact, the space support team that went to Afghanistan to support Task Force 180 on the ground was a National Guard space support team.

Senator BILL NELSON. By the way, speaking of that, I may as well get on my soapbox. A policy question, Mr. Chairman, that we are going to have to answer is, how much can the Guard and the Reserve do what the active-duty military is supposed to do, particularly if we are ending up in long-term stabilization of countries as we obviously are going to be in Afghanistan, as we will likely be

in Iraq, just as we have been now for 7 years in Bosnia. As you all are making your plans on your high-tech folks, it is not fair to say that we are going to expect the Guard to do this, because the Guard is the Guard, and it is expecting that it is called up in times of emergency for short durations, not for the long-term duration that we are going to be looking at in the future. I just add that little comment for policy consideration.

Senator ALLARD. I agree. Our Guard and Reserve people are being utilized more than I think most of us ever visualized, and it is creating some hardship on families, employers, and educational efforts with all that is going on there. But I know one thing that is happening in Colorado is, we have, as I understand it, an Air Space Reserve. The Reserve is dedicated just to space. I visualize that more at home, but obviously there might be times when they might have to be deployed.

A couple of questions, again, on space management and organization. I am just going to give you all an open-ended question. Are there any improvements to the acquisition or oversight of space systems that would more fully assure that your service's space equities are adequately addressed?

General Lord?

General LORD. In my particular case and certainly the Air Force and certainly relating to the Under Secretary and our maturing process with the Space and Missile Systems Center as part of Air Force Space Command, the Program Executive Office authority, from the Secretary of the Air Force, is delegated to Secretary Teets and out to Los Angeles. I think we have a structure that is maturing, and it is getting better as we work those. Then as we put it in the virtual program with Secretary Teets and the other Army/Navy program together, we are getting a good review, along with the space architects' look at the overall architecture. I think things are being done quite well right now, but that does not mean we cannot improve, and maybe we ought to watch it for a while and see if we are delighted or pleased with the outcome.

Senator ALLARD. General Cosumano.

General COSUMANO. Thank you, Mr. Chairman, for the question. I would like to think that the Air Force copied Army Space Command. As I mentioned earlier, we have been organized for some period of time. We have all our materiel development, combat development, and operators all in the same unit bringing products quickly to the warfighter.

Specifically, we see the framework that Secretary Teets has set up with the national security integration, national security space architect, and that whole review process, as a welcome improvement over the old process. It does give us a voice in the acquisition world. We are part of that process. We are part of the Major Force Program (MFP) 12, the virtual space program, and we participate, in terms of priority, for those assets.

On the requirements side and capabilities side, the Joint Requirements Oversight Council that all our vice chiefs sit on has been more than adequate to review the status and resourcing of those programs.

At this point in time, I think we are fine, sir, and we think we have made some good improvements over the last year.

Senator ALLARD. Admiral?

Admiral MAYO. Mr. Chairman, the processes are still continuing to evolve, but I think they are headed in the right direction. The virtual major force program gives everybody in DOD great situational awareness now on the resources that are being spent in space across the services and the agencies.

Our major system acquisition on behalf of the DOD and executive agent, the Mobile Use Objective System, is doing well. We benefitted from the interaction with Secretary Teets and the staff, and it is on schedule.

Secretary Teets has been very inclusive, has reached out, embraced, really brought us in to the integration and the architecture office. He has really gone out of his way to try to make this work, and we are very supportive of that.

I would say if there is one challenge that I would like to tell you about, though, it is that this requires a lot of work to make this work. We are trying to make the Rumsfeld Commission come together. There are a lot of meetings. There are a lot of places to go. Earlier today, we heard about program office, west coast/east coast. We only have a finite number of people. We send them to the best meetings that we think they should attend. We work closely with the Marine Corps, in fact, the Navy/Marine Corps team, trying to attend all the meetings.

I think a challenge to be recognized, at least for the Navy or Marine Corps team, is that we have a finite number of people. There are a lot of meetings to go to, so we are working that issue.

General LORD. Sir, if I might add, too?

Senator ALLARD. Yes, General?

General LORD. I think that our work with the requirements process to be almost unrelenting, if you will, to make sure that only urgent and compelling needs are reintroduced into the program. The biggest threat to our program acquisitions has been an unstable baseline in our major programs. To stabilize the baseline, have a process where we would review requirements, and then if we need to change, do it with the full understanding of what the price and what the cost and what the impact is to the program, certainly supports the needs of the acquirers as well as those who are going to get the operational capability. That is something that, as General Cosumano said, has worked for them, and we are pushing hard on that.

I think that has been one of the successes in the SBIRS-High program, and I would say, although Dick did not say this, that is certainly the way that MUOS has worked, as well.

Senator ALLARD. General Lord, I want to go back to our educating and training our space professionals. I understand that space comprises only one-half of 1 lesson out of 37 lessons in the full professional military education curriculum and only 1 lesson in squadron officers school. Do you think that is the right level of emphasis for space?

General LORD. No, sir. We are working to improve that. As I said, part of our initial look is to give everybody 20 courses, 20 basic lesson plans, in astro engineering. We are going to make people's heads hurt, but they need to understand that. We are going to harmonize that with Secretary Roche and General Jumper's

push on force development so that our professional military education fully uses and employs the space part of the curriculum so people understand the importance of what we are doing. I started that as a commander of Air University. I was responsible for that curricula you talked about. We started to improve that, and they will continue to follow through on it.

Senator ALLARD. Admiral Mayo, you made reference to the importance of space control to the Navy. Would you elaborate on the Navy's interest in space control, and what capabilities does the Navy bring to bear in this area?

Admiral MAYO. Sir, in open session, Mr. Chairman, all I can say is that we view this as critical because we are absolutely dependent upon the product we get from space to define our battle space and to be able to bring precision and speed to our combat capability. The Navy, the naval forces, because of the geometry that we can use on the open ocean, brings unique attributes and capabilities to the idea of space control. Otherwise, sir, I would have to ask if we could go into closed session.

Senator ALLARD. We are going to have a closed session later on—not today, but in another hearing—just dedicated to those kind of issues. I would ask the staff to keep that question in mind, and we will bring that up to whomever we have there from the Navy at the time.

Admiral MAYO. Yes, sir.

Senator ALLARD. Thank you.

Also, Admiral Mayo, there was discussion in the first panel related to the transfer of the fence to the Air Force. Does the transfer of this space surveillance system represent any retreat from involvement in space activities by the Navy? To further elaborate on that, why did not the Navy transfer any outyear funds to the Air Force for operation of upgrade of this asset, which both Secretary Teets and Admiral Ellis described as very important to the space surveillance mission?

Admiral MAYO. Sir, we have done the naval space surveillance system, so-called “the fence,” for years. But as we look to the future and how to implement the Rumsfeld Commission Report, we felt we would best be served in the Navy and within DOD if we concentrated on what we consider to be core competency. Because of the large efforts that the Air Force does also in space surveillance, we thought it best to see if our efforts could be integrated and rationalized with their efforts. That is the course that we are embarked upon, and that has been directed by PDM1 from last year.

The funds for outyear, as I understand it—and I would be glad to supply more information for the record—were gathered up by the Department of Defense. I think what is going on is that the Department of Defense is awaiting the ultimate recommendation from Secretary Teets as to what the future of this naval space surveillance fence should be.

[The information referred to follows:]



DEPUTY SECRETARY OF DEFENSE
1010 DEFENSE PENTAGON
WASHINGTON, DC 20301-1010

DEC 12 2002

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
UNDER SECRETARIES OF DEFENSE
DIRECTOR, DEFENSE RESEARCH AND ENGINEERING
ASSISTANT SECRETARIES OF DEFENSE
DIRECTOR, OPERATIONAL TEST AND EVALUATION
COMMANDERS OF THE COMBATANT COMMANDS
DIRECTOR, PROGRAM ANALYSIS AND EVALUATION
DIRECTOR, ADMINISTRATION AND MANAGEMENT
DIRECTORS OF DEFENSE AGENCIES

SUBJECT: Program Decision Memorandum (PDM) (U)

(U) This memorandum transmits my decisions regarding Department of Defense programs for fiscal years 2005-2009. The changes directed should be reflected in the budget.

(U) In a number of instances I have directed a military department or agency to provide additional funding within existing resources for program adjustments. The programmatic reductions necessary to provide these additional funds may not be made in the Defense Health Program, the National Foreign Intelligence Program, or the Special Operations Forces Program, and should be consistent with the priorities established in the Defense Planning Guidance.

(U) These decisions establish baselines for the programs they affect. Absent specific approval to depart from those baselines, DoD components are to maintain them in their FY 2005-2009 program proposals.

(U) A list of the studies and analyses directed by this PDM is attached. The principals responsible for them should designate points of contact to the Director, PA&E by December 20, 2002, and should deliver the reports to his office on their completion.

A handwritten signature in black ink, appearing to read "Paul Wolfowitz".

Attachments

**PDM I
TIER II**

24. Space Operations and Access

(U) Navy Fence

Air Force, Navy

Transfer responsibility for the Navy Space Surveillance Fence from the Navy to the Air Force. Transfer funds as shown in the following table. USAF/NRO provide the Deputy Secretary of Defense with the results of a study on whether to upgrade or terminate the system as well as how to provide an alternative Space Control Center by March 15, 2003.

UNCLASSIFIED

	TOA (Current \$M)						
	FY04	FY05	FY06	FY07	FY08	FY09	FY04-09
OSD Transfer from Navy	--	+33.5	+33.9	+33.2	+33.3	+33.7	+167.6
PE 0305910F, R,D,T, and E-Air Force (Transferred from Navy)	+1.0	--	--	--	--	--	+1.0
PE 0305910F, Operation and Maintenance-Air Force (Transferred from Navy)	+21.0	--	--	--	--	--	+21.0
PE 0305910F, Other Procurement-Air Force (Transferred from Navy)	+10.0	--	--	--	--	--	+10.0
PE 0305927N, R,D,T, and E-Navy (Transferred to Air Force)	-1.0	--	--	--	--	--	-1.0
PE 0305927N, R,D,T, and E-Navy (Transferred to OSD)	--	-1.0	--	--	--	--	-1.0
PE 0305927N, Operation and Maintenance-Navy (Transferred to Air Force)	-1.7	--	--	--	--	--	-1.7
PE 0305927N, Operation and Maintenance-Navy (Transferred to OSD)	--	-1.6	-1.6	-1.6	-1.6	-1.7	-8.1
PE 0303998N, Operation and Maintenance-Navy (Transferred to Air Force)	-19.3	--	--	--	--	--	-19.3
PE 0303998N, Operation and Maintenance-Navy (Transferred to OSD)	--	-18.9	-20.2	-19.6	-19.7	-20.0	-98.4
PE 0305927N, Other Procurement-Navy (Transferred to Air Force)	-10.0	--	--	--	--	--	-10.0
PE 0305927N, Other Procurement-Navy (Transferred to OSD)	--	-12.0	-12.0	-12.0	-12.0	-12.0	-60.0

Senator ALLARD. Thank you.

I want to thank you, gentlemen, for showing up before the subcommittee, and thank the subcommittee members for being here today and for their questions. You are all doing a good job. Stay in touch, good to have you here before us, and good luck.

Admiral MAYO. Thank you, Senator, and thanks to the subcommittee. Thank you.

Senator ALLARD. I adjourn the subcommittee.

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR JEFF SESSIONS

IMPACT OF MOSCOW TREATY RATIFICATION

1. Senator SESSIONS. Admiral Ellis, now that the Senate has ratified the Moscow Treaty, please share your assessment of the implications that this new strategic relationship between the United States and Russia will have for the structure of the strategic forces of the United States?

Admiral ELLIS. This treaty reflects our new relationship with Russia that moves beyond the adversarial framework of the Cold War to one of mutual confidence and cooperation. More important than the actual reductions, however, is the affirmation

by our two Presidents that our nations have entered into a new relationship based upon trust, with the goal of developing a genuine partnership, strengthened through cooperation and friendship.

Under this treaty, both sides can make reductions in their own way, according to what serves their own best interests. Each side will reduce forces according to its own plan and will determine for itself the composition of its strategic forces, subject to agreed overall limits. Both countries will retain the flexibility required to ensure their future security.

MISSILE DEFENSE DEPLOYMENT

2. Senator SESSIONS. Admiral Ellis, from your vantage point as the Commander responsible for system employment, are there potential advantages to be gained by deploying the Ground-Based Midcourse Defense (GMD) and the Sea-Based Midcourse Defense System (SMD) segments of our missile defense system prior to completion of all required operational tests?

Admiral ELLIS. The ballistic missile threat is expanding, and fielding viable defensive capabilities as they become available is the prudent choice to more effectively increase the security of our Nation, our forces, our allies, and our friends. Ballistic missile defense is inherently a multi-command and multi-regional task, and, as the Missile Defense Agency acquires systems, U.S. Strategic Command will bring a warfighter's focus to most effectively and efficiently integrate and operationalize the system on a global scale.

The systems will be tested in an operationally representative mode. By testing in this manner, initial defensive capability can be provided to the Regional Combatant Commanders without having to wait for all operational testing or even initial operational capability. This is a very positive plan, initial defensive capability is available to the Nation and the technical experts designing and acquiring the systems can see how the operators use them, thereby having the opportunity to refine systems in the early stages of development.

FUNCTIONING OF THE REORGANIZED U.S. STRATEGIC COMMAND

3. Senator SESSIONS. Admiral Ellis, as combination of the functions previously resident in the former U.S. Space Command and the U.S. Strategic Command mature within the reorganized U.S. Strategic Command, are you aware of any additional legislative assistance necessary to ensure the continued smooth functioning of your command given your new responsibilities?

Admiral ELLIS. As you are well aware, Unified Command Plan Change 1 brought the functions of the former U.S. Space Command and Strategic Command together on October 1, 2002. Change 2 signed by the President on January 10, 2003, assigned the command new responsibilities in missile defense integration, global strike, DOD information operations, and C⁴ISR. As we develop organizational structures, processes, and concepts of operations for these newly assigned missions, we will review the need for any legislative assistance. Although we currently have no legislative issues, I look forward to working with Congress if requirements are identified.

ARMY SPACE TRANSFORMATION

4. Senator SESSIONS. General Cosumano, this budget is the Department of Defense's most concerted attempt at transformation. Would you outline the vision for Army Space transformation, and why it is important?

General COSUMANO. Senator, the vision for Army Space transformation directly supports the advanced full-spectrum decisive operations described in the Army's Objective Force concept.

Army space operations will focus on five essential tasks to ensure that the Objective Force will successfully achieve decisive victory. These five essential space operations tasks are to support increased deployability and reduced theater footprint; achieve situational understanding "Off the Ramp" during entry operations; support precision maneuver, fires, sustainment, and information; enable continuous information and decision superiority and protect the force during all phases of the operation.

The Army has already transformed a large portion of the Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C⁴ISR) aspects of these tasks for Army and Joint Services. This occurred through fielding of the Tactical Exploitation System (TES) and its Joint variants (the Navy TES-N as part of the Joint Fires Network, the Marine Corps Tactical Exploitation Group,

and the Air Force ISR Manager), all of which is playing a critical role in Operation Enduring Freedom and will again if we go into conflict.

Transformation of the Army's space operations is critical to maintaining a technological edge of superiority over our adversaries. Space support will be reliable and timely, and operational friction with the warfighter will be minimized. The central thrust of Army space operations is to reduce technical and procedural seams in the system of systems. Army space operations will be consistent with the Army's responsibility to conduct prompt and sustained land combat and win the Nation's wars.

U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND SUPPORT FOR U.S. CENTRAL
COMMAND

5. Senator SESSIONS. General Cosumano, much has been made in both the press and in committee hearings about the importance of space-based capabilities in the Afghanistan campaign. The current build-up in the Central Command area of responsibility also places a heavy demand on our space-based assets. Can you comment on the Army's role in space in the current operations, and on your assessment of the adequacy of our capabilities?

General COSUMANO. Yes, sir. The U.S. Army Space and Missile Defense Command (USASMDC) continues to provide space support across a multitude of U.S. Central Command (CENTCOM) elements. Satellite communications is the most obvious single space-based capability used by deployed forces of all services. As your question implies, there is an ongoing concern that the capability of these systems is not adequate to support the kind of information intensive operations that we are currently conducting in the Middle East, and in which we envision the Objective Force will be involved. The Air Force is working on providing new satellites to address future bandwidth requirements. Recent launches of new MILSTAR and DSCS satellites are a great example of continuing improvements to our space architecture. In the meantime, the Army performs the critical function of allocating these limited resources to the highest priority users.

The Army has FA40 Space operations officers working closely with Joint Task Force (JTF)-180, the Combined Forces Land Component Commander (CFLCC), V Corps and with various Special Forces staffs. In addition, our Army Space Support Teams are deployed in theater to provide space force enhancement products to both Army and Marine Corps ground forces. The Space and Missile Defense Battle Lab in Huntsville developed and fielded the Space Support Element Toolset—Light, in short order. The toolset is an independent, high capacity, secure communications capability for our deployed space forces. It provides a significant increase in our ability to push high resolution, commercial imagery forward to deployed commanders. As an example, the U.S. Army Space Command's Spectral Operations Resource Center (SORC) recently delivered unclassified commercial imagery for CENTCOM press briefings. With regard to missile defense, the Nation's in-theater Joint Tactical Ground Station (JTAGS), manned by both Army and Navy personnel, is providing continuous 24/7 tactical ballistic missile (TBMs) early warning to our forces. This system, deployed shortly after September 11, is now a permanent part of the theater missile early warning architecture which is vital in providing our warfighters protection from enemy TBMs.

One of the Army's biggest uses of space is to derive intelligence. The Army's Tactical Exploitation of National Capabilities (TENCAP) such as the Tactical Exploitation System (TES) and its joint variants play a crucial role in tasking, downloading, processing, and disseminating that information in the theater. As far as adequacy is concerned, the Army and the rest of DOD are working on a number of programs to improve the detail and responsiveness of national systems for today and tomorrow. I think we are on the right path to ensure that the Objective Force has a greatly improved capability to request and receive the right information quickly, and in a usable form.

The Army's Space-Based Blue Force Tracking Mission Management Center provides near real time location and status of elements equipped with tracking devices into the theater common operating picture (COP). This capability became operational following the events of September 11, 2001, and has supported the CENTCOM area of responsibility.

Finally sir, the USASMDC Technical Center has been able to accelerate a number of test and evaluation assets, which we deployed and made operational well ahead of schedule in order to support the war effort.

QUESTIONS SUBMITTED BY SENATOR BILL NELSON

INCREASED DEMAND FOR BANDWIDTH AND BANDWIDTH MANAGEMENT

6. Senator BILL NELSON. Secretary Teets, the Department of Defense is rightly concerned with increasing the available communications capacity, or bandwidth, available to the warfighter. New, more capable communications satellites will be critical to this effort. Equally critical, perhaps, will be the less visible efforts to make better use of the available bandwidth, using innovative software programs, for example. What sort of bandwidth management and control programs do you have in place to ensure that the space systems you are developing make maximum use of communications bandwidth now available?

Secretary TEETS. Making more efficient use of existing bandwidth is an ongoing effort in several areas:

a. In the satellite area, we have upgraded our last four Defense Satellite Communications System (DSCS) satellites as part of the Service Life Enhancement Program to include higher power transmitters and better receivers that result in higher throughputs within the same frequency band. Similar efforts are being taken in the designs of both the Wideband Gapfiller and Advanced Extremely High Frequency (EHF) satellites. We also use multi-beam antennas and are moving to phased arrays in order to implement "frequency reuse" techniques—i.e., use the same frequency in multiple areas within the satellite field of view.

b. In the terminal area, we have upgraded many of our existing Super High Frequency (SHF) terminals to use more efficient modulation schemes. In addition, both the Ground Multi-Band Terminal (GMT) and the Family of Advanced Beyond Line of Sight Terminal (FAB-T) programs are being designed with bandwidth efficient modulation as a key requirement. Use of more efficient modulation schemes allows us to transmit more bits of data in each hertz of frequency spectrum. In the UHF area, we are continuing to implement Demand Assigned Multiple Access (DAMA) terminals at our ground locations and on our airborne platforms. We have increased capacity 35 percent in 2002 by aggressively implementing DAMA capability. We are using an unprecedented amount of DAMA to execute Operations Enduring Freedom and Iraqi Freedom. In fiscal year 2005, DAMA will be fully operational and is expected to increase capacity another 25 percent. Approaching the bandwidth shortage from another angle, USSTRATCOM is leading an effort to identify and reduce interference, which robs us of useable capacity. Each channel we recover would cost \$83,000 per year to replace from a commercial source. So far, the effort has resulted in the recovery of six channels in CONUS and we are targeting long-term sources of interference emanating from foreign countries via the State Department. Attempting to resolve interference issues has highlighted a dramatic need for DOD owned and operated geo-location capabilities to assist operators in quickly rectifying interference that occurs regularly throughout the SATCOM spectrum. We continue to pursue any available capability that can assist with this effort.

c. We are implementing the Global Broadcast System (GBS) in order to more efficiently transmit broadcast type of information to multiple users simultaneously, instead of sending the same information on multiple channels. In addition, we will be migrating GBS to an Internet Protocol architecture, which will allow for even more dynamic and efficient bandwidth use within GBS.

d. In addition to these technical means of increasing bandwidth efficiency, we also use management processes. Access to all military satellite resources is controlled by USSTRATCOM. They look at all requirements across all services and agencies and allocate satellite resources to individual users, depending on the specific requirement and its priority. They also monitor satellite usage to ensure that individual users are remaining within their allocation. When a specific requirement has been satisfied, the satellite resources used to meet that requirement are then reallocated to another user. In order to accomplish this allocation process, USSTRATCOM makes use of communications planning tools. These tools permit USSTRATCOM to satisfy the maximum possible number of users within a given satellite bandwidth.

As an example, in the Milstar system, apportionment is the process used to allocate bandwidth to the user community. Communications planning tools are used to allocate these slots and monitor the user community to ensure compliance. For Milstar, the Milstar Communications Planning Tool-Integrated is the current communication planning tool being used. This year, we are fielding the Automated Comm Management System (ACMS), which provides additional automated capability to allocate and monitor bandwidth efficiency. Similarly, our SHF control systems are in the process of being updated with the latest technology with the introduction of Wideband Gapfiller Satellites. Existing control systems will be replaced by the Common Network Planning System and the Integrated Monitoring and Control System.

These upgrades will provide increased flexibility in planning the satellite communications requirements and bring on line new technologies to monitor and control the satellite networks.

SPACE SYSTEMS SOFTWARE PROBLEMS

7. Senator BILL NELSON. Secretary Teets, space programs rely heavily on computer software. Both NASA and the Department of Defense have had problems in recent years with software. NASA has lost a Mars probe because of a software problem, and the Department of Defense almost canceled the SBIRS-High program in part because of software problems and delays. Last year's National Defense Authorization Act required all of the military services to establish programs, by April 1, to improve software acquisition and establish metrics to monitor software performance. What metrics do you use to monitor the progress of software development for space programs and how do you know when a program's software development is not going well?

Secretary TEETS. On 21 March, OSD issued a memo providing Department-wide guidance on Section 804, requiring each service to define and develop a software acquisition process improvement program and to report the status within 90 days (13 June). SAF/US is a senior member of the Air Force Software Steering Group (AFSSG), the Air Force lead in addressing the OSD memo and Section 804. The AFSSG Working Group has been working this issue since February, briefing and receiving feedback from the AFSSG Principals at the March AFSSG meeting. Currently the Working Group is developing the framework and identifying the already existing resources for a centralized AF program.

In addition to the coordinated AFSSG efforts, the Space and Missile Systems Center (SMC) is in the midst of reinvigorating the Air Force's approach to space program software acquisition in concert with the Aeronautical System Center's Air Force-wide software acquisition reform initiative. SMC is working with Carnegie Mellon University's Software Engineering Institute to modify the widely-used Capability Maturity Model Integration industry standard for evaluation of the maturity of software systems engineering development efforts at each of its program offices and contractors. Associated metrics are being designed to identify incompatible or optimistic performance, cost, and schedule baselines; software engineering staff issues such as instability, shortages, or lack of training and experience; and inadequate software risk identification and management. Use of more applicable metrics that better address cost, schedule, and quality in conjunction with rigorous standards, peer reviews, independent evaluations, and thresholds whose breach will trigger corrective action will enable early warning of potential problems for mitigation while minimizing the risk of duplicating past software engineering problems.

8. Senator BILL NELSON. Secretary Teets, what in your view is the primary reason for the many software problems; is it not enough people, poor management, unclear requirements, too much reuse of software, or something else?

Secretary TEETS. There is no single primary cause of space program software problems. In our experience, multiple contributing factors collectively plague software development:

- Lack of experienced software engineering personnel. Shortages of qualified people across the spectrum of software development, from design to testing, result in consistent understaffing of these efforts. Contractors often attempt to compensate by requiring overtime, but fatigue burns out skilled personnel and causes more mistakes that require additional downstream rework, with attendant cost and schedule impacts.
- Lack of proper contractor emphasis on software development. Contractor management often streamlines software development efforts when under cost and schedule pressure, decreasing the scope and/or frequency of peer reviews, combining or eliminating levels of software testing, postponing integration until the latter stages of software development, or scheduling more software tasks in parallel. The end result: discovery of substantial software defects late in development efforts, when they are much more expensive and time consuming to fix.
- Government inattention to contractor software efforts. By strongly emphasizing cost and schedule targets while poorly enforcing disciplined contractor software development processes, the Government fails to display concern about software engineering or hold companies accountable for poor software development practices.

- Overly optimistic bids. The Government has gotten away from emphasizing low bids over best value; however, the tendency remains for contractors to bid low on ambitious projects. The result is often an underestimate of the required lines of code, overestimate of the amount of usable commercial and reuse software, and overestimate of attainable software development productivity in order to achieve these impossibly low bids.
- The increasing complexity of space systems. As systems become more complicated, ever more complex software packages are required to link and control their various elements. Growth of system software development technical, cost, and schedule risks is commensurate with software's increasing centrality to space systems.

The Air Force is working to improve its software engineering metrics, increase use of independent cost estimates, hire additional software engineering technical support, and include software in source selection criteria. These and other measures will help prevent the recurrence of recent software engineering problems in future acquisition efforts.

DOD/NASA COORDINATION AND SHUTTLE REPLACEMENT

9. Senator BILL NELSON. Secretary Teets, late last year, both NASA and Air Force officials announced that they planned to increase their cooperation in aerospace technology development to achieve efficiencies and share expertise. You were quoted as saying that this cooperation was likely to occur in the Space-based Radar program as well as the follow-on program to the EELV launch vehicle. A memorandum of agreement signed October 8 stated that "additional cooperative efforts are possible and desirable, including cross utilization of facilit[ies] . . . sharing of support services, and leveraging of science and technology investments."

Increased cooperation was to manifest itself in the 2004 budget request. In the wake of the Space Shuttle Columbia tragedy, the need for cooperation is even more urgent. Specifically, what is the DOD doing to explore manned space alternatives, help NASA explore future alternatives to the space shuttle, institute joint research and development programs, and otherwise examine the future military requirements for manned space flight?

Secretary TEETS. The Air Force and NASA are cooperating in many areas from space technology to launch infrastructure. This cooperation is being managed at the very highest levels through the Air Force, NASA, Director of Defense Research and Engineering, United States Strategic Command, and National Reconnaissance Office Partnership Council. This Council is chaired by Mr. O'Keefe; General Lord, the Space Command Commander; Admiral Ellis, the Strategic Command Commander; Dr. Sega, Director of Defense Research and Engineering; and me, and meets semi-annually to ensure cross talk at all levels of our organizations.

Several successful examples of our mutual sharing occur in the area of space technology. We have been sharing technology with NASA from our X-43 liquid hydrogen scramjet demonstration program, and our Experimental Spacecraft System (XSS)-11 for use in NASA's Mars Sample Return Mission. Also, NASA has been providing technology for DOD satellite efforts, including the National Polar-Orbiting Operational Environmental Satellite System's risk reduction effort, and SBR's Analysis of Alternatives (AoA). We are also transforming our communication architecture by integrating communications among DOD, the intelligence community, and NASA.

In the area of launch infrastructure and support, we are providing mutual benefit through such efforts as our joint Delta II procurement strategy and review teams. We are also exploring strategies for the future including new spacelift architecture, both reusable and expendable, and Operationally Responsive Spacelift (ORS).

The ORS effort is to provide rapid, economic access to space, and is being explored through an AoA, with full NASA involvement. The AoA will define comprehensive solutions to satisfy requirements for responsive launch and on-orbit operations. This will lead to the demonstration of a small launch vehicle, one of our fiscal year 2004 new starts. Ultimately, we expect the ORS effort to lead to a reusable launch vehicle.

Concerning specific manned space flight requirements, at this time the Air Force has no initiatives addressing them, as those are unique NASA requirements.

10. Senator BILL NELSON. Secretary Teets, how much DOD funding is associated with this effort?

Secretary TEETS. The Air Force is requesting \$24.4 million in fiscal year 2004 to begin the ORS program.

GLOBAL POSITIONING SYSTEM III

11. Senator BILL NELSON. Admiral Ellis, the ability to jam Global Positioning Systems (GPS) has grown in recent years. From your perspective as a warfighter, can you share your thoughts for the need for GPS III and when this might be needed?

Admiral ELLIS. In my role as the combatant commander responsible for providing navigation and timing signals to users worldwide, I fully support the expeditious improvement of the GPS constellation. While the acquisition of GPS jammers by our potential adversaries increases, the performance of today's GPS constellation is bound by the original design. It is imperative we field a new generation of GPS satellites that possess robust resistance to countermeasures, improved signal integrity, global availability, and spectrally separate military and civilian signals.

12. Senator BILL NELSON. Admiral Ellis, can you also give a sense of the anticipated improved capabilities for GPS II-F and II-R and if these capabilities are sufficient to allow a 2-4 year delay in the GPS III program?

Admiral ELLIS. Planned GPS modernization includes 12 GPS IIF, 8 Block IIR, and 5 IIR-M satellites. These upgraded satellites will improve the warfighter's ability to control power output, commonly referred to as "flex power," partially mitigating the effects of jamming. Additionally, the five IIR-M satellites will introduce a second civil frequency and a new military signal that provides the user with direct access to an encrypted, precise navigation signal, reducing vulnerabilities to intentional and unintentional interference.

Additionally, over the last year the Air Force conducted a review of the GPS III program and developed a more efficient acquisition strategy to meet warfighter needs. This new strategy reduces development and fielding time by more than 2 years, allowing a later program start while maintaining the first launch in fiscal year 2012. The Air Force will also change from a "launch on need" strategy, which adds a new satellite as one ages out, to a "launch on capability" strategy, which launches each GPS III satellite as it is developed.

WEAPONIZATION OF SPACE

13. Senator BILL NELSON. Secretary Teets, the Space Commission believed unanimously and concluded that the "U.S. has an urgent interest in promoting and protecting the peaceful use of space." Is current policy consistent with this recommendation?

Secretary TEETS. The recommendations of the Space Commission are consistent with current national space policy. According to this policy, "The United States is committed to the exploration and use of outer space by all nations for peaceful purposes and for the benefit of all humanity." "Peaceful purposes" allow defense and intelligence-related activities in pursuit of national security and other goals. The Department of Defense is directed by national policy to "maintain the capability to execute the mission areas of space support, force enhancement, space control and force application. Consistent with treaty obligations, the United States will develop, operate and maintain space control capabilities to ensure freedom of action in space, and, if directed, deny such freedom of action to adversaries. These capabilities may also be enhanced by diplomatic, legal and military measures to preclude an adversary's hostile use of space systems and services.

14. Senator BILL NELSON. Secretary Teets, when will the revisions to U.S. national security space policy be completed, will it urge weaponization of space, and does the administration plan to consult with Congress before the new space policy is completed?

Secretary TEETS. In June 2002, the President directed the National Security Council (NSC) to initiate a phased approach to updating various aspects of the national space policy, and this process is still underway. The NSC sets the timetable for this review. The remote sensing national policy is nearing completion, and the space transportation policy is on hold pending results from the Space Shuttle Columbia accident investigation board. I understand additional space policy reviews are planned. Current national space policy promotes the "use of outer space for peaceful purposes." We will work to ensure that all future policies support this goal, while preserving our right to protect and defend our critically important defense and intelligence space systems.

EELV FUNDING

15. Senator BILL NELSON. Secretary Teets, is there any active consideration to modifying the EELV program to make it "man-rated" for use by either NASA or any future manned military space flight?

Secretary TEETS. Currently, the Air Force does not foresee a requirement for manned military space flight. Therefore, there are no plans on the part of the Air Force to modify the Evolved Expendable Launch Vehicle (EELV) program to certify either the Atlas V or Delta IV for human flight. Based on their requirements, NASA has been working directly with Lockheed Martin and Boeing on the possibility of human-rating the EELV boosters.

SPACE LAUNCH RANGE FUNDING REDUCTIONS

16. Senator BILL NELSON. Secretary Teets and Admiral Ellis, the fiscal year 2003 budget request for space launch range modernization was \$82 million and anticipated that the fiscal year 2004 budget request would be \$106 million. The actual fiscal year 2004 budget request is only \$63 million, a reduction of \$43 million. With the reduction is a program shift away from modernization to stabilization. This is a significant decrease in funding and a significant program shift. The goal to modernize the ranges to achieve a 20 percent reduction in operations and maintenance costs has been abandoned, as well. Why has the funding for launch ranges been decreased so significantly and why has the Air Force walked away from the laudable goal of a 20 percent reduction in operations and maintenance costs for the ranges?

Secretary TEETS. The Air Force has shifted its focus away from the increasingly costly and time-consuming modernization program to completely standardize and automate the ranges, with the theoretical possibility of follow-on operations and maintenance (O&M) cost savings. In its place is a less costly and more incremental recapitalization and sustainment approach to replace or upgrade existing, obsolete range systems, without compromising necessary support for the Nation's launch and test mission requirements through the foreseeable future.

There are two primary reasons for this change: 1) launch rates have not increased as dramatically as projected when the range modernization efforts began, diminishing the need to reduce range reconfiguration times and increase range flexibility through full-scale standardization and automation; and 2) the Air Force needed to reallocate investment dollars earmarked for range modernization to other higher priority space modernization needs.

At the same time, the Air Force determined the 20 percent O&M savings goal established nearly 10 years ago is no longer realistic, given the significant changes in program direction and the emergence of other O&M cost drivers not directly influenced by range modernization. Accordingly, the Air Force decided to abandon this goal and more realistically seek to offset fact-of-life range O&M cost increases by replacing older, more costly systems and implementing more cost effective sustainment efforts.

Admiral ELLIS. Our position at U.S. Strategic Command is that uninterrupted, on demand access to space is fundamental to ensuring the responsiveness necessary to replenish or augment our critical on-orbit capabilities. Inextricably linked to assured access is maintaining viable gateways to space. We must work with our partners in Government and industry to search for the most effective and fiscally responsible strategies to ensure a responsive, bicoastal launch capability for the long term. I look forward to being a part of the discussions on the long-range vision for our launch complexes.

17. Senator BILL NELSON. Secretary Teets and Admiral Ellis, could you provide an optimized schedule for achieving this goal, the annual cost of the modernization, and the savings on an annual basis?

Secretary TEETS. As indicated before, the goal of achieving a 20-percent cost savings is no longer justifiable. Therefore, the Air Force has not developed an optimized schedule to achieve 20 percent O&M cost savings, nor has it determined the associated annual costs of modernization and savings on an annual basis. Instead the Air Force is focused on modernizing, recapitalizing and sustaining the ranges to the degree necessary to reliably and responsively support launches for the foreseeable future, with O&M cost containment as an important, but not overriding factor.

Admiral ELLIS. STRATCOM's role is to identify operational requirements, and we will also exercise our oversight responsibilities for space launch ranges. I am personally committed to helping determine the most effective, streamlined methods of modernizing space launch ranges to ensure responsive, bicoastal launch capabilities. Our vision is that as we modernize the complexes, we must explore and analyze op-

portunities to find new ways to provide not only replacement, but improved capability with less infrastructure where possible.

18. Senator BILL NELSON. Secretary Teets and Admiral Ellis, do you believe the current state of the space lift ranges is adequate to meet space launch requirements for the future?

Secretary TEETS. Yes, our shift in emphasis from modernization to recapitalization and sustainment will allow us to meet the space launch requirements for the foreseeable future. However, if we look out to 2020 and beyond, the need for a global launch and test range capability (exceeding the current Eastern and Western Ranges' capabilities) to support operationally responsive spacelift makes a compelling argument for renewed investments in range modernization beyond the FYDP. Then the likely emphasis will be on space-based launch and test range assets.

Admiral ELLIS. In the near term, yes. As we move past the near term, we must develop a range capability that supports flexible, operationally responsive spacelift to remain the preeminent space-faring nation. This effort will require renewed, dedicated investments in range modernization, and we must strive to find effective and fiscally efficient methods of supporting these requirements.

Also important, we will address potential issues such as the vulnerability of our launch pads as we analyze the full range of diverse and increasingly complex global threats our Nation faces. We will identify possible single point failures within our space launch complexes and other data essential to ensuring the long-term security and viability of our spacelift program.

EUROPEAN GPS INTERFERENCE ISSUES

19. Senator BILL NELSON. Secretary Teets, the European Union plans to launch their own version of the GPS, called Galileo, in 2008. Despite U.S. protests, I understand they may decide to use the same frequency band that the U.S. GPS uses. This could potentially result in interference to the U.S. GPS signal. If Galileo uses the same frequency as the U.S. GPS, how much of a problem would that be and what action is the U.S. taking to persuade the Europeans not to use the same frequency?

Secretary TEETS. The United States firmly opposes the European Commission's (EC) proposal to overlay Galileo signals on the GPS Military code (M-code). Overlay is in direct conflict with U.S. and NATO security interests. Specifically, it complicates our ability to deny our enemies access to the GPS signal while preserving U.S. and allied use of the system. Any overlay of the GPS M-code is unacceptable to the United States and should be to the European Union (EU) Member States as well.

The United States Government (through a Department of State-led team) has been engaged in discussions with the EU for the past several years regarding cooperation between GPS and the proposed Galileo system. Part of that discussion has been focused on alternative signals, which we believe provide equivalent performance capabilities for Galileo users. Our GPS experts are participating in Technical Working Groups with the EC experts to discuss these alternatives. Our goal is to help facilitate a successful Galileo program, without eroding U.S. and NATO security interests.

SPACE-BASED RADAR

20. Senator BILL NELSON. Secretary Teets, the Air Force has requested substantial funding in fiscal year 2004 to develop a space-based radar system which would be capable of global detection and tracking and possibly imaging of various ground targets. Such a system, once fielded, also could possibly be used to provide global tracking of ballistic missiles. Would the space-based radar system, as currently envisioned, be capable of providing ballistic missile tracking data?

Secretary TEETS. The space-based radar (SBR) would be capable of tracking mobile ballistic missiles and their launchers as they traverse the earth's surface prior to launch. Also, Synthetic Aperture Radar (SAR) imaging is a baseline requirement for space-based radar. These missiles and launchers can be imaged by the space-based radar.

Some information on tracking the missiles in flight may be received and the complete phase history data will be transmitted to ground processing. However, airborne targets tend to have lower radar cross-sections (radar signatures), operate at higher speeds, and have significantly greater agility than surface targets. This requires radar to have a faster scan and range gating capability and from space, targets need to be detected against a complicated surface clutter background. This pro-

vides a greater challenge in terms of radar antenna size, power required, and demands advancements in processing techniques. A cost effective space Airborne Moving Target Indication (AMTI) solution is a problem of technology readiness. The likely time frame of availability is well beyond the schedule of the first increment of SBR.

21. Senator BILL NELSON. Secretary Teets, as you look at the long range future of the space-based radar do you see it becoming the primary ground moving target locator or that it will be used in conjunction with other platforms such as J-STARS?

Secretary TEETS. Even in the long term, SBR will be used in conjunction with other platforms. Persistent surveillance isn't envisioned to be accomplished by one system, but a system of systems. Radar from either space or air brings day/night, all-weather target identification, and tracking capability. SBR adds global access with multi-theater support, theater-wide dynamic surface picture, and near-continuous, non-provocative intelligence preparation of the battlefield. There are no overflight restrictions or political sensitivities. Space basing offers reduced terrain masking constraints, operational risk, and theater footprint. Nevertheless, aircraft platforms bring the benefits of higher transmit power and closer ranges, which provide capabilities that are not achievable from space. Each platform has its own strengths and weaknesses. A mix of platforms is the best approach to maximizing ground moving target indications coverage.

CONVENTIONAL WARHEADS ON ICBMS

22. Senator BILL NELSON. Secretary Teets, the Air Force is beginning a program to look at developing a non-nuclear warhead to be launched on an intercontinental ballistic missile (ICBM). Launching an ICBM at a target is a potentially provocative move, because ICBMs have nuclear warheads on them and if launched from a silo how would anyone be certain if the warhead were nuclear or conventional. Such a launch could easily be interpreted as a nuclear strike, greatly increasing the chance that any potential adversary would overreact. From a policy perspective, what is the justification for such a weapons system?

Secretary TEETS. The Air Force has studied use of an ICBM in a conventional role in the past. This concept has reemerged within the Air Force in a limited fashion. From a policy perspective, it is only one of various possible alternatives being examined to meet the Nuclear Posture Review (NPR) goal of enhancing our deterrent posture with a mix of advanced concepts, to provide the widest possible range of options for our Nation's leaders. The Air Force acknowledges there are sensitive issues associated with this type of system, in terms of international security and stability, and we will address these concerns as this capability is reviewed. These internal discussions simply allow us to weigh alternatives and in no way represent a decision to design, produce or deploy a conventional ballistic missile (CBM). In short, there is no developmental CBM effort underway, nor is one programmed in the current FYDP.

23. Senator BILL NELSON. Secretary Teets, what discussions has the U.S. had or would be needed with other countries about these non-nuclear ICBM programs?

Secretary TEETS. To our knowledge, there have been no discussions with other countries on this topic. If this capability evolves beyond the current conceptual stage, some dialogue may be necessary to address treaty implications, international law concerns, and similar issues.

24. Senator BILL NELSON. Secretary Teets, what are the plans to deploy and use such weapons?

Secretary TEETS. As stated above, this is simply an ongoing conceptual discussion based on new mission requirements. There are no current plans to deploy and use such a weapon.

25. Senator BILL NELSON. Secretary Teets, would such a program signal an abandonment of the land-based leg of the nuclear triad?

Secretary TEETS. A concept such as CBM would not signal abandonment of the land-based leg of the nuclear triad. The "nuclear triad" has evolved from the limited focus of the Cold War paradigm. Nuclear forces are now just one part of the "new triad" defined in the 2001 NPR. It includes: (1) both nuclear and non-nuclear strike forces, to provide a more robust deterrent; (2) active and passive defenses, including ballistic missile and air defenses; and (3) a responsive defense infrastructure for developing, building and sustaining required systems. This concept is underpinned by

enhanced Command and Control, Intelligence, Surveillance, Reconnaissance (C²ISR), and planning—all designed to ensure comprehensive, accurate and actionable information on an adversary's capabilities of military consequence.

In short, the NPR validated the continued need for nuclear ICBMs, stating, "ICBMs are a critical component of the New Triad. The focus of the Department's efforts are to extend the life of the Minuteman III weapon system until 2020 while beginning the requirements process for the next-generation ICBM." The NPR also embraces new concepts, similar to the CBM, as a way to enhance our deterrent force/strategic strike capabilities with a mix of advanced concepts, to provide the widest possible range of options for our Nation's leaders.

HIGH FREQUENCY ACTIVE AURORAL RESEARCH PROGRAM (HAARP)

26. Senator BILL NELSON. General Lord and Admiral Mayo, DARPA, the Navy, and the Air Force signed a Memorandum of Agreement to jointly invest \$118.5 million over 4 years to attempt to develop a high power, radio frequency, ground- or space-based transmitter that could potentially clear charged particles out of radiation belts and remediate a portion of the space environment to support space operations. Is this an example of a program that had been previously funded through congressional adds that is now considered an important portion of the defense science and technology budget request?

General LORD. Yes, congressional adds and funding for HAARP have definitely advanced space technology. This important program exploits extremely-low-frequency/very-low-frequency wave generated in the ionosphere for subsurface communications, detecting and characterizing underground structures, and for reducing charged particle populations in the radiation belts, which disrupt satellite systems and operations.

Admiral MAYO. Yes, the previous congressional funding of HAARP has provided an important contribution towards the potential capability for clearing charged particles and remediating a portion of the space environment. Development of this pioneering concept would exploit emerging ionosphere/high-power radiowave technology. The Air Force, Navy, and DARPA have embraced this technology through a coordinated MOA for addressing this remediation along with other potential applications such as imaging subsurface structures and enhancing submarine communications.

27. Senator BILL NELSON. General Lord and Admiral Mayo, given limited resources, how high a priority is this effort relative to other technology development efforts to support your service's space missions?

General LORD. A calm space environment is one important aspect to ensuring reliable, accurate space operations. HAARP is an exploratory effort to research innovative ways to stabilize the ionosphere. As a result, we believe this investment is very important to future space operations.

Admiral MAYO. Space protection is very important to maintaining space systems operations and is a critical capability. HAARP is an exploratory effort to research innovative ways to protect the environment in which these critical space assets operate. We believe this investment is important to future space operations.

NATIONAL AEROSPACE INITIATIVE

28. Senator BILL NELSON. General Lord, Admiral Mayo, and General Cosumano, the fiscal year 2004 budget request proposes \$363 million science and technology funding for the National Aerospace Initiative (NAI), a multi-service program to develop space-related technologies and improve our hypersonic flight and space access capabilities. This program is slated to be funded at nearly \$2 billion over the next 6 years. What are the goals of this major initiative?

General LORD. The Director of Defense Research and Engineering's (DDR&E) National Aerospace Initiative is to accelerate service development of technologies in the areas of high speed/hypersonic flight, space access, and space technology. The stated mission of NAI is to ensure America's continued aerospace leadership. The NAI goal is to do this by using an integrated, capability-focused, national approach that enables high speed/hypersonic flight; affordable, responsive, safe, reliable access to and from space; and in-space operation by developing, maturing, demonstrating, and transitioning transformational aerospace technologies.

Admiral MAYO. The overall vision of NAI is to ensure America's leadership in space. The three defined goals that support this vision are:

- Development and demonstration of technologies that enable air-breathing hypersonic flight;
- Development and demonstration of technologies that enable responsive, safe, reliable and affordable access to space; and
- Development and demonstration of technologies that enable transformational and responsive capabilities in space.

Further, the NAI objectives include science and engineering education for all Americans. This is truly a cross-cutting initiative that will have implications far beyond space.

General COSUMANO. Senator, there are three goals for the NAI. The first goal is to demonstrate sustained hypersonic flight to Mach 12 by 2012 and beyond—develop and demonstrate technologies to enable militarily responsive, low-cost, reusable access to space. In the nearer term, this effort offers the potential to reduce the time and cost of space access by 50 percent—consistent with goals put forth by the “Commission on the Future of the United States Aerospace Industry.” In the longer term, order-of-magnitude improvements are possible through the use of air-breathing propulsion concepts that do not require carrying an oxidizer during the boost phase—thus significantly reducing system mass. The second goal is to maintain U.S. technological superiority in four areas—space control, responsive payloads, intelligence, surveillance, and reconnaissance (ISR) and flexible communications. Space control means providing space situational awareness and the ability to defend space systems. Responsive payloads provide quick response deployment and employment of space capabilities. Third, there is ISR which provides for persistent, global ISR for the warfighter. There is also flexible communications, which ensure delivery of the right information to the warfighter anywhere at anytime.

29. Senator BILL NELSON. General Lord, Admiral Mayo, and General Cosumano, were those goals developed in coordination with the services?

General LORD. Technical experts from all the services participated in the development of the NAI goals.

Admiral MAYO. Yes, these goals and objectives were developed within the past year by a panel that included representatives from OSD and all the services. All services will also be represented on the NAI Board of Directors.

General COSUMANO. Yes, sir. In addition to the Army, national experts from the Navy, Marine Corps, Air Force, NASA, industry, and academia worked together over the past year to generate a comprehensive state-of-technology assessment and identify technical opportunities, such as flight demonstrations of supersonic and hypersonic cruise missiles, high-speed unmanned vehicles, long-range aircraft, and reusable, affordable access to space vehicles. Following this, four Synergy Group meetings were held from September 2002 through February 2003 to develop coordinated collaboration and implementation plans for the three NAI pillars. These meetings were jointly chaired by the Office of the Secretary of Defense (OSD) and NASA Headquarters. Senior-level representatives from the Army, Navy, Marine Corps, Air Force, Defense Advanced Research Projects Agency (DARPA), NASA Glenn Research Center, NASA Langley Research Center, NASA Marshall Space Flight Center, NASA Dryden Flight Research Center, Air Force Space Command, Headquarters Space and Missile Command, Air Force Air Combat Command, National Security and Space Integration (NSSI) office, and other appropriate organizations and agencies participated in the meetings. The result was consensus agreement on the NAI mission, goals, objectives, organizational structure, and roles and responsibilities.

30. Senator BILL NELSON. General Lord, Admiral Mayo, and General Cosumano, how are these efforts being coordinated with acquisition strategies and operational organizations?

General LORD. Air Force Space Command has been involved in the development of NAI strategy and planning. The NAI space technology area is well funded by current DOD S&T efforts, which are closely coordinated with the service’s acquisition strategies and operational plans. As an example, the near- to mid-term NAI space access technology plans are being coordinated with the ongoing Air Force Operationally Responsive Spacelift (ORS) Analysis of Alternative (AoA) being conducted by Air Force Space Command. As concepts are defined, refined, and selected through the ORS AoA process, these will be used to further refine the NAI space access technology development goals.

Admiral MAYO. Navy’s lead for NAI is ASN(RDA), who also has responsibility for oversight of all naval acquisition strategies. I believe this gives us reasonable assurance that NAI and our acquisition strategies will be coordinated and synchronized to the degree necessary.

Top level management issues and objectives for NAI are just now being finalized, so it may be premature to judge how well coordinated all is, or will be, with operations. I can assure you that I will work closely with ASN(RDA) to make certain that my operational needs and objectives will be met as appropriate by NAI.

General COSUMANO. In addition to a number of other operational commands (including U.S. Strategic Command, Air Force Space Command, and Air Force Air Combat Command), the U.S. Army Space and Missile Defense Command actively participated in the NAI planning process. As NAI moves forward, operational commands will also be represented in the NAI management organization to coordinate linkage of NAI technology activities with current and future acquisition strategies.

31. Senator BILL NELSON. General Lord, Admiral Mayo, and General Cosumano, how are the programs within the NAI consistent with the space-related missions of the individual services?

General LORD. The NAI space technology efforts are very consistent with the DOD space mission. For example, the NAI space access technology developments are directly applicable to the DOD space lift mission and will converge with specific service goals as we progress through our Operationally Responsive Spacelift Analysis of Alternatives. In addition, the NAI high speed/hypersonic programs do have potential applicability to the space lift mission as well as potential hypersonic missile applications.

Admiral MAYO. The emerging NAI management plan allows the services to participate to the level and degree as they see relevant to their needs. This level of flexibility allows the services to leverage NAI in a way that is fully consistent with their needs. Also, all NAI technology roadmaps will be developed with transition as a goal. This further ensures NAI will be responsive to our needs.

General COSUMANO. The NAI will develop and demonstrate technologies that will enable capabilities never before available to our warfighters such as long-range supersonic cruise missiles, hypersonic strike/interceptor missiles, a family of long-range hypersonic strike/reconnaissance aircraft, air-breathing space access, rapid insertion of surveillance satellites to expand remote area coverage, rapid dispensing of long range weapons during early stages of a conflict, and on-orbit space control. This breadth of capabilities supports the Army's mission.

SPACE SCIENCE AND TECHNOLOGY PRIORITIES

32. Senator BILL NELSON. General Lord, Admiral Mayo, and General Cosumano, what are the highest space S&T priorities for your service?

General LORD. The Air Force's highest space mission capability need in the mid-to far-term (fiscal year 2010–2030) is responsive spacelift. The Air Force is pursuing the following S&T efforts to enable responsive spacelift: Advanced Organic Matrix Composite (OMC) Material Concepts, Materials Supportability, Metallic Materials and Processes for Space Applications, OMC Materials and Processes for Space, Boost, Scramjet (Hypersonics), System Simulation and Flight Control, Advanced Spacecraft Mechanisms, Integrated Structural Systems, Advanced Control for Space Systems, and Adaptive Guidance and Control.

Admiral MAYO. In the area of space science, our current highest priorities include improved sensing of ocean, atmosphere and space environments for a number of applications including improved ISR and targeting, reduced navigation and communication outages and improved GPS and precision geolocation. Nearly every aspect of maritime operations, from safety of navigation to weapon selection and deployment, is dependent upon a clear meteorology and oceanographic picture. While nearly all the services and agencies deal with weather over land, only the naval services are so heavily dependent on timely and frequent forecasts of weather over water and sea conditions.

In the area of space technology, priorities include revolutionary optics for ISR, hyperspectral sensing, new techniques for optical communication and improved time keeping technologies.

General COSUMANO. There are two emphases in Army space S&T priorities. One is force enhancement technologies such as ISR, and position, navigation, and timing to extend and improve the operational capabilities of the Future Combat System (FCS) and the Objective Force; second is space control technologies to protect and secure our Nation's space assets while denying our adversaries the use of space. The focus of these technology efforts is to enhance our force's operations in theater, to augment space capabilities and protect them from the enemy.

Current funding allows the Army to develop and demonstrate advanced space technology applications for the Army's Objective Force. Advanced space force en-

hancement technologies include electro-optical, synthetic aperture radar, advanced data collection, processing and real time dissemination. The Army is currently pursuing efforts to process space data in real time to ultimately support a single integrated operational picture for the Objective Force. We are also pursuing development of advanced space control technology risk reduction efforts for ground-to-space surveillance and negation systems like the Space Surveillance Science and Technology Objective.

33. Senator BILL NELSON. General Lord, Admiral Mayo, and General Cosumano, what is your current investment in that area?

General LORD. The Air Force fiscal year 2004 President's budget requested amount for space-unique S&T is \$0.3 billion, which is 14 percent of the total Air Force fiscal year 2004 S&T request.

Admiral MAYO. The naval space S&T investment is approximately \$22 million per year.

General COSUMANO. Army space S&T funding is reflected in the Army Space Application Technology Program that funds force enhancement initiatives and space control programs. Space control technologies including sensor-to-shooter efforts are currently programmed for funding by the Army. Force enhancement technologies for ISR radars and radio frequency-based counter fire systems are also funded. These technologies support Objective Force operations as well as deny the adversaries the ability to use space against our forces.

The Army has programmed more than \$70 million from fiscal year 2004 through fiscal year 2009 for space control and force enhancement technology efforts. Space control efforts include space surveillance and negation technologies. Force enhancement technologies include distributed radar imaging, radio frequency early warning, and upper tier airship augmentation of space capabilities.

34. Senator BILL NELSON. General Lord, Admiral Mayo, and General Cosumano, what are your highest priority unfunded space S&T requirements?

General LORD. We manage the Air Force space S&T portfolio to minimize risk and maximize impact for the entire group of important long-term projects. Therefore, we tend to focus on "underfunded" rather than "unfunded" priorities. Our underfunded S&T priorities include the following areas: access to space, space control (space capability protection) and space force application.

Admiral MAYO. I currently cannot identify what I would call a high priority unfunded in the space S&T area. As we proceed with the development of our FORCEnet capabilities, we will be identifying specific capabilities and associated S&T needs. Some of the types of issues I will be examining include naval needs for increased communications bandwidth and improved ISR to provide quick and tailored response to conflicts. A candidate technology here may include small, low cost, tactical microsattellites and payloads to test new technologies for networking, SIGINT, communications and imaging. When those are identified, I will prioritize and forward them through the appropriate Navy channels.

General COSUMANO. Senator, for the Army, the immediate priority is to fund space control technologies supporting Joint programs and protecting the Objective Force. These technologies are terrestrial-based and support deployed joint forces, to include our FCS. The Army's long term priority is to fund space technologies that enhance the Objective Force by leveraging both Army and Joint investments. This will provide tactical in-theater exploitation of space resources and associated enabling capabilities.

[Whereupon, at 11:50 a.m., the subcommittee adjourned.]

**DEPARTMENT OF DEFENSE AUTHORIZATION
FOR APPROPRIATIONS FOR FISCAL YEAR
2004**

WEDNESDAY, APRIL 2, 2003

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

**DEPARTMENT OF ENERGY'S OFFICE OF ENVIRON-
MENTAL MANAGEMENT AND OFFICE OF LEGACY MAN-
AGEMENT**

The subcommittee met, pursuant to notice, at 10:02 a.m., in room SR-222, Russell Senate Office Building, Senator Wayne Allard (chairman of the subcommittee) presiding.

Committee members present: Senators Allard and Bill Nelson.

Majority staff members present: L. David Cherington, counsel; Brian R. Green, professional staff member; and Scott W. Stucky, general counsel.

Staff assistants present: Andrew Kent and Sara R. Mareno.

Committee members' assistants present: Douglas Flanders, assistant to Senator Allard; Aleix Jarvis, assistant to Senator Graham; and Peter A. Contostavlos, assistant to Senator Bill Nelson.

**OPENING STATEMENT OF SENATOR WAYNE ALLARD,
CHAIRMAN**

Senator ALLARD. I call to order the Strategic Forces Subcommittee of the Senate Armed Services Committee. This is a very busy time for Congress, considering the conflict in Iraq and considering the fact that we have a very compressed schedule in getting the Defense authorization bill out of the Senate and moving. As a result of that, we all have very tight schedules, and so I want to get started on time. I have a reputation for getting started on time. Other members, I think, will show up as we proceed forward with the hearing. We will give them an opportunity to make opening statements and then to ask questions, and we will call on them in the order of arrival, which is the way we do business around here.

The committee meets this morning to receive testimony from Ms. Jessie Roberson, the Assistant Secretary of Energy for Environmental Management, and Mr. Mike Owen, Director of the Department of Energy's Office of Worker and Community Transition. I would like to thank our witnesses for appearing before the Strate-

gic Forces Subcommittee today and providing testimony about the Department of Energy's vision for cleanup and closing all of the environmental sites and facilities and the subsequent challenges of handing over the long-term stewardship and personnel responsibilities to the soon-to-be-created Office of Legacy Management. I look forward to hearing your testimony.

In 1996, the vision of cleanup and closing Rocky Flats, Mound, and Fernald in 10 years was revolutionary. The original plan for these former defense nuclear weapons facilities was to complete cleanup in 2065. To many naysayers in 1996, a 10-year closure plan was impossible. Now it is not only seen as possible, but probable, and it has provided the manuscript for completing cleanup and closing the remaining Environmental Management (EM) sites much sooner and at much less expense than originally envisioned.

Hindsight is 20/20, but as it turns out the methods used by the EM program to accelerate cleanup also make the most sense environmentally. Reducing the largest risk first provides enormous benefits to the workers, to the environment, and to the surrounding communities, and also allows the sites to save resources formerly used merely to meet compliance requirements, which did nothing to further cleanup or reduce environmental risks.

Now the freed-up resources can be plowed back into the cleanup, greatly reducing the duration of the cleanup and thereby saving tens of billions of dollars across the EM complex.

It is important to note that none of the success of the EM program could have been done without the cooperation and commitment by the workforce. As an example, the workers at the 2006 closure sites have exhibited the highest level of professionalism even when knowing the better their performance, the quicker they will find their job has come to an end.

At Rocky Flats, where I have gotten to know the workers the best, I want to express my deepest appreciation for the pride they take in their work and the success that they will deliver to Colorado and to the Nation as other sites will now have a great cleanup and closure model to follow.

While I celebrate EM's successes, I also know there are still many challenges ahead. Maintaining the closure model that has proven to be successful at Rocky Flats, Mound, and Fernald does not mean it will necessarily be successful at the remaining four major EM sites. Moving to an acceleration cleanup and closure are not a simple plan you put in place and just implement.

The struggle to move Rocky Flats, Mound, and Fernald towards closure required a lot of cooperation by the States and local communities, respectively. It required and still does require a lot of cooperation by the other EM sites who stood by as only some of the sites were accelerated with increased funding. The EM sites further exhibited their cooperation when they took on missions to help coordinate waste treatment and final disposition responsibilities. As I already mentioned, it takes a lot of cooperation between management and the workers who will actually do the cleanup.

If there is one message I want to send the remaining EM sites, it is that cooperation is the key. This will require flexibility and compromise, but it also can deliver compelling results.

One example of how the post-2006 closure sites are about to be repaid is with increased resources. By accepting waste for processing from other sites which will allow Rocky Flats, Fernald, and Mound to close by 2006, there will be over \$1 billion of annual EM budget freed up to help accelerate closure for the remaining EM sites.

Additionally, there have been important lessons learned and new innovative cleanup processes adopted at the 2006 closure sites.

Last year, the EM program worked with the remaining EM sites and the States to work out initial agreements to accelerate their cleanup and closure as well. Although many of the details still need to be worked out—and I do not mean to steal Jessie Roberson's thunder on this—DOE has now redesignated all of the EM sites as closure sites, with the last of the cleanup to be completed by 2035 or sooner.

One of the biggest challenges that lies ahead for all of the EM sites is how they will be transitioned to assume their long-term stewardship and post-closure personnel responsibilities. The plan to create the Office of Legacy Management (LM) is a good first step in that it establishes the office which will assume these responsibilities. How the closure sites will be seamlessly transferred from EM to LM remains to be seen.

On the environmental side, the States and local communities need to be sure the stewardship responsibilities will be taken care of by Legacy Management both with short-term and long-term concerns. Additionally, the workers who made the cleanup and closure of these sites possible want to make sure that they have an entity to take care of their pension, health care, and any other needs as is appropriate.

The current DOE entity that addresses these concerns is the Office of Worker and Community Transition. I am interested to know how this office will work with EM and Legacy Management to make sure our dedicated workforce receives a smooth transition as they close their current workplace, whether they transfer to another Environmental Management site or leave the Department of Energy for other opportunities.

Secretary Roberson and Mr. Owen, thank you for your service to our Nation. We look forward to your testimony and then when my ranking member shows up, I will turn to him for an opening statement. So why do we not proceed with you, Madam Secretary. We look forward to your testimony.

STATEMENT OF HON. JESSIE HILL ROBERSON, ASSISTANT SECRETARY OF ENVIRONMENTAL MANAGEMENT, DEPARTMENT OF ENERGY

Secretary ROBERSON. Good morning and thank you, Chairman Allard. As usual, it is always a pleasure to sit before you and communicate what our progress has been. I am pleased to be here today to discuss President Bush's fiscal year 2004 budget request for the Department of Energy's environmental cleanup program.

Eighteen months ago, Secretary Abraham directed me to review from top to bottom the EM program and uncover those obstacles hindering the efficient and effective cleanup of our sites. As you are aware, the Top-to-Bottom Review was published last February and

it concluded that EM had lost focus of its core mission, which was to remedy the legacy of the Cold War's impact on the environment.

We had to take immediate action. With the Top-to-Bottom Review as the blueprint for our transformation, we have realigned EM's focus from risk management to risk reduction and accelerated cleanup and closure, the intended mission for the Environmental Management program from the start. We have made remarkable progress this year toward our goal of saving at least \$50 billion over the life of this program and completing the program by at least 35 years sooner.

But we must not succumb to the idea that all problems are solved. The momentum we have gained must not be compromised or allowed to weaken. We must stay the course. The actions and strategies we have implemented while producing key results must be given the chance to further evolve, bringing even greater gains in risk reduction and cleanup sooner.

Underpinning these strategies are several groundbreaking reforms that will propel us forward in our thinking and in our actions. We are implementing a new acquisition strategy. We are aggressively using and managing the acquisition process as a key tool to drive contract performance and risk reduction results. We have established 10 special project teams to carve new innovative paths for accelerated cleanup and risk reduction. Each team is formulating corporate-level initiatives and activity-specific actions to accelerate risk reduction in a much improved, more cost-effective manner.

We have implemented a strict configuration control system that baselines a number of key critical program elements. Robust change control and monitoring of these key elements will facilitate a high confidence level that the direction of the accelerated cleanup initiative is on course and that our objectives are being accomplished.

The budget request before you is one of our most crucial reforms. This request, a cornerstone of our transformation, is a major step toward aligning performance with the resources needed to expedite risk reduction and cleanup. This budget request sets the foundation for budget planning and execution of the accelerated risk reduction and closure initiative.

Today the EM program is still very much a defense environmental liability, responsible for the disposition of many tons of special nuclear material, 88 million gallons of radioactive liquid waste, 2,500 metric tons of spent nuclear fuel, 135,000 cubic meters of transuranic waste, and well over a million cubic meters of low level waste.

I ask the committee to stay with us as we continue our quest to eliminate risk posed by these materials at a pace few of us could have imagined 2 years ago. For example, just within the last week at Savannah River, the defense waste processing facility was restarted on March 29 and completed its first canister pour with waste and a new glass frit. The melter change out of this facility occurred more efficiently and expeditiously than thought.

At Rocky Flats, the plutonium packaging facility has produced 425 containers in the first 3 months of this year and is producing at a rate of 140 3013 containers per month. At Richland, we are

packaging six spent-fuel multiccanister overpacks per week versus one. At the River Protection Project, waste retrieval from Tank C-106 commenced on March 31. At Fernald, contract modification was executed on March 28, making closure in 2006 an actual contractual requirement. This is the first time this has actually occurred.

At Idaho, the advanced mixed waste treatment facility sent its first TRUPACT-II to WIPP on March 31. Yesterday, Savannah River packaged its first 3013 plutonium canister. Yesterday, Oak Ridge removed its first converter from Building K-29. At the Office of River Protection, we have pumped over 1.5 million gallons of radioactive liquid waste from older single-shell tanks. Less than 300,000 gallons of waste remains in single-shell tanks.

These are examples of work that was completed in the last week, and skeptics did not believe that we would accomplish these goals at this point in time. We know that our job is not to let skeptics convince us that we cannot do this job, but to demonstrate by our actions that we can and are doing this job.

New ideas and breakthroughs have grown from looking beyond the paradigm of risk management to the new focus of accelerated risk reduction and cleanup. We are experiencing the realization that for the first time the goal of completing the current cleanup is within our grasp. We are at a turning point for this program.

In spite of the challenges ahead, and there are challenges ahead, these challenges, however, existed from the beginning of this program. We did not create them in the accelerated cleanup program. They have simply been lying in wait. However, we are taking these challenges on and our momentum is building.

I ask for your support of our fiscal year 2004 budget request of \$7.24 billion to assure our impetus does not diminish. The administration considers this program vitally important. We stand at an important crossroads in the cleanup program today. I believe the cleanup of the former nuclear weapons complex is far too important a matter to be left to chance. With your past assistance, we have laid a solid foundation that is already showing signs of early success. Moving forward, we need your continued support to achieve success more broadly across the complex.

Thank you.

[The prepared statement of Secretary Roberson follows:]

PREPARED STATEMENT BY HON. JESSIE H. ROBERSON

Mr. Chairman and members of the subcommittee, I am pleased to be here today to discuss the reform of the Department of Energy's Environmental Management (EM) program, our progress in implementing cleanup reform, and the importance of sustaining the momentum for the benefit of the many generations to come. I appreciate the opportunity to sit before you and share our actions of this past year and the opportunities that lie before us.

In 1996, Congress took a bold step that fundamentally altered the course of the cleanup program in the Department of Energy when it supported the accelerated closure of Rocky Flats. This was at a time when there was little reason and no demonstrated track record to believe that the Department could deliver on a challenge of this magnitude. Congress took further steps in 1999 when it created the Defense Facilities Closure Projects account and challenged the Department of Energy to close three of its nuclear sites by 2006. While it has taken significant effort and dedication, today all three of those sites, Rocky Flats, Mound, and Fernald, will close on or ahead of schedule. The vision and support that Congress provided plant-

ed the seeds of success in the cleanup program and we have already begun harvesting those fruits.

Nonetheless, success at other sites in the EM program remained elusive. Year after year, it continued to take longer and cost more to complete the cleanup and we slowly devolved into a program that promised little and delivered even less. By the end of fiscal year 2001, the environmental cleanup program stood as one of the largest liabilities of the Federal Government.

Last year, as ordered by Secretary Abraham, the Department completed a Top-to-Bottom Review of its cleanup program and concluded that significant change was required in how the Department attacked risk reduction and cleanup for the rest of its sites. Two years ago, as costs continued to increase, we estimated that it could take over \$300 billion and nearly 70 more years to complete cleanup—20 years longer than the actual operations of our oldest facilities and 25 times longer than the actual construction of our most complex facilities. We concluded that a fundamental change to how we approached, managed, and performed the entire cleanup program was required. Last year I started the effort to reform this massive program, and while our most daunting challenges still lie in front of us, we are now focused, moving in the right direction. The accelerated cleanup program has started to build momentum.

Today the EM program is still very much a defense liability, responsible for many tons of special nuclear material in the form of plutonium and enriched uranium, which would make it one of the world's largest nuclear super-powers. In addition, the EM program is responsible for safely disposing of 88 million gallons of radioactive liquid waste, 2,500 metric tons of spent nuclear fuel, 135,000 cubic meters of transuranic waste, and well over 1 million cubic meters of low level waste. I ask the committee to stay with us as we continue our quest to eliminate risks posed by these materials at a pace few of us could have ever imagined.

Since the completion of Secretary Abraham's Review, the estimated cost to complete the cleanup program has decreased by over \$30 billion and the time to complete will be shortened by 35 years. This means that the risks to our workers, our communities, and the environment will be eliminated a generation earlier than the previous plan. But I am not satisfied and neither should you. My goal is to accelerate risk reduction and cleanup and shorten this program even further while decreasing costs by more than \$50 billion.

In fiscal year 2004, President Bush is requesting a record \$7.24 billion for the accelerated cleanup program. The administration's funding request continues the great progress we made last year with our regulators and communities. The administration believes that this investment, which we expect to peak in fiscal year 2005, is crucial to the success of accelerated risk reduction and cleanup completion. We anticipate funding will then decline significantly to about \$5 billion in 2008.

The EM portion of the fiscal year 2004 congressional budget contains some creative and innovative changes that are greatly needed to support our accelerated risk reduction and closure initiative. The first of these is a new budget and project baseline summary structure that focuses on completion, accountability, and visibility; institutionalizes our values; and integrates performance and budget. Requested funding can clearly be associated with direct cleanup activities versus other indirect EM activities. Second, where appropriate, we have limited the inclusion of line-item construction projects as activities for separate authorization and funding controls to facilitate timely and sensible tradeoff decisions that otherwise may not be possible. We solicit your support for this flexibility as we implement our accelerated cleanup strategies, with the understanding that improving project management remains a significant challenge for the Department. Third, this budget reflects the transfer of multiple activities that are not core to the accelerated cleanup mission to other Department elements. They include the transfer of Idaho National Engineering and Environmental Laboratory (INEEL) landlord responsibilities to the Office of Nuclear Energy, Science and Technology, transfer of the long-term stewardship program to the new Office of Legacy Management, and several others.

The administration considers this program vitally important. We stand at an important crossroads in the cleanup program today—success is clearly within our reach, but so is failure. I believe the cleanup of the former nuclear weapons complex is far too important a matter to be left to chance. With your past assistance, we laid a solid foundation that is already showing signs of early success. Moving forward, we need your continued support to achieve success.

A YEAR OF TRANSFORMATION

Last year at this time, the Top-to-Bottom Review had been recently released, citing recommendations to quickly improve performance. I wish to take a moment to

recap the recommendations and update you on our progress in remedying these weaknesses.

Improve DOE's Acquisition Strategy and Contract Management. A key conclusion of the Top-to-Bottom Review was that EM's contracting approach was not focused on accelerating risk reduction and applying innovative cleanup approaches. Processes for contract acquisition, establishment of performance goals, funding allocation, and government oversight were managed as separate, informally related activities rather than as an integrated corporate business process. Contracting strategies and practices made poor use of performance-based contracts to carry out EM's cleanup mission. The Top-to-Bottom Review team recommended that all current performance-based contracting activities be reviewed and, where necessary, restructured to provide for focused, streamlined, and unambiguous pursuit of risk reduction.

Move EM to an Accelerated, Risk-Based Cleanup Strategy. EM's cleanup strategy was not based on comprehensive, coherent, technically supported risk prioritization—another important observation cited by the Review team. The program was implementing waste management practices and disposition strategies costing millions without providing a proportional reduction in risk to human health and the environment. Cleanup work was not prioritized to achieve the greatest risk reduction at an accelerated rate. Interpretation of DOE Orders and requirements, environmental laws, regulations, and agreements had created obstacles to achieving real cleanup benefiting neither human health nor the environment. Resources were diverted to lower-risk activities. Process, not risk reduction, had become the driving force. The Review recommended that DOE initiate an effort to review DOE Orders and requirements as well as regulatory agreements, and commence discussions with states and other regulators with the goal of accelerating risk reduction.

Align DOE's Internal Processes to Support an Accelerated, Risk-Based Cleanup Approach. The Review found DOE's own internal processes inconsistent with a risk-based cleanup approach. The hazards at the DOE sites and the liability associated with them did not appear to dictate the need for urgency in the cleanup decisions. The Review team emphasized that the EM mission cannot be accomplished by continuing business as usual. Immediate actions in all elements of the EM program would need to be taken to transform DOE's processes and operations to reflect the new accelerated risk-based cleanup paradigm.

Realign the EM program so its scope is consistent with an accelerated, risk-based cleanup and closure mission. The Review team underscored the necessity that EM should redirect, streamline, or cease activities not appropriate for accelerated cleanup and closure. A laser-like focus on the core mission was needed to realize the cleanup of the Cold War legacy in our lifetime. Though many of these non-core activities may be worthy of DOE or Federal Government support, a reassessment of the relevance of non-related or supporting missions was warranted to focus the EM program. The financial and administrative resources required for EM implementation and oversight of these activities represent a major commitment for EM.

In response to the Review's recommendations we have:

Developed and are implementing a new acquisition strategy. In the area of acquisition strategy and contract management, we have not been idle. We are aggressively using and managing the acquisition process as one tool to drive contract performance. We are evaluating both the performance and design of every contract in this program and as opportunities become clear we are making corrective action. One example of our progress is the December 2002 award of a new contract for the cleanup and closure of the Mound site. The whole process, which required changes in DOE's internal business practices, was accomplished in just 6 months from time of the issuance of the Request for Proposals (RFP) to the awarding of the contract. Another example is at Oak Ridge, where we are transforming the cleanup contract into a closure contract with a 1-year demonstration period to further our overall cleanup goals. Changing this contract arrangement will accelerate cleanup work by 5 years and save \$1 billion over the life of the program at the site.

But that is just the tip of the iceberg. I envision a broader overhaul of EM's entire acquisition process, including our methodology for formulating acquisition strategy, developing RFPs, identifying performance-based incentives, and providing oversight of contractor performance. We are pursuing a path to both increase competition by enlarging the pool of potential contractors competing for our work and increase the accountability of our contractors to deliver real, meaningful cleanup. Our acquisition strategy focuses on five areas. First, we are "unbundling" work into smaller packages where it makes sense. Second, we are driving innovation and improved cost performance through the use of small and smaller businesses, complementing the unbundling strategy. Third, we are actively promoting innovation in our cleanup work through the competitive process where improved performance is required. Fourth, we are extending or modifying contracts where excellent performance has

been clearly demonstrated. Fifth, we are modifying and changing our acquisition processes to support these strategies in order to allow them to be successfully implemented.

To complement these steps, we have launched a Contract Management Review Board to review our contracts from a more corporate perspective. Our goal is to ensure that the lessons learned, both good and bad, from all our endeavors are institutionalized into our contracts and business practices and that we suspend those contract philosophies that do not support accelerated risk reduction and cleanup of our sites.

Established 10 special project teams to carve new innovative paths for accelerated cleanup and risk reduction. The Top-to-Bottom Review identified unfocused and inconsistent work planning processes as the principal contributors to EM's uncontrolled cost and schedule growth. To address this failing, I formed 10 special corporate projects, each assigned a specific strategic objective. Each team is formulating corporate level initiatives to accelerate risk reduction in a much improved, more cost-effective manner. Objectives include contracting, high-level waste, and consolidation of special nuclear material. Each of the special projects has a dedicated project manager, supported by an integrated project team, to identify, plan, and execute needed changes in the EM program. These project teams, using project management principles, are key to correcting our work planning processes and instilling rigor into our internal management decisions.

Meaningful, lasting reform must be the result of leadership and commitment but it must find its way into the very core of the organization to be sustained. Building a high-performing culture requires attracting and retaining talented people who deliver excellence in performance. Improving management efficiencies requires that organizations challenge, hold accountable, and reward top-performing employees. This corporate initiative does just that. These 10 teams will herald a new standard of performance, innovation, and greater results for the EM program. Our goal is not just to establish performance-based contracts but to solidify a performance-based program for all who choose to have a role.

Implemented a strict configuration management system. Another reform we have implemented is a strict configuration management system that baselines a number of key, critical program elements. Examples of some of the key elements include the Performance Management Plans, EM corporate performance metrics, contract performance measures/incentives, and life-cycle costs. Strict change control and monitoring of these key elements will facilitate a high confidence level that the goals and direction of the accelerated cleanup initiative are being met.

In October 2002, EM established several new corporate performance measures for the program. EM will continue to track corporate measures such as the number of geographic sites completed, the amount of transuranic waste disposed, and the number of plutonium metal/oxides packaged. However, new corporate measures such as the volume of liquid waste in inventory eliminated, number of liquid waste tanks closed, number of enriched uranium containers packaged, and amount of depleted and other uranium packaged are a key part to the successful execution of EM's accelerated cleanup strategies. In addition, EM is establishing site resource-loaded baselines that will enable the program to comprehensively track progress against its accelerated risk reduction, cost, and schedule objectives. The establishment of these new performance measures and a rigorous configuration management system are resulting in clear lines of accountability for what is expected. With this critical tool, EM is now able to make crucial corporate decisions that will keep the program on track, control cost increases, and minimize schedule growth.

Identified work activities that directly support accelerated cleanup from those that do not. A key finding of the Top-to-Bottom Review was that EM was supporting and managing several types of activities that may not be appropriate for an accelerated risk-reduction and cleanup program. In that light, I took a hard look at those activities and, while they may be of importance to the Department and the Federal Government, they may not be best aligned in the EM program. Based on that assessment, for fiscal year 2004, the following identified program elements were not included in the EM budget but, because of their importance to the Department, have been transferred to other DOE organizations with which they are more appropriately aligned. They represent activities that are not part of the core accelerated risk reduction and closure mission.

- Environmental Management staff at the National Energy Technology Laboratory transferred to the new Office of Legacy Management.
- The Analytical Services Program transferred to the Office of Environment, Safety and Health.
- The Radiological and Environmental Sciences Laboratory transferred to the Office of Environment, Safety and Health.

- Pre-existing liabilities and long-term contractor liabilities transferred to the Office of Legacy Management.
- The Long-term Stewardship Program transferred to the Office of Legacy Management.

In addition, landlord responsibilities for the Idaho National Engineering and Environmental Laboratory were transferred to the Office of Nuclear Energy, Science, and Technology to reflect the site's major mission realignment.

Revitalized our human capital strategy. Another key management reform is the human capital revitalization that strongly supports the President's Management Agenda. This reform focuses on building a high-performing culture that attracts and retains talented managers and staff to deliver sustained performance excellence. We have built a more robust performance accountability system that holds each manager and employee accountable for actions and results and rewards them accordingly. Individual performance management is being fully integrated into EM organizational goals; executives are being held accountable for achieving strategic program objectives, fostering innovation, and supporting continuous improvement.

We are implementing an executive mentoring program with our senior executives with the objective of having a cadre of executives who are well-rounded and are prepared to effectively lead irrespective of the position to which they might accrue. We are becoming a flatter and more effective organization with a goal to have an organizational structure that is clearly aligned to deliver on our accelerated risk reduction and closure initiative.

Aligned tangible, consequential results to resources with this budget request structure. Given all these changes and advances, the budget request before you is one of the most crucial. This budget request structure is the foundation for budget planning and execution of the accelerated risk reduction and closure initiative. This new structure clearly identifies scope and resources that directly support the core accelerated cleanup and risk reduction mission from those that do not. The new structure consolidates risk reduction and completion activities into only two appropriations (defense and non-defense) in addition to the existing Uranium Enrichment Decontamination and Decommissioning Fund. This structure removes barriers to facilitate better resource utilization and segments accelerated completion into three distinct accounts to highlight accountability.

In addition, implementation of this new structure will complement other management reform initiatives by focusing on completion or endpoint, clearly delineating how resources will be utilized (i.e., for direct cleanup activities or for other activities in the program that only indirectly relate to on-the-ground cleanup activities), and communicating the goals and objectives that we value. Last, but not any less important, this new structure will support integration of performance and budget for the EM program.

THE FISCAL YEAR 2004 BUDGET REQUEST

The fiscal year 2003 budget was a transitional budget in which management reforms were developed and significant efforts were put forth to improve performance, accelerate cleanup, and reduce risk. The strategic groundwork has been laid, and the EM program is moving forward with its risk reduction and cleanup strategies. The investment we have requested in our fiscal year 2004 budget will keep EM's new accelerated risk reduction and cleanup strategies on track.

The EM fiscal year 2004 budget request has been tailored to meeting our mission of accelerated risk reduction and completion. This budget fully reflects each site's new accelerated risk reduction and cleanup strategies. The fiscal year 2004 budget request is a major step toward aligning performance with the resources needed to expedite risk reduction and cleanup.

The 2004 budget request for EM activities totals \$7.24 billion to accelerate risk reduction and closure. The request includes five appropriations, three of which fund on-the-ground, core mission work, and two of which serve as support. The five appropriations and associated requested funding are:

- Defense Site Acceleration Completion (\$5.8 billion)
- Defense Environmental Services (\$995 million)
- Non-Defense Site Acceleration (\$171 million)
- Non-Defense Environmental Services (\$292 million)
- Uranium Enrichment Decontamination and Decommissioning Fund (\$418 million)

Through the implementation of accelerated cleanup strategies, the EM program anticipates that cleanup will be completed by 2035, at least 35 years earlier than originally anticipated, with the potential of life-cycle savings of greater than \$50 billion.

In building the request, the Department applied the following principles and priorities:

Protect workers, public, and the environment: The budget request continues to place the highest priority on protecting workers, the public, and the environment. The implementation of new cleanup strategies will allow for an overall improvement in safety and reduction in risk because cleanup will be completed sooner, reducing the extent to which workers, the public, and the environment have the potential to be exposed.

Ensure the appropriate levels of safeguards and security: Due to heightened security levels throughout the Nation, it is crucial that we maintain vigilance in our domestic security to protect our citizens. The EM program is responsible for many tons of surplus nuclear material. This budget request reflects our increased safeguards and security needs. In particular, the sites with the largest funding needs are Savannah River and Hanford. Savannah River's increase in funding supports protective force staffing for the HB Line Category 1 Process and plutonium stabilization activities, perimeter improvements, maintenance on security systems, vulnerability assessments, and Capital and General Plant Project upgrades. Hanford's increase in funding supports updates to the Critical Facility Vulnerability Assessment, additional security employees for Waste Treatment and Immobilization Plant construction, security clearance processing, drug testing, and accelerated movement of special nuclear material to Savannah River and/or the Grout Facility.

Reduce risk methodically: Accelerated risk reduction requires a pragmatic approach to cleanup based on real risk reduction. Risk reduction occurs in various stages, which involve the elimination, prevention, or mitigation of risk. Because safe disposal of many materials will take a number of years to complete, our major focus of risk reduction is stabilization of high-risk materials.

The following categories of materials are considered to pose the highest risk:

- High-curie, long-lived isotope liquid waste
- Special nuclear materials
- Liquid transuranic (TRU) waste in tanks
- Sodium bearing liquid waste in high-level waste tanks
- Defective spent nuclear fuel in water basins
- Spent nuclear fuel in leaky or poor water chemistry basins
- High TRU waste content (greater than 100 nanocuries/gram)
- TRU waste stored on the surface
- Remote-handled (RH) TRU waste
- Decontamination and Decommissioning of highly contaminated facilities

Although all of these items are to be considered when setting priorities, their relative ranking may vary from site to site. For example, the following sites have planned activities/milestones for fiscal year 2004 that correspond to their site-specific risk categories.

Hanford

- Close six single-shell tanks; the first tanks closed at the site.
- Complete interim stabilization of Hanford single-shell tanks, which completes removing all pumpable liquids from single-shell tanks.
- Complete 30 percent of the Hanford Waste Treatment and Immobilization Plant.
- Complete stabilization of plutonium metals, oxides, and residues.
- Complete removal of all spent fuel from the K Basins and place in dry storage in the Canister Storage Building.

Idaho

- Complete the transfer of spent nuclear fuel in the Power Burst Facility canal from wet storage to dry storage at the Idaho Nuclear Technology and Engineering Center.
- Ship off-site a total of 1,819 kg total uranium (leaving a remainder of 825 kg).
- Begin the transfer of EBR-II spent nuclear fuel from the Chemical Processing Plant to the Argonne National Laboratory-West for treatment and disposition as an interim step to removing all EM spent nuclear fuel from wet storage.
- Support treatment of sodium-bearing waste: complete conceptual design activities for the sodium bearing waste treatment project, initiate preliminary design on primary technology, and complete Sodium Bearing Waste Treatment Facility Critical Decision 1 documentation; and complete characterization of remaining liquids and solids in the 11 underground tanks.

Rocky Flats

- Remove and ship remaining plutonium metals, oxides, and residue.

- Begin stabilization and hazard removal in two TRU waste buildings.

Savannah River

- Permanently close tanks 18 and 19, completing the closure of the first tank grouping.
- De-inventory spent nuclear fuel from the Receiving Basin for Off-site Fuels.
- Complete treatment of the aqueous portion of the plutonium-uranium extraction (PUREX) waste at the Saltstone Facility.
- Produce 250 canisters of vitrified high-level waste.

Accelerate cleanup results: To accelerate cleanup, 18 sites have developed Performance Management Plans (PMPs), which identify strategies, end states, end dates, key milestones, and commitments that facilitate accelerated cleanup and site closure. These PMPs were developed in collaboration with our State and Federal regulators.

For fiscal year 2004, several examples of sites' milestones for accelerated cleanup are:

Brookhaven National Laboratory

- Submit Brookhaven Graphite Research Reactor Draft Record of Decision to our regulators to determine the final end-state for Brookhaven Graphite Research Reactor.
- Complete construction of the Airport/Long Island Power Authority Groundwater Treatment System.

Hanford

- Complete cocooning of the H Reactor.
- Complete excavation/removal of 100 B/C Process Effluent Pipeline.
- Dispose of 500,000 tons of remediation waste from waste sites and burial remediations in the Environmental Restoration Disposal Facility.

Idaho

- Begin shipment of RH TRU waste offsite (6-year acceleration) supporting completion of shipments by 2012.
- Complete cleaning and grouting of second pillar and panel vaulted tank, supporting acceleration of tank farm facility closure by 4 years to 2012.

Lawrence Livermore National Laboratory-Livermore Site

- Construct, install, and operate a new treatment system to address groundwater contamination.

Los Alamos National Laboratory

- Permanently dispose of over 600 cubic meters of legacy TRU waste through an integrated strategy of segregating, decontaminating, and shipping to the Waste Isolation Pilot Plant (WIPP).
- Complete shipment of 2,000 drums and initiate retrieval of legacy TRU waste stored below grade.

Nevada Test Site

- Complete remediation of 55 release sites.
- Continue to dispose of low-level waste from complex-wide generators in support of closure of other EM sites.
- Continue characterization and shipments of TRU waste to WIPP.

Oak Ridge

- Complete East Tennessee Technology Park K 29/31/33 decommissioning for re-use (1-year acceleration), supporting closure of the site 8 years earlier than planned.
- Complete Molten Salt Reactor Experiment flush salt removal, and complete fuel salt removal from the first of two drain tanks.

Pantex

- Continue pump and treatment of the perched groundwater and evaluation of more efficient cleanup technologies to mitigate the contaminated plume.
- Complete demolition of Zone 10 ruins and initiate actions for the demolition of Building 12-24 Complex.

Savannah River

- Eliminate low-level waste legacy inventory.
- Complete major remediation projects in the testing and experimental areas.

WIPP

- Increase carrier capacity from 25 to 34 shipments of TRU waste per week.

- Procure 11 RH trailers for a total of 14.
- Complete TRUPACT-II (a transportation container to safely transport either TRU waste or standard waste boxes) fabrication to obtain fleet of 84 TRUPACTs.

Maintain closure schedules: Three major sites, Rocky Flats, Fernald, and Mound, have accelerated closure schedules. In addition, two smaller sites, Ashtabula and Battelle-Columbus, are scheduled to close in 2006. Funding in the fiscal year 2004 budget will allow these sites to remain on track toward project completion and site closure.

At Rocky Flats, fiscal year 2004 funding provides for:

- Disposing of more than 109,000 cubic meters of low and mixed low level waste.
- Disposing of more than 8,600 cubic meters of TRU waste (70 percent complete).
- Completing the decontamination and decommissioning of 72 work sets in Buildings 371, 717, 771, and 776.
- Cleaning 194 environmental release sites (81 percent complete).

At Fernald, fiscal year 2004 funding provides for:

- Treatment and shipment offsite of 150,000 tons of waste pit material, which cumulatively represents approximately 80 percent of the total.
- Construction completion of Silos 1, 2, and 3 retrieval facilities.
- Completion of D&D of Plant 1 Complex Phase II, Liquid Storage Complex Phase II, and Pilot Plant Complex.

At Mound, fiscal year 2004 funding provides for:

- Continued removal of high concentrations of tritium from Tritium Effluent Reduction Facility to allow for early shutdown.
- Completion of soil excavation phase of Potential Release Site 66 and completion of the total remediation of Potential Release Sites 68 and 267. These three Potential Release Sites represent 38 percent of the total soil remediation remaining.

At Ashtabula, fiscal year 2004 funding provides for:

- Complete disposal of 100 percent of building remediation debris generated in fiscal year 2003.
- Initiation of excavation and shipment of remaining estimated known scope (i.e., 38,000 tons) of contaminated soil to a licensed disposal site.

At Battelle-Columbus, fiscal year 2004 funding provides for:

- Demolition of buildings JN-2 and JN-3.

Integrate technology development and deployment: An integrated technology development and deployment program is an essential element for successful completion of the EM cleanup effort and for fulfilling post-closure requirements. The EM Technology Development and Deployment (TDD) program provides technical solutions and alternative technologies to assist with accelerated cleanup of the DOE complex.

Through the fiscal year 2004 budget, EM technology development and deployment investments are focused on high-payoff site closure and remediation problems through a two pronged approach: Closure Projects and Alternative Projects.

Closure Projects: Principal near-term closure sites (such as Rocky Flats, Fernald, and Mound) will be provided with technical support and quick response, highly focused technology development and deployment projects. The goal is to ensure that accelerated site closure schedules are achieved.

- At Rocky Flats and the Ohio closure sites, technical assistance teams will assess critical technical issues and provide technology alternatives including the treatment and disposition of orphaned waste streams.
- At Mound, innovative technologies will be developed to determine and enable treatment of radioactive contaminated soil beneath buildings.
- At Fernald, the vacuum thermal desorption demonstration will be completed to provide a technical solution for an orphaned waste stream.

Alternative Projects: Alternative approaches and step improvements to current high-risk/high cost baseline remediation projects are our second focus. The goal is to enable cleanup to be accomplished safely, at less cost, and on an accelerated schedule. EM is focusing funds for fiscal year 2004 on:

- Alternatives for tank waste immobilization;
- Alternatives for carbon tetrachloride source term location;
- Alternatives for remediation of leaked high-level waste below tanks;
- Alternatives for disposition of high-level salt waste;

- Alternatives for immobilization of high-level sludge waste;
- Alternatives for remediation of chlorinated ethenes using monitored natural attenuation;
- Alternatives for deposit removal at gaseous diffusion plants;
- Alternatives for cleanup of trichloroethylene under buildings (Paducah); and
- Alternatives for expedited processing of scrap metal/equipment.

CONCLUSION

We planted the seedlings of transformation 1 year ago. We have fostered and guided the reforms. New ideas and breakthroughs have grown from looking beyond the paradigm of risk management to the new focus of accelerated risk reduction and cleanup. New strategies and plans are thriving.

We are experiencing the realization that for the first time, the goal of completing EM's mission is within our grasp. We have set into motion a reformed cleanup program—one designed and managed to achieve risk reduction not just risk management; to shift focus from process to product; and to instill the kind of urgency necessary to clean up and close down the nuclear legacy of the Cold War and to protect human health and the environment.

We are at a turning point for this program. We must not lessen our resolve. I ask for your support to continue this important work. We must avoid passing this intolerable inheritance to our children. Accelerating cleanup by at least 35 years and saving over \$50 billion is a wise investment for our children's future.

I look forward to working with Congress and others to achieve this goal. I will be happy to answer questions.

Senator ALLARD. That is a good news report. I want to thank you for all your effort, and I know you have been involved in it from the very start.

Mr. Owen, go ahead.

STATEMENT OF MICHAEL W. OWEN, DIRECTOR, OFFICE OF WORKER AND COMMUNITY TRANSITION, DEPARTMENT OF ENERGY

Mr. OWEN. Thank you, Mr. Chairman, and good morning. My name is Michael Owen, and I am the Director of the Office of Worker and Community Transition at the Department of Energy. I have also been directed by Secretary Abraham to lead the planning for and standup of the new Office of Legacy Management.

To ensure our success, the Department must complete preparation for the orderly transition of long-term surveillance and maintenance activities to the Office of Legacy Management. Additionally, retirement benefits administration will transition to the Office of Legacy Management. This will be required after the completion of cleanup and closeout activities at Rocky Flats, Mound, and Fernald.

As proposed in the Department's budget, the Office of Legacy Management would be a stand-alone program secretarial office with a separate budget line reporting directly to the Under Secretary of Energy. The Department, in the fiscal year 2004 budget request, is proposing to establish this new office, to be funded at approximately \$48 million.

The environmental surveillance and maintenance efforts require approximately \$26 million, slightly more than half of the proposed budget. Of the balance, about \$12 million would be used to meet the requirements for pension and other benefits for former contractor personnel at four sites. The remaining approximately \$10 million would be for program direction expenses to include personnel at offices in Washington, DC, Grand Junction, Colorado, the Na-

tional Energy Technology Lab in Morgantown, West Virginia, and Pittsburgh, Pennsylvania.

The Secretary with his budget proposes creating the new Office of Legacy Management, which would be put together from the personnel currently working at sites that I have mentioned. The Secretary with his budget proposes creating the new Office of Legacy Management to focus on the environmental surveillance and maintenance of sites whose missions have ended and the continuity of worker benefits at those closure sites. Because these functions have historically been included among the activities of the Office of Environmental Management, Secretary Roberson's office, the net budgetary effect of establishing the new office is neutral.

Upon standup, the Office of Legacy Management would be responsible for such activities at more than 60 sites where active environmental remediation has been completed. The majority of these sites are Uranium Mill Tailings Radiation Control Act (UMTRCA) sites. Other sites transferring to Legacy Management also include sites associated with Formerly Utilized Sites Remedial Action Program (FUSRAP), the Weldon Spring site in St. Charles County, Missouri, the Monticello site in Utah, and the Young-Rainey Science, Technology, and Research (STAR) Center in Largo, Florida, better known as the Pinellas plant. Over the next 5 years, the number of sites to be managed by Legacy Management is projected to grow to approximately 80.

The completion of the Department's missions also has an impact on the former contractor personnel at their respective sites. When the site contractor's cleanup functions are complete, pensions and other long-term benefits due to former contractor personnel still need to be administered.

At this time the Department's oversight of post-closure benefits involves two programs at four sites. The office will administer selected post-retirement, post-closure benefits for the former contractor personnel at the Pinellas facility. The other program, involving three sites, administers certain pre-existing liabilities and long-term contractor liabilities at the former gaseous diffusion facilities at Oak Ridge, Tennessee, Paducah, Kentucky, and Portsmouth, Ohio, where Environmental Management is still conducting site remediation.

The Office of Legacy Management will oversee a program to continue the benefit payments that the Department, through its contracts, is committed to provide for the contractor employees at Rocky Flats as well as Mound and Fernald. We recognize that the Department has responsibilities to the communities following the completed remediation and closure of sites. Establishing the Office of Legacy Management will ensure that community concerns are represented by a dedicated office measured only by its success in meeting the defined needs of those communities.

We believe the Office of Legacy Management will be better able to address these long-term issues in one office, while the Office of Environmental Management continues to focus on the environmental cleanup mission.

That concludes my statement, Mr. Chairman. I would be glad to answer any questions on the Office of Legacy Management proposal, as well as my existing office, the Office of Worker and Com-

munity Transition, and the relationship between the two. Thank you.

[The prepared statement of Mr. Owen follows:]

PREPARED STATEMENT BY MICHAEL OWEN

Good morning, Mr. Chairman, and distinguished members of the committee. My name is Michael Owen and I am the Director of the Office of Worker and Community Transition at the Department of Energy. I have also been directed by the Secretary to lead the planning and stand-up of the new Office of Legacy Management.

The Department is making significant progress in addressing the consequences of our science, nuclear energy and national security missions. This is an important moment, and an opportunity to focus DOE programs and personnel on achieving the diverse missions of the Department. As you have heard (or will hear) from Assistant Secretary Roberson, the successful completion of the Office of Environmental Management's responsibilities requires a re-focusing of that program's efforts and a Department-wide approach to securing the continued protection of the environment and communities. To ensure our success the Department must complete preparation for the orderly transition of long-term surveillance and maintenance activities and retirement benefits administration to the Office of Legacy Management that will be required after the completion of cleanup and closeout activities at Rocky Flats, Mound, and Fernald.

The Department, in the fiscal year 2004 budget request, is proposing to establish an Office of Legacy Management to be funded at approximately \$48 million. The environmental surveillance and maintenance efforts require approximately \$26 million, slightly more than half of the total. Of the balance, about \$12 million would be used to meet the requirements for pension and other benefits for former contractor personnel at four sites. The remaining approximately \$10 million would be for program direction expenses of the personnel at Washington, DC, Grand Junction, Colorado, and at the National Energy Technology Laboratory in Morgantown, West Virginia, and Pittsburgh, Pennsylvania.

CONTINUED COMMITMENT TO THE ENVIRONMENT, AND OUR COMMUNITIES AND WORKERS

The new office will be responsible for ensuring that the Department's post closure responsibility including the administration of long-term pension and medical benefits for former contractor personnel and environmental surveillance and maintenance are fulfilled. The Secretary, with his budget, proposes creating the new Office of Legacy Management to focus on the environmental surveillance and maintenance of sites whose missions have ended and the continuity of worker benefits after site closure. Because these functions have historically been included among the activities of the Office of Environmental Management (EM), the net budgetary effect of establishing the new office is neutral. As proposed in the Department's budget, the Office of Legacy Management would be a stand-alone program secretarial office with a separate, discrete, free-standing budget and reporting directly to the Under Secretary of Energy.

Placing these functions in a new office will allow EM to better focus its efforts on remediation, as well as permit the Office of Legacy Management to achieve significant efficiencies by consolidating programs of a similar nature and concentrating the long-term functions in one office dedicated to legacy issues.

PROTECTING THE NATION'S INVESTMENT IN CLEANUP THROUGH EFFECTIVE LONG-TERM SURVEILLANCE AND MAINTENANCE

The Department's environmental legacy responsibilities stem primarily from the activities of the Department and predecessor agencies, particularly during World War II and the Cold War. These activities left behind a variety of radioactive chemical waste, environmental contamination, and hazardous materials at over 100 sites across the country, including such large sites as Rocky Flats in Colorado and the Mound and Fernald sites in Ohio which are scheduled to close.

While the remediation activities conducted by EM will continue, the administration's focus on accelerating cleanup in order to achieve risk reduction and closure will mean that the EM mission will be completed at many sites earlier than previously predicted. However, certain aspects of the Department's environmental responsibility remain. These environmental surveillance and maintenance requirements differ according to the nature of the individual site, but generally include: groundwater monitoring and treatment, record keeping, radiological surveys, repairs

to waste disposal caps and covers, erosion control and periodic inspections and the preparation and submission of post-closure regulatory documentation.

Upon standup, the Office of Legacy Management will be responsible for such activities at more than 60 sites where active environmental remediation has been completed. The majority of these sites are Uranium Mill Tailings Radiation Control Act (UMTRCA) sites, and also include sites associated with the Formerly Utilized Sites Remedial Action Program (FUSRAP), the Weldon Spring Site in St. Charles County, Missouri, the Monticello site in Utah, and the Young-Rainey Science, Technology, and Research (STAR) Center in Largo, Florida (Pinellas Plant).

Over the next 5 years the number of sites to be managed by the office is projected to grow to approximately 80.

ENSURING THE EFFECTIVE MANAGEMENT OF CONTRACTOR PERSONNEL MEDICAL BENEFITS AND PENSIONS

The completion of the Department's missions also has an impact on the former contractor personnel at the respective sites. When the site contractor's cleanup functions are complete, pensions and other long-term benefits due to former contractor personnel still need to be administered.

At this time, the Department's oversight of post-closure benefits involves two programs at four sites. The office will administer selected post-retirement/post-closure benefits for the former contractor personnel at the Pinellas facility. The other program, involving three sites, administers certain pre-existing liabilities and long-term contractor liabilities at the former gaseous diffusion facilities at Oak Ridge, Paducah, and Portsmouth where Environmental Management is still conducting site remediation. The latter includes activities and expenses associated with post-retirement life and medical benefits for contractor employees at the gaseous diffusion plants who served there prior to the 1993 creation of the United States Enrichment Corporation and for the retirees of the Ohio Valley Electric Company (OVEC) associated with the Portsmouth contract.

Additionally, a significant increase in pension and long-term benefit administration will occur in the near future. In the past, the administration of pensions and benefits at closed sites were passed over to other DOE contracts. For example, the administration of Pinellas' pensions and benefits was transferred to an Albuquerque contractor. With the planned closure of Rocky Flats, this practice would no longer be a viable option given the magnitude of the Rocky Flats pension and benefit plans. Rocky Flats is scheduled to close in fiscal year 2006. The Office of Legacy Management will oversee a program to continue the benefit payments that the Department, through its contractors, is committed to provide for former contractor employees from Rocky Flats as well as from Mound and Fernald.

ACTIONS TAKEN/NEEDED TO PLAN FOR AND CONDUCT THE STANDUP OF NEW OFFICE

As part of my responsibilities to manage the standup of the new office I have formed interdisciplinary teams (legal, regulatory, logistics, personnel, communication) to ensure the transition of functions to the office is completed in an orderly fashion and that we seamlessly continue to serve our customers and stakeholders.

The personnel involved in managing the activities of the Office of Legacy Management would come from three organizations. Generally, Washington, DC, personnel would provide overall oversight and coordination as well as establish policy. Program implementation at the sites would be performed by personnel located at our Grand Junction, Colorado, location and by personnel at the National Energy Technology Laboratory in Morgantown, West Virginia, and Pittsburgh, Pennsylvania.

We are planning the standup of this office to consolidate multiple functions and provide affected communities, stakeholders, government regulators, and former contractor personnel a single point of contact for information, communication and expertise regarding legacy management issues. Furthermore, such consolidation will integrate functions for cross-cutting departmental policy issues and facilitate inter-governmental coordination. Most importantly, concentrating functions in an office dedicated to legacy management will heighten its visibility and, consequently, program accountability to the Secretary, Congress, and affected communities and organizations for successful performance.

CONCLUSION

We recognize that the Department has responsibilities to the communities following the completed remediation and closure of sites. The continued involvement of stakeholders including state, tribal, and local governments, is critical to meeting these responsibilities. Establishing an Office of Legacy Management will ensure that community concerns are represented by a dedicated office, measured only by

its success in meeting the defined needs of those communities and their constituents.

In closing, the Secretary is dedicated to ensuring the Department's commitment to the environment, our communities and our workers. We believe the Office of Legacy Management will be better able to address these long-term issues in one office, while the Office of Environmental Management continues to focus on its environmental cleanup mission.

Mr. Chairman, and members of the committee, that concludes my statement. I appreciate the opportunity to testify before you today, and I will be happy to answer any questions you may have.

Senator ALLARD. Thank you very much for your report, Mr. Owen. You are just starting a new Office of Legacy Management, and I know there are a lot of challenges. I want to be helpful to both of you as you move forward in the future.

It is not going to surprise you, Madam Secretary, when my first question is on Rocky Flats. It has been reported this week that as many as 33 workers at Rocky Flats may have been exposed to plutonium this past week. Can you give us an update on this incident? Also, were any of the workers found to have been exposed to plutonium, and what is being done to mitigate further exposure?

Secretary ROBERSON. Thank you, Mr. Chairman. The event that you are referring to involved 33 workers during decontamination activities in Buildings 776 and 777. The initial investigation revealed that a ventilation damper was closed, which impacted the ability of ductwork to move upstream air into an air plenum. The mechanical linkage inside the duct that controls the damper movement via a control arm was defective and that arm would turn, indicating a different position than was actually occurring inside the ductwork.

All 33 workers received initial sampling. The results indicated that three of these workers were above the site-operating decision level. Two of those employees that were above the decision level have undergone additional testing, and we are awaiting the results of those results. Those workers have been removed from the building area for that work while we await those results.

Area monitoring in this work area has indicated that the exposure in the area is below background, and we expect the additional testing results to be in within 21 days. We will keep those workers from that workplace until we validate that there was no exceedances.

The site itself is conducting an investigation even today, and tomorrow my chief operating officer, Paul Golan, is being deployed to the site to make sure that we understand the circumstances and to make it clear how important it is to ensure that these kind of occurrences do not happen in the future.

Senator ALLARD. Thank you.

Now, the State of Idaho won a lawsuit against the Department of Energy on transuranic waste, and I know that because you are going through the legal aspects of it there are probably some limited comments that you could make at this particular hearing.

Secretary ROBERSON. Right.

Senator ALLARD. Without getting into the middle of ongoing litigation and since DOE may choose to appeal this decision, can you please quantify the potential increased cost created by the court decision where an additional 62,000 cubic meters of TRU waste may have to be removed from the INEEL site?

Secretary ROBERSON. Well, Mr. Chairman, I can probably provide some bounding numbers for the record. I do not know off the top of my head what the range of impact would be. I would like to clarify that the court agreement that is at issue is a Batt agreement that has been in place for a number of years and the State of Idaho approached the legal system to request an interpretation as to whether buried waste was intended to be included in that order. This is the result of their request for an interpretation of that.

I cannot say more because we simply just yesterday understood the results of that and I think our legal staffs are trying to decide what is an appropriate path forward.

Senator ALLARD. What this committee would be interested in would be your giving us some kind of range on costs if you could. I know that we are very premature and we understand they are nothing more than just estimates, but do the best you can.

Secretary ROBERSON. Okay.

Senator ALLARD. Also, please estimate how long it might take. I know again this is a subjective approach and there are a lot of factors, but just do the best you can for this committee. We would appreciate it.

[The information referred to follows:]

POTENTIAL INCREASED COST CREATED BY COURT DECISION

The Department is in the process of determining the appropriate remediation for the buried waste through the Comprehensive Environmental Response, Compensation, and Liability Act process. Our current estimate for retrieval, characterization, packaging, disposal, and long-term monitoring and maintenance of this buried waste is at least \$10 billion. The current schedule estimate indicates that the work could not be completed before 2018.

Secretary ROBERSON. We will. One other thing I would like to add, Mr. Chairman, is we have not exempted cleanup in this area from our accelerated cleanup plan for INEEL. But there is a CERCLA process that determines what removal needs to take place or not. So we have not predetermined action while this process proceeds.

Senator ALLARD. Thank you.

Senator Nelson, welcome. I know that you are battling a full schedule like all the rest of us around here. It is a very busy time.

Senator BILL NELSON. I have not figured out how to clone myself.

Senator ALLARD. I had two very important hearings going on today that affected Colorado, this one and another one in the Environment and Public Works Committee. I know how these things happen.

When you showed up, we wanted to give you an opportunity to make an opening statement and then ask some questions if you like, and we will just switch back and forth.

Senator BILL NELSON. Thank you very much. I will just get right into the questions.

Mr. Owen, one of your duties is to ensure that the workers' pensions and health insurance are protected when the various sites and facilities are cleaned up and then when they are closed. It is going to extend to billions of dollars of pension funds and thousands of workers. What is your plan for protecting the workers and their benefits when their current employers are no longer DOE contractors and their jobs are gone?

Mr. OWEN. Yes, sir. This is exactly one of the reasons that Secretary Abraham directed that the new office be stood up and established. In addition to land legacies that the Department has to tend to, there is the people legacy. For the first time ever, we do have some fairly large sites closed or about to close. In Florida we have the Pinellas site. Workers are involved there. Just around the corner, Rocky Flats, Mound, and Fernald will close.

For the first time ever, a site contractor or an M&O contractor will not be on site to tend to the traditional human resource needs of former contractor workers. We have recognized this, and we are working with the establishment of the new Office of Legacy Management to create a mechanism to allow for the administration of pension and medical benefits. We recognize the financial responsibility that we have for those workers. We are not trying to shirk that, and we are going to work to establish a system that will allow for a smooth, seamless administration of pensions and all issues associated with that, as well as these former workers' health benefits.

Exactly the shape that that is going to be in, the form it will take, we are still working that out and we will share that with committee staff as we go forward. We have already been talking to them some about that. We are still planning for this new mechanism. It has to be in place ideally by mid-2005 so it is ready to accept Rocky Flats.

As for the Pinellas folks we currently have their benefits funded for now, and they will be part of the new system. We were fortunate in that when the Pinellas plant closed, the M&O contractor was Lockheed Martin. They also had another site within the DOE complex, and they agreed just to transfer the administration of those benefits over to that site. But as we bring the new organization on board, we would anticipate that the Pinellas folks would be one of the first participants in the new mechanism.

Senator BILL NELSON. What was the Pinellas plant?

Mr. OWEN. It was a facility that I believe worked on electrical component parts of some of our weapons systems. I would be hesitant to be held to that 100 percent, but I believe that was their primary mission. It is a well-contained, modern plant type of facility a little south of Tampa. We probably employed over a thousand people there.

It is a success story for my office in how we were able to work with the local community for follow-on reuse and how the facility is now being reused by the local economic development authority. I believe there are actually more private sector workers in that facility today than DOE ever had. There is a small environmental remediation effort underway, a groundwater monitoring situation that we are monitoring and will continue to monitor.

But it is a typical, fairly modern industrial plant. It is not a sprawling, hundreds of thousands of acres type of facility. It is very defined, and it is located in a very populated area.

Senator BILL NELSON. When you go about closing down one of these facilities and cleaning it up, do you have in your process a way that the public comes in and has participation?

Secretary ROBERSON. Senator, we absolutely do. All of our cleanups are conducted in accordance with some regulatory process which in and of itself requires public involvement. There are obvi-

ously different processes, whether it is RCRA, CERCLA, or a DOE-regulated process under AEA or NEPA. They all involve and mandate public involvement in those decisions.

Senator BILL NELSON. Now, do you contract out to an insurance or financial company to ensure the benefits are there for the employees? If the vendor has financial difficulties, does DOE have any guarantee of those benefits?

Mr. OWEN. Yes, sir. As the situation is today, there are a large variety of pension plans and health benefit plans being used by our various contractors for our contractor workforce scattered across the country. If one of those plans were to be in the red at any given hour and there were a need to cash it out, the Department of Energy recognizes its responsibility to make that plan whole. Of course, many pension plans—and there are numerous ones throughout the Department—are contingent upon equity markets, and we all know that they have been heading south for the last couple of years. There are indeed plans currently across the complex nationwide that are in the red. If they had to be cashed out today, all the funds would not be available to do it and the Department of Energy would have to step in and cover that shortfall.

On the medical benefits, there are no means to establish trust funds under the Internal Revenue Code to cover medical benefits in the out years. That has been historically and will continue to be a pay-as-you-go, 1 year-at-a-time securing of appropriations to support the medical benefits of our contractor employees currently working or already in retirement and their families who are entitled to those benefits.

The new office that we are establishing is to better manage and administer all of those things, to allow us to get a better handle on it, especially as we start to lose contractors because of closures.

Senator BILL NELSON. When you close a site, what is done to see that the employees have the same bargaining rights that they had previously?

Mr. OWEN. Maybe we can both try and chime in, kind of a tag team.

If a site is closing, the workforce in most instances would no longer work for us. They would come to the end of their employment and, if they are eligible, go into retirement or wait for a deferred retirement, or find other alternative employment, which our office works to help them do through career transitioning.

I do not know if, at this hour, we have an issue where a whole block of unionized workers are moving from one site to another and it is an issue concerning their collective bargaining agreement. I cannot cite one right now, Senator.

Secretary ROBERSON. There are two points to be made. One, we certainly have sites where as work is done, the size of the workforce is reducing. Those workers, retirees for instance, are still a part of the bargaining unit, so as the active workforce negotiates benefits and other elements, the retirees are considered a part of that. But once the complete suite of work is done, there is no negotiation of a bargaining agreement at that point because there is no work to bargain around.

Mr. OWEN. Our policies concerning a site closure and the layoff of, say, people at Rocky Flats and, if there is an opportunity and

the right skill mix requirements, say at Idaho or Pantex or wherever require that those employees have preferential hiring or right of first refusal type of guarantees. We work with them to make the rest of the complex nationwide aware that they are available to highly qualified radioactive welders at Rocky, five of them are going to come to the end of their employment there and do you need them at Pantex? Then they would have some preference if they wanted to relocate, and we would help them relocate with some financial assistance if need be or maybe even help with some retraining dollars if they need some retraining. They would receive some preferential consideration at another DOE site if an opportunity exists for them.

Secretary ROBERSON. But upon that move, then they would be covered by the existing bargaining unit agreement at that site. It does not transport.

Mr. OWEN. The new site.

Secretary ROBERSON. Right.

Senator ALLARD. Very good. Thank you.

We both have a number of questions to ask this morning. Several concerns have been raised in my office that the Energy Employee Occupational Illness Compensation Program (EEOICP), which is managed by the Department of Labor, is processing the workers' claims much too slowly. This is for you, Mr. Owen, as the Director of Worker and Community Transition and the future head of the Office of Legacy Management. What can be done to make sure workers at DOE facilities have an effective remedy through the EEOICP and by the Department of Labor, and what are you doing to help expedite the process?

Mr. OWEN. At this hour, I am not responsible for the administration of that specific program.

Senator ALLARD. I see.

Mr. OWEN. It is a relatively new program. It is still being stood up, I believe, and there is always some hiccups associated with that. But that is not my responsibility. The oversight of that is by Assistant Secretary Beverly Cook, our Assistant Secretary for Environment, Safety, and Health.

Senator ALLARD. Go ahead, Madam Secretary.

Secretary ROBERSON. Mr. Chairman, I think I can contribute a bit because, as you are well aware, there are several elements of this program and I believe the concerns surround the processing of claims through State workers' compensation.

Senator ALLARD. So it is the State compensation program that is slowing down the processing?

Secretary ROBERSON. Well, it is the processing of claims through the State workers' compensation.

Senator ALLARD. I see.

Secretary ROBERSON. In each State we have, quite frankly, a different set of laws at the State level that govern. I am personally familiar with those claims that are in the system at each of our sites. I work very closely with our site manager in Kaiser-Hill on the ones that are specific to Rocky. I am familiar with those claims since the payment is directed through our contracts.

There are two elements that we are working on. One is records retrieval and management; as you can imagine, when it comes to

historical claims, it does indeed take some time to retrieve records. Then also it takes time working through the process.

I know one of the concerns is once there has been a physician's positive finding of a physicians panel, we direct our contractor to make payments. Those claims are sent to State workers' compensation, and then the State also has a process to work through to determine the range of disability or impact. We are working aggressively—hopefully, you can tell by my statement that I am personally informed on those complaints that have positive findings that are to be paid by the Environmental Management program—and we are working very hard. As Mike said, it is a new program and so with every step we are learning and finding a way to improve it. We are working on shortening that cycle. But there certainly are two elements that are different from site to site.

Mr. OWEN. If I might add, Senator, Assistant Secretary Roberson in her comments mentioned the retrieval of records. As part of the Office of Legacy Management, we have recognized that a very large, new, evolving problem is records management. Legacy Management will be working on and addressing these records issues. The records required for environmental remediation have to be left open to the public and revised periodically, with periodic investigations and inspections, as well as the record of all those many employees who have worked there.

As part of the new office we hope we will be able to come up with a good management system that will help everything move along better when it comes to records management and retrieval of what is turning out to be a very large amount of records that we are going to have to keep.

Senator ALLARD. Now, can the workers go to one place and get all this managed in one place, or do they have to keep going to a number of different offices throughout this process?

Secretary ROBERSON. For the workers' compensation program, I would venture to say the program was not designed to do that. That is why there are satellite offices set up across the country. We bear the burden of records retrieval and providing those records, but it is still a different task. I mean, we are dealing with records decades old, so the quality of the records and the ability to retrieve those and the contract history involved in retrieving those certainly proves to be a challenge in this venue.

Senator ALLARD. I guess the question is, when a site closes, won't workers need one organization to interface with?

Mr. OWEN. On that type of thing, sir, they would interface with the Office of Legacy Management or outposts that we establish to deal with them. I would anticipate that at a large site, such as Rocky Flats, we will probably require that the contractor of the pensions and health benefits system set up by us maintain what I call kind of a downtown storefront office with benefits claims processors and experts that the people can come in and learn about the new system, especially the first couple of years after a site is closed. After that, they will get used to the new system and recognize that it is seamless.

As we manage through all of these problems and the many problems of standing up the new office and some of the new things that come with closure and no M&O contractor any longer, the ability

for workers to access their records and interface with us and maintain liaison with us is very important. It will be high on our checklist of things to do to make sure that that is as smooth and seamless as possible—these are anxious times for a lot of the workers. For some 70 years, Rocky has been out there and it is going to go away. There is not going to be a building; there is not going to be a little Human Resources office for them to go into. We have to make sure that they feel comfortable with that.

Senator ALLARD. Will the DOE workers go to Legacy Management or will they have to go to other DOE organizations to seek remedies, Mr. Owen?

Mr. OWEN. Right now, if they have a specific remedy that they are seeking under the EEOICP, they would probably come into our same network and system to file that claim. But that is a very specific claim, a very specific program, a very specific statutory authority, working with State unemployment compensation folks.

But ideally the public face that we put on as far as basic information and records retrieval and things like that are concerned, they would be working through the mechanisms that my new office will establish out in the field. We certainly, when we go back, will work with Assistant Secretary Cook. I have already met with her. As I look at the new records management requirements in my office, I have gone to Assistant Secretary Cook and said, "Let's get our people together and determine what your requirements are so that we don't build the right thing without the other's knowledge." We will work for a smooth transition on that front and be fully coordinated with the very specific requirements of the EEOICP.

Senator ALLARD. Thank you.

Senator Nelson.

Senator BILL NELSON. Is this Office of Legacy Management going to be responsible for additional cleanup required after a site is closed and the cleanup is completed?

Mr. OWEN. No, sir. The remediation, the cleanup, will have been completed. If, for example, that cleanup results in a tail being left there or say it is a groundwater contamination problem such as at the Pinellas plant and there is some pump and treat equipment, Legacy Management will oversee and make certain that those remedies are being properly maintained. We will conduct surveillance to see that they are doing their job—doing sampling and whatever else is necessary.

But will we as such actually do the remediation? No. Secretary Roberson's office will do the remediation. When they are finished, they will pass it to me.

Senator BILL NELSON. But once the facility is closed, who has the responsibility for any additional cleanup that might occur down the road?

Secretary ROBERSON. May I? Thank you.

Mr. OWEN. You are talking about additional, new, unfound cleanup?

Senator BILL NELSON. That is correct.

Secretary ROBERSON. Well, I would say in general terms, the Department of Energy remains responsible for that cleanup. This does not remove that liability. The tool or organizational instrument that would be used 40 years down the road when we complete the

current scope of this program is something that the Secretary has a team evaluating now and would be a long-term instrument to ensure that the Department maintains the capability for remediation in the future, beyond where we are right now.

Senator BILL NELSON. How do you go about budgeting for that?

Secretary ROBERSON. The first thing that you do is you identify what is likely to be there, just as we budget today. Problem identification is a precursor to estimating what the cost would be. What the Secretary is committed to doing is maintaining the capability and the vehicle for doing so, but the specific problems obviously have to surface themselves before we could estimate the remedy.

Senator ALLARD. I want to get back to some of our discussion on the accelerated cleanup with the three sites. We appropriated extra dollars to get that accomplished. I remember making a commitment to other cleanup sites that as these sites were completed, those freed-up dollars would be available to them to accelerate their cleanup. How does DOE plan to use the annual savings utilized by the closure of the three sites? Are they going to be used to accelerate cleanup on the remaining EM sites?

Secretary ROBERSON. Mr. Chairman, the current application to cleanup in this program is a result of the Top-to-Bottom. You are absolutely correct; about 5 or 6 years ago the approach was to accelerate those sites and reinvest the savings from those in the cleanup of other sites. As a result of the Top-to-Bottom, the Department made the determination that the cost to accelerate the cleanup of those sites based upon the strategies that resulted from that review with some minimal increase today would actually allow us to make a broader life cycle savings in the overall program.

What you have before you in the 2004 budget request and what you saw in the 2003 budget request and congressional appropriation was an increase over what had been planned as a flat funding program. That peak over the next 2 to 3 years actually allows us to pull forward the cleanup at those sites so that those communities actually benefit in a more timely manner from a cleaner environment.

Senator ALLARD. Thank you for your comments.

As Environmental Management attempts to define the scope of the remaining cleanup responsibilities, NNSA continues to create additional waste streams and need for structures to be decontaminated and decommissioned. As far as you know, is there a plan for NNSA to mitigate their waste in a facility D&D scope that will not be added to the environmental management scope?

Secretary ROBERSON. There are two things at work right now. One is, with the opportunity for accelerating this scope of work, it has provided the impetus to really look 20 years out at what environmental remediation work scope would avail itself and to actually plan structurally for that right now.

The Secretary has established, I would say, an interagency team, since NNSA is a semi-autonomous agency, over the next 4 months to actually dissect this issue and provide options for a decision as to how to go forward in the future. Taking into consideration the acceleration of this program, it brings issues like that to the forefront.

It has been one of the clear benefits of the acceleration of this program. It is one of those challenges that was lying in wait and has come to the forefront that we must deal with now. The Secretary has set forth an effort to do that and to do that within this fiscal year.

Senator ALLARD. Well, if NNSA is semi-autonomous, don't they maybe have a responsibility to do their own cleanup?

Secretary ROBERSON. I think all options are available. I am not aware that there is a lean one way or the other, but I think all options are available, and the Secretary has been very clear that while they decide what the future may look like, my job is to demonstrate we are taking care of the present.

Senator ALLARD. As a follow-up question—in your vision for Environmental Management, do you see it going out of business or should it continue to take on cleanup and waste business at some point in time?

Secretary ROBERSON. I believe we have been very consistent in that there is a tremendous amount of work in this program that needs to get done, and continuing to expand it without a demonstration of doing, actually fulfilling, actually remedying issues that have been left in the environment, will not improve our ability to deal with future work scope. The Secretary has been very clear. Our job is to bound the scope that we have and demonstrate that we can do it and fulfill it; the leadership of the Department will identify options for completing future environmental cleanup.

Senator ALLARD. Are there some advantages in your view to having the NNSA do their own cleanup?

Secretary ROBERSON. Well, I would liken it to industry. In industry, the view is normally that if a generator has to make cost-benefit decisions, then they are likely to generate less—to be more aggressive about pollution prevention. In the past, EM and NNSA have been very intertwined at these sites. But I believe that there is a benefit to tying pollution prevention principles to generation of materials directly.

Did I answer your question, sir?

Senator ALLARD. I believe you did.

Senator Nelson.

Senator BILL NELSON. As a follow-up to that, take, for example, when you close Rocky Flats in 2006, are you going to be able to, in your budget plan, redistribute the funds that were made available by the Rocky Flats closure? Are you going to be able to redistribute that to other sites?

Secretary ROBERSON. The strategy we have laid out and we have been implementing for the last 18 months involves accelerating the cleanup of those sites. Five years ago the strategy was to accelerate Rocky Flats, Mound, Fernald, and a few smaller projects, reinvest that savings, and then pull forward the cleanup at those other sites.

Through the Top-to-Bottom Review, we actually developed strategies with minimal investment to accelerate the cleanup of those other sites as well. Our longer term plan does not necessarily include reinvesting those fundings into the current cleanup. It may be available for cleanups that are now not a part of the Environ-

mental Management program. But our strategy funds the accelerated cleanup of all of our sites today.

It is, thus, a different strategy. Five years ago, the plan was level funding and pull as many sites as you could when you could underneath that level funding. In the last 2 years we have actually asked for a minimal increase to pull all of our sites forward in schedule. That is what allows us to take 35 years off the overall schedule for the program.

Senator BILL NELSON. Can you provide the committee with a funding plan for each of those things down the road?

Secretary ROBERSON. Yes, sir.

[The information referred to follows:]

FUTURE FUNDING

The administration is in the process of budget formulation for fiscal year 2005. With the conclusion of this process, the fiscal year 2005 budget request will provide you our funding plan to achieve the new "minimal investment" acceleration strategy and its associated risk reduction and cleanup goals.

Senator BILL NELSON. May I ask some other questions?

Senator ALLARD. Yes, go ahead, Senator.

Senator BILL NELSON. Does your 2004 budget request fully fund the DOE's obligations in the various agreements?

Secretary ROBERSON. I believe it does.

Senator BILL NELSON. All right. You initiated an effort to renegotiate the cleanup agreements with States and EPA to focus on risk reduction. Can you explain what this means from a practical perspective?

Secretary ROBERSON. What it means from a practical perspective, as with any project, whether it is in industry or in government, we drew conclusions 10 years into this program—and obviously it was validated not just by the Department's Top-to-Bottom Review, but reviews by GAO, IG, and many others.

At the 10-year mark in this program, it was time to reevaluate both the strategy and approach to cleanup. In doing that reevaluation, we were able to apply lessons learned, technology developments, and, quite frankly, a more capable pool of resources to designing the logic for cleanup. The problems are there. We are not changing the problems. But our approach in the sequencing of addressing those is really the result of the Top-to-Bottom Review that impacts our cleanup approaches and our agreements at some of our sites.

The way our cleanup agreements are structured is unchanged. They include processes defined that includes regulatory collaboration and decisionmaking, and public collaboration and decisionmaking. Those were processes used during development of the Performance Management Plan (PMP). Then there is a section that involves regulatory milestones.

Within the process of applying our cleanups, they all include steps to go through to change milestones. With or without the accelerated cleanup, that is the case and that has always been the case, and milestones do evolve as we learn and we experience. We view this as learning and experience and the evolution of it does have some limited impact on the sequencing and scope of milestones.

Senator BILL NELSON. Well, in that budget do you get the same level of cleanup or does that cleanup start to change?

Secretary ROBERSON. I believe in many cases we get a better cleanup sooner. The approach to cleanup and the end result I do not believe are necessarily disconnected. Am I answering your question?

Senator BILL NELSON. Well, what about fines for noncompliance for the EPA and the States?

Secretary ROBERSON. Are funds for fines included? Is that your question?

Senator BILL NELSON. No. The various agreements that you have include what are known as these enforceable milestones that you just talked about.

Secretary ROBERSON. Right.

Senator BILL NELSON. They allow the States and the EPA to assess those penalties or fines for noncompliance. Are there any States at the moment that are contemplating assessing such fines or penalties, do you know?

Secretary ROBERSON. None that I am aware of directly related to our accelerated cleanup initiative. At the Hanford site, I believe they are assessing a fine because we were late on meeting a milestone of sludge removal from spent-fuel basins. At Idaho I believe there was a fine recently assessed for missing a milestone.

Our going-in assumption has to always be that the regulators have the same goal in accomplishing the cleanup that we do. Actually, the steps we went through in this program were to revalidate that was the case, that the goals that we sought are the same. We may indeed have disagreements on the steps to achieving that along the way.

But our agreements have processes through which we work, and that is not new. Two years ago I could have probably listed out two or three fines that were in debate between ourselves and the regulators. We have not created any new structure with this program.

Senator BILL NELSON. Is it your experience in dealing with EPA that they are doing their job or are they dragging their feet?

Secretary ROBERSON. Well, that is a hot question. To be honest, I tend to be more self-critical. I think if they are dragging their feet, it is because we are not leading. I tend to focus more on are we dragging our feet, are we stepping out, because we are responsible for actually doing this work. We do not have to be dragged along the way to do it.

My goal is for us to be out front in demonstrating we understand it, we are committed to it, and we know how to do it. This way I do not need EPA or the States to drag us along. That is the way we should be doing our work.

Senator BILL NELSON. We appreciate your commitment. What if you were not so committed? Would EPA be there cracking the whip?

Secretary ROBERSON. If the Department were not so committed, I think history shows that they would be there cracking the whip.

Senator BILL NELSON. I hope you are right, but I do not have faith.

Thank you.

Senator ALLARD. I think I have about four questions left on my side. On that response, I think Colorado has been cracking the whip if I recall correctly and keeping the pressure on.

Secretary ROBERSON. May I, Mr. Chairman, just add one comment?

Senator ALLARD. Yes.

Secretary ROBERSON. I think the States, EPA, and DOE have to be focused on the same set of goals because we are all there to produce a better environment for the people in the communities and in the States that we work in. We have to be careful not to relate cracking the whip to just more milestones. One of the changes that we are trying to make in this program is to ensure that we are all focused on the accomplishment of physical results—problems solved, material gone. We do not just contain and maintain compliance, but we reduce those risks because they get no easier in the future.

Sometimes we confuse more milestones with risk reduction and remediation, and they are not the same. That is a challenge in this program.

Senator ALLARD. Let me address this to Mr. Owen, and I will just ask you a direct question here. Would there be value in folding the Worker and Community Transition Office into the Office of Legacy Management so there is one office which is responsible for all legacy issues?

Mr. OWEN. Yes, sir. Our budget submission shows the offices as separate and freestanding. We debated that long and hard prior to sending the budget to Congress. We decided to take the course we did because we felt it added emphasis to the importance of the new Office of Legacy Management.

Clearly, because of many of the things that the Worker and Community Transition Office is doing, it is a very natural glove-fit to have it run by the same Office of Legacy Management. They are out there dealing with local communities, which will be a big responsibility of Legacy Management. They take the worker up to that last split second when he goes off the payroll and Legacy Management picks him up and carries him on through retirement. It seems very logical that the two offices be merged together. We would support that, and, as either the manager of both of the offices or the merged office, I would personally find it an easier management process if they were merged together.

Senator ALLARD. In creating the Office of Legacy Management, why didn't the administration just go ahead and put the Worker and Community Transition right in the Legacy Management at the start?

Mr. OWEN. Well, again, we seriously debated that and we really wanted to lead with the new emphasis on Legacy Management to show its importance. We did not want to appear as though maybe it was being diluted in another office because it is certainly not going to be. It was a decision we debated. We could have gone either way. We decided to send it separately because we did not want it to be diluted. But the marriage of the two just begs of common sense.

Senator ALLARD. How soon do you think that will happen?

Mr. OWEN. Well, we plan to stand up the new office on October 1, 2003, and we could on October 1 have the merger accomplished as well if there is support for that on Capitol Hill, if the appropriations come back aligned accordingly. Now there are two budget lines, but with some language coming back from here, we could do it October 1.

Senator ALLARD. We would like to work with you on that. I think we could combine that, and I think it would help if we could.

Mr. OWEN. Thank you.

Senator ALLARD. On security and safeguards, does the fiscal year 2003 appropriation for safeguards and security provide enough funding for the Environmental Management program to provide adequate security while maintaining the cleanup and closure schedules, Madam Secretary?

Secretary ROBERSON. Mr. Chairman, first of all, I would like to express our gratitude to Congress. In the omnibus budget there was an inclusion of a reprogramming that actually did indeed put the Environmental Management program in a solid position for this fiscal year based upon a security level 3.

Obviously, we are at an enhanced security level, and we are pretty close within the Department to understanding the impacts of that if we have to maintain it for the balance of the fiscal year. I am sure we will be communicating very soon. There clearly will be some impacts because that changed security posture results in some additional costs, although we think minimal. But the Department is evaluating all of its programs at this time.

Senator ALLARD. What kind of plans do you have for closure on the final details? Have you come up with some final details for closure and how those details can be verified in the three sites that we have accelerated plans?

Secretary ROBERSON. The three specific sites? At Mound, Fernald, and Rocky Flats, as you well know, once you have agreement among the public and the regulators as to what the bounding scenario is—for instance, at the Rocky Flats wildlife refuge; at Fernald, county park and wetlands; and at Mound, transition to the city of Miamisburg for industrial use—then the regulatory process aims to lay out the details of how you get there to accomplish that.

I would say I think we are in pretty good shape on those three. We will continue to have details to work out, both with the regulators among ourselves and with the community. But I think we are in a pretty solid path, better than we have ever been before on any site.

Senator ALLARD. Now I have a number of questions that I want to ask on the Savannah River Site and then I will pretty well be able to wrap mine up. On Savannah River, are there any waste streams which are planned to go through the F Canyon now or in the future?

Secretary ROBERSON. No, sir, none that I am aware of.

Senator ALLARD. Are there any materials held by Environmental Management or the National Nuclear Security Administration which need to be disposed of and which must be or should be processed through F Canyon to reach a safe disposition?

Secretary ROBERSON. No, sir. We believe H Canyon can meet the Environmental Management needs and the future needs of the National Nuclear Security Administration.

Senator ALLARD. There are not any materials being held by Environmental Management or NNSA?

Secretary ROBERSON. There are no materials being held by Environmental Management. The question with NNSA is future release of materials, things that are not before us right now, and ensuring that the capability is maintained to process any future materials. We believe that H Canyon still provides that capability. Obviously, that is a result of the size of the stockpile and modernization at some of the different sites. But we believe H Canyon can provide that long-term capability and F Canyon is not needed.

Senator ALLARD. As far as you know, are there any reasons now or in the foreseeable future why we would need F Canyon to meet the national security mission?

Secretary ROBERSON. No, we believe that F Canyon is available—is no longer needed for the future mission of any of our programs.

Senator ALLARD. Any reason why F Canyon should not be dismantled?

Secretary ROBERSON. Well, we do have a congressional hold point that we are attempting to resolve between ourselves and the Defense Nuclear Facilities Safety Board and committee staff, but there is no work-off to be done. We have completed processing all the necessary material in that canyon.

Senator ALLARD. What is your plan for the H Canyon there at Savannah River?

Secretary ROBERSON. Currently, in the Environmental Management program, our processing needs for H Canyon that are within the scope of this program would be completed in about 2008. Right now the National Nuclear Security Administration is evaluating its needs beyond that period of time and could very well result in H Canyon needing to be available to process materials that come out of NNSA in the future. I do not know what those material streams would be. They are in the process of determining that right now.

Senator ALLARD. Is Environmental Management going to make sure that all materials which need to be processed through H Canyon will be processed before any decommissioning of H Canyon?

Secretary ROBERSON. Absolutely, and I think the Secretary has made that commitment.

Senator ALLARD. Senator Nelson.

Senator BILL NELSON. I am asking you, under current law, DOE is required to specifically request funds in a line item, as is DOD, for anything that is over \$5 million. Can you explain how your 2004 budget request would propose to modify the current law?

Secretary ROBERSON. I do not think that we do propose the current law. Is this an issue of the proposed structure, the reduction of the number of construction line items?

Senator BILL NELSON. I am asking you, under current law, construction projects over \$5 million have to have a line item. Is there any in your budget that does not obey current law?

Secretary ROBERSON. I do not believe it does because the bulk of this program is not construction line item and was not before the 2004 budget request.

Senator BILL NELSON. Do you propose to change that current law?

Secretary ROBERSON. I do not propose to change that current law, sir. What the administration has proposed and I obviously support is the elimination of certain interim activities as construction line items. We clearly proposed a new budget structure for this new program in the 2004 budget request. That budget structure is a result of lessons learned from the closure initiatives of the past year. We did not invent this for the rest of the complex. We are simply taking the lessons learned from Rocky, Fernald, and Mound and applying them to the remediation activities at all of our operations across the complex.

What it entails is it does, indeed, provide greater accountability in that by providing to Congress visibility of a subset of the billions of dollars spent in this program, somewhere around 20 percent of the funds, we would report on the totality of the funds, almost 80 percent of the funds that come in this program. Our goal is to structure the entire program applying our project management order, not just to the construction line items, but the entire project. The entire program is a set of projects from site to site that have some defined end point to be accomplished.

That is the way the reporting and the budgeting would occur. We call them project baseline sheets that are provided to Congress to define the scope of work at each site. Major pieces of work, including life cycle costs, would be handled as a project, even though it isn't a construction project.

Let me just give you an example of why this is important. Savannah River, Hanford—the major drivers of funds utilization in this program are remediating our tank farms where we have liquid radioactive waste below ground. This year we have construction line item projects for constructing waste removal systems on top of tanks, and we have hundreds of these tanks. The removal system above each tank is a construction line item.

What we are attempting to do is to create more mobility and flexibility on a real-time basis to remove waste because that is the result. What should be important is not the increment that is spent on constructing a system on top, because we would like for them to learn from each other in real time, but how much waste is actually removed in a reasonable time frame.

We have proposed substituting construction line item projects that are increments of accomplishing work for visibility of the actual accomplishment of the work that makes the environmental difference in what we spend dollars on.

Senator BILL NELSON. Okay. But let me tell you, you could get into some touchy territory here because this whole process is about the constructive and healthy tension between the executive branch and the legislative branch, which funds the executive branch. The idea of being in there is that the requirement of \$5 million plus for a construction project the legislative branch has the oversight and the spending authority.

This is the way the constitutional fathers created this remarkable experiment that we have been engaging in for over 2 centuries. I want to make sure that we are not suddenly creating a

category that is skirting for future administrations this requirement of our appropriations oversight.

Secretary ROBERSON. Well, Senator, that is certainly not our intent. Clear and simple, our intent is just as I explained. I would be more than happy to work with Congress to make sure that we address any concerns in a way that will be satisfying. I also would continue to like to have the opportunity to explain why I think it is so critical to this program.

Senator ALLARD. Senator Nelson, if I can step in here. We have a good model at Rocky Flats, and Madam Secretary was involved with that. It is when you put these certain goals that become inflexible in the process that it does not make sense. What we found at Rocky Flats is that sometimes you run into a problem and you can do work over here. While you are doing work over here, you resolve this problem, and then you can come back to it.

Secretary ROBERSON. Exactly.

Senator ALLARD. It keeps you moving during the process. That is how the committee has looked at this in the past, and we have decided that you need to put some confidence in what is happening on the ground so that you do not cause delay of cleanup. The purpose of the committee has been to see rapid cleanup—at least see it accelerated past what it was and that was one of the key milestones in getting rapid cleanup to occur—to ensure that we did not make it so fragmented that we run into these milestones that created problems.

Go ahead.

Secretary ROBERSON. I was just going to say, Mr. Chairman, you are absolutely right, and it is the same approach that we applied to ourselves, we applied to our contracts, and that many of our regulatory agreements are coming around to. We are going to run into challenges and problems that are going to slow work down. What we have looked at is any wall that would prevent us from applying resources, human and financial, to ensure that we continue to move forward on other activities while we address whatever issues may arise on a specific activity, which is critical to being able to accomplish the work before us.

Senator BILL NELSON. If at the end of the day what you are trying to do is to close a site and to get it done as quickly as possible and as efficiently as possible, what about considering the advantages of budgeting by site closure instead of by closure year? Do you understand what I am saying?

If I understand your proposal, each of the sites is allocated a portion of your account based on when they anticipate they would close or the cleanup would be complete. Would it make more sense to budget that by site?

Secretary ROBERSON. Well, this is the balance we attempted to strike, and I think it is critical to maintain this balance. What we are proposing to do in the 2004 budget structure is to budget by fulfillment of activity—spent fuel removed from wet storage and nuclear material packaged and in storage. There may be five specific activities at a site. But we believe the offset is to demonstrate progress. With budgeting by site, what we think is critical is to hold ourselves accountable for accomplishing results, not just fund-

ing the site, but making visible what is to be accomplished by major activity.

I think we have proposed to go one level down for the reason that we want accountability. We are asking for flexibility in being able to accomplish it, but we also know that one of the things that is going to get this job done is to maintain accountability for fulfilling the specific physical results that we have committed to do.

Senator BILL NELSON. In the past there was a distinction between the waste management and the treatment accounts and the accounts devoted to the cleanup of soil and water. Is this distinction no longer important?

Secretary ROBERSON. In our project baseline summaries, which are what is provided as the basis for our budget request in this program, I think we have identified somewhere between seven and nine distinct accounts that cross every site. Savannah River would have an account for soil and water remediation, with a life cycle cost and a schedule for completing that. Hanford would have the same. Rocky would have the same. Savannah River would have a tank farm closure summary as well, as a subproject to the cleanup of that site. Hanford would have the same.

It would be a consistent set of subprojects across the whole complex that you would see repeated with a schedule and a life cycle cost for that specific site.

Senator ALLARD. I do not have any more questions. Senator Nelson, have you wrapped it up?

Senator BILL NELSON. Let me just check here.

Senator ALLARD. While he is checking to see if he has any more questions, there may be a few questions for the record that we will want to submit to both of you. I just ask that if we have those questions that you could respond back to us within the 10-day period.

Mr. OWEN. Yes.

Secretary ROBERSON. Yes, sir.

Senator ALLARD. If for some reason you cannot make that, if you would let us know and the reason why. Most of these questions probably will be in regard to Rocky Flats closure on some of the specific concerns that we hear there from time to time.

Mr. OWEN. Yes, sir.

Secretary ROBERSON. Yes, sir.

Senator BILL NELSON. I am fine.

Senator ALLARD. Thank you, Senator Nelson.

I want to thank the panel. I think this has been a good hearing. Thank you very much.

Secretary ROBERSON. Thank you.

Mr. OWEN. Thank you.

Secretary ROBERSON. Thank you both.

Senator ALLARD. The committee is adjourned.

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR WAYNE ALLARD

RESPECTIVE ROLES REGARDING THE DEVELOPMENT OF STEWARDSHIP POLICIES FOR CLOSURE SITES

1. Senator ALLARD. Secretary Roberson and Mr. Owen, the successful closure of a site necessitates incorporating long-term stewardship requirements into remedy

selection. What are the respective roles of Environmental Management (EM) and Legacy Management (LM) regarding the development of stewardship policies for closure sites?

Secretary ROBERSON and Mr. OWEN. The Department of Energy is addressing long-term stewardship with a Department-wide, corporate strategy. The Office of LM will lead the coordination and development of policy for the Department. The Office of EM will participate in the LM-led development of policy to provide perspectives on cleanup and remediation plans and strategies.

2. Senator ALLARD. Secretary Roberson and Mr. Owen, if LM is charged with developing such long-term stewardship policies, what measures will be put in place to ensure the closure sites do not receive conflicting policy direction regarding remedy selection and related post-closure long-term stewardship needs and commitments from EM and LM?

Secretary ROBERSON and Mr. OWEN. Remedy selection and remedy maintenance, which includes long-term environmental surveillance and maintenance, are clearly interrelated activities. Therefore, EM and LM will work closely to ensure that EM's remedy decision policies and LM's post-closure policies are consistent. Thus, as part of the remediation process, EM will consider and make policies regarding active remediation, taking into account the long-term protectiveness and life-cycle cost of implementing a chosen environmental remedy, as required by applicable law and regulation. LM will consider and make post-closure policies regarding the long-term surveillance and maintenance.

3. Senator ALLARD. Mr. Owen, LM will be charged with ensuring the long-term effectiveness of remedies and will house the long-term stewardship subject matter experts. Given that the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) explicitly provides that the long-term effectiveness of remedies be considered when selecting remedies, does LM intend to be involved in the selection of remedies? If so, how?

Mr. OWEN. As part of long-term surveillance and maintenance activities, LM will evaluate the effectiveness of remedies for sites under its authority. Additionally, LM will work with and provide data to EM for its consideration in future remediation decisionmaking.

4. Senator ALLARD. Secretary Roberson, if LM does not intend to be involved in the selection of remedies, how will EM continue to integrate long-term stewardship into remedy selection and coordinate with LM?

Secretary ROBERSON. EM is charged with putting environmental remedies in place that comply with applicable laws and regulations, such as the Comprehensive Environmental Response, Compensation, and Liability Act. Thus, long-term stewardship considerations are integrated into remedy selection as part of the regulatory process.

5. Senator ALLARD. Secretary Roberson and Mr. Owen, given the aforementioned integration of remedy selection and long-term stewardship planning, when Rocky Flats personnel call the Department of Energy Headquarters with stewardship planning questions, who answers the phone, EM or LM?

Secretary ROBERSON and Mr. OWEN. During closure and environmental remediation operations at the site, EM site personnel will continue to report and consult with EM personnel at headquarters. However, EM and LM will work together in a consolidated effort to ensure that sound stewardship decisions are made during and after closure.

6. Senator ALLARD. Secretary Roberson and Mr. Owen, similarly, will a long-term stewardship subject matter expert remain with EM, or will all responsibilities be transferred to LM?

Secretary ROBERSON and Mr. OWEN. LM will have personnel with long-term stewardship and long-term surveillance and maintenance expertise. EM's Office of Long-term Stewardship personnel will transition to LM. The offices of EM and LM will work closely together.

ROCKY FLATS CLEANUP AGREEMENT

7. Senator ALLARD. Secretary Roberson and Mr. Owen, at Rocky Flats, DOE and the regulators have committed that the long-term stewardship plan will be adopted as part of the final closure documents. Further, under the Rocky Flats Cleanup

Agreement, the Environmental Protection Agency (EPA) and Colorado Department of Public Health and the Environment (CDPHE) must, as a regulatory matter, approve the stewardship plan. Which program office (EM or LM) will be responsible for developing, finalizing, and seeking the approval of the plan by the EPA and CDPHE?

Secretary ROBERSON and Mr. OWEN. EM is and will continue to be responsible for conducting all necessary cleanup and remediation activities, including developing required plans and finalizing regulatory documentation. However, LM and EM will work together to coordinate the development of Rocky Flats' long-term stewardship plan and other documents, as necessary, associated with the long-term care.

8. Senator ALLARD. Mr. Owen, currently all DOE-Rocky Flats staff work for EM, including site staff that focus on long-term stewardship. Will LM staff be assigned to Rocky Flats prior to closure so that they can be involved in developing the stewardship plan?

Mr. OWEN. Not at this time. However, on-site EM staff will coordinate with LM staff to develop any required documents.

CRITERIA FOR TRANSFERAL OF SITE JURISDICTION

9. Senator ALLARD. Secretary Roberson and Mr. Owen, what criteria will EM and LM use for determining when site jurisdiction should be transferred from one program office to another? What criteria will EM use to determine a site can be designated as closed?

Secretary ROBERSON and Mr. OWEN. The Department will use the draft revised Life-Cycle Asset Management process for transferring site responsibility between programs. This process is a detailed management tool for ensuring clear lines of accountability and authority for sites before, during, and after transfer. EM and LM personnel are familiar with this process as they assisted with its development and revision. The Department will determine a site's readiness to close pursuant to all applicable laws, regulations, and agreements.

10. Senator ALLARD. Secretary Roberson and Mr. Owen, will LM have veto authority over the transfer of a site to its jurisdiction?

Secretary ROBERSON and Mr. OWEN. There is no "veto authority" between departmental programs. Any issues that may arise regarding the transfer of sites from EM to LM will be discussed and resolved by the Department's senior management.

11. Senator ALLARD. Secretary Roberson and Mr. Owen, how will disputes be resolved?

Secretary ROBERSON and Mr. OWEN. Issues or disputes between EM and LM will be resolved by the Department's senior management.

COST-ESTIMATES FOR POST-CLOSURE LONG-TERM STEWARDSHIP PLANS

12. Senator ALLARD. Mr. Owen, currently, DOE field offices, including Rocky Flats, are required to develop cost estimates for implementing post-closure long-term stewardship plans. Presumably, these costs estimates will be updated annually. Assuming EM continues to develop the cost estimates, what will be LM's role in this process?

Mr. OWEN. LM will review and analyze cost estimates to ensure they are adequate to meet requirements.

13. Senator ALLARD. Secretary Roberson, conversely, if LM assumes responsibility for developing these cost estimates, what will be EM's role in that process?

Secretary ROBERSON. EM's role is, and will continue to be, development and selection of remedies, taking into consideration the long-term effectiveness and cost of the selected remedy.

14. Senator ALLARD. Secretary Roberson and Mr. Owen, likewise, what steps will LM and EM take to ensure the cost estimates are factored into remedy selection analyses? This question is extremely important because CERCLA mandates that both cost and long-term effectiveness be factored into remedy decisionmaking.

Secretary ROBERSON and Mr. OWEN. The Comprehensive Environmental Response, Compensation, and Liability Act, as well as the Resource Conservation and Recovery Act, require the Department to develop and analyze remedial options while considering the long-term implications and cost. EM takes into account and

considers the long-term effectiveness and cost of all remediation decisions. In addition, LM will review and analyze cost estimates to ensure they are adequate to meet requirements.

LM TOOLS AND STAFFING RESOURCES

15. Senator ALLARD. Mr. Owen, once a site has been closed and responsibility has been transferred to LM, what tools and staffing resources will LM have to maintain and repair remedies and implement response actions?

Mr. OWEN. LM will request the financial resources and be staffed with personnel who have the knowledge and experience needed to conduct an effective and efficient long-term surveillance and maintenance program. LM will be staffed with existing personnel from DOE Headquarters and a number of DOE sites, including personnel from DOE sites located in Morgantown, West Virginia; Pittsburgh, Pennsylvania; and Grand Junction, Colorado. Much of that staff has long-term surveillance and maintenance experience as they perform these responsibilities at numerous sites today. LM's core staff will adjust accordingly to perform complex long-term surveillance and maintenance requirements at an increasing number of closure sites. Additionally, LM is currently factoring the estimated increase in site responsibility into future program budget, planning, and staffing profiles to ensure the office has access to the resources needed to properly manage legacy responsibilities.

16. Senator ALLARD. Mr. Owen, is DOE's assumption that in shifting the Grand Junction Office to LM that Grand Junction will be charged with these critical responsibilities?

Mr. OWEN. The Grand Junction staff has been responsible for long-term surveillance and maintenance activities at numerous sites since 1988. This management and long-term surveillance and maintenance expertise will be drawn upon as LM goes about its responsibilities.

17. Senator ALLARD. Mr. Owen, what tools and staffing resources will LM have to research and develop new technologies that could be applied to remedies to either improve the remedies or replace the remedies?

Mr. OWEN. LM will actively coordinate and integrate Federal research and development (specifically the work of the Department's Office of Science) into our program. Additionally, LM will use the draft Long-term Stewardship Science and Technology Roadmap as a framework for identifying research and development opportunities and for leveraging existing investments in long-term stewardship related science and technology.

MAINTAINING PHYSICAL RECORDS

18. Senator ALLARD. Secretary Roberson and Mr. Owen, which office (EM or LM) will maintain physical records regarding mission work, cleanup activities, and long-term stewardship?

Secretary ROBERSON and Mr. OWEN. In general, LM will be responsible for and receive custody of all departmental closure site records as sites are transferred to LM for long-term surveillance and maintenance. Currently, LM and EM are coordinating these record management efforts with the Department's Chief Information Officer, the Office of Environment, Safety and Health, and other affected responsible entities.

ROCKY FLATS NATIONAL WILDLIFE REFUGE ACT OF 2001

19. Senator ALLARD. Secretary Roberson and Mr. Owen, under the proposal, LM, not EM, will be charged with managing Rocky Flats once the site is closed and delisted from the CERCLA National Priorities List. Per the Rocky Flats National Wildlife Refuge Act of 2001, DOE will be charged with implementing the Memorandum of Understanding (MOU) that is now being negotiated between EM and the U.S. Fish and Wildlife Service. Should LM, the agency that will be charged with implementing the MOU, be involved in the development of the MOU?

Secretary ROBERSON and Mr. OWEN. The EM's Office of Long-term Stewardship staff, which will be transitioning to LM, has participated in the past, and will continue to actively participate, in the development of the MOU. LM will continue to work with EM staff on the MOU and will coordinate with EM on any agreements that provide for or affect the management of sites after closure.

[Whereupon, at 11:20 a.m., the subcommittee adjourned.]

**DEPARTMENT OF DEFENSE AUTHORIZATION
FOR APPROPRIATIONS FOR FISCAL YEAR
2004**

TUESDAY, APRIL 8, 2003

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

STRATEGIC FORCES AND POLICY

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

Committee members present: Senators Allard, Reed, and Bill Nelson.

Majority staff members present: L. David Cherington, counsel; Brian R. Green, professional staff member; and Mary Alice A. Hayward, professional staff member.

Minority staff members present: Richard D. DeBobes, Democratic staff director; and Madelyn R. Creedon, minority counsel.

Staff assistants present: Andrew Kent and Sara R. Mareno.

Committee members' assistants present: Douglas Flanders and Jayson Roehl, assistants to Senator Allard; Arch Galloway II, assistant to Senator Sessions; Elizabeth King, assistant to Senator Reed; and William K. Sutey, assistant to Senator Bill Nelson.

**OPENING STATEMENT OF SENATOR WAYNE ALLARD,
CHAIRMAN**

Senator ALLARD. I am going to call to order the Strategic Forces Subcommittee on the Armed Services Committee. First of all, I would just like to welcome our panels here today. I am looking forward to your testimony. Just a little bit of business. We are going to go ahead and conduct the first part of this hearing here in open session, then we are going to go to Top Secret level and the staff will lead us over to the room where we will be set up for Top Secret. Unfortunately, we did not get cleared for some of the real technical nuclear discussion aspect of it, so we will have to avoid that in our discussion once we are at Top Secret, if you will help me remember that while we are there.

We will start out this morning and Senator Nelson was going to join us, but apparently he is not here, so I will go ahead and proceed.

I want to start by introducing the witnesses on our first panel: Acting Administrator of the National Nuclear Security Administration (NNSA) and Under Secretary of Energy Linton F. Brooks; and Admiral James O. Ellis, Jr., Commander, U.S. Strategic Command. Since both of you have appeared before this committee, I want to welcome you again. In fact, Admiral Ellis, we heard from you earlier this morning.

Admiral ELLIS. Yes, sir.

Senator ALLARD. We are here to receive testimony on U.S. strategic forces. There is no more important task for this subcommittee than to exercise its oversight functions with respect to U.S. nuclear forces. Nuclear weapons remain the most awesome in our arsenal, and we cannot foresee any circumstances in which nuclear weapons would cease to play a central role in our nuclear posture.

The security, safety, reliability, and effectiveness of these weapons remain paramount. But there can also be no doubt that the role of nuclear weapons in our overall military posture and the very notion of having to think about strategic forces is changing. The Nuclear Posture Review (NPR), issued in December 2001, was truly a watershed document. It recognized that the Cold War paradigm of two hostile nations balanced in a nuclear standoff was no longer relevant and could not dominate our strategic future.

Uncertainty about the nature and direction of current and future threats is now more prominent. Rogue nation and non-state threats are key. The psychological underpinnings of deterrence are more poorly understood with respect to future adversaries than they were when we faced off with the Soviet Union.

These considerations led the Department of Defense to conclude that a new, more flexible, more adaptive strategic triad is needed. Rather than rely exclusively on a nuclear triad of land and sea-based intercontinental missiles and long-range bombers, the Nuclear Posture Review outlined a new triad consisting of offensive strike forces, both nuclear and non-nuclear, defensive systems, both active and passive, and an infrastructure capable of supporting these systems, all supported by robust command, control, intelligence capabilities.

I know some of my colleagues are uncomfortable with the notion that this is an era of inevitable change in which we must rethink and reshape our strategic forces. There are concerns, none of which I mean to belittle, that these changes are not for the better and in adapting our nuclear and non-nuclear forces to the new strategic environment they somehow lower the threshold for nuclear use, or that active defenses against missile attack may somehow be destabilizing.

But from my perspective one of the major goals of the NPR was to reduce reliance on aging nuclear weapons. The merit of missile defense, advanced conventional weapons, and new delivery systems is that they have the potential to provide a more complete tool kit to our political and military leaders and a more relevant set of capabilities to assure our allies, dissuade our adversaries, deter, and, if necessary, defeat our enemies.

In laying the groundwork to provide a more complete set of alternatives, the Nuclear Posture Review holds the promise of raising, not lowering, the nuclear threshold.

None of this is to say that defenses and advances in conventional munitions and delivery systems can deter or defeat the entire range of threats. Our legacy nuclear weapons and delivery systems will remain important to hold certain targets at risk and, if for no other reason than their enormous destructive power, remain a powerful deterrent. But as Cold War threats have diminished after the collapse of the Soviet Union, a new set of security challenges has emerged to which our Cold War nuclear force may not be well adapted. Thus I believe it is time to begin considering how advanced nuclear concepts may contribute to our ability to hold at risk emerging threats.

By providing for research in advanced nuclear concepts, our weapon designers will have the opportunity to sharpen their skills, innovate, and conceptualize new designs which may be required in the future. Research on such concepts does not in my view presuppose that Congress will finally authorize advanced development or production, but it would provide a common set of facts and a common understanding of a range of alternatives that might meet the legitimate U.S. national security needs on which Congress might base an intelligent debate.

I am very interested in engaging with our witnesses and with my colleagues in a broad discussion on the future of our strategic forces and of deterrence. How do we understand the notion of strategic forces? How important is the mix of offense and defense? Are we making sufficient progress in the development of advanced conventional munitions to provide a more complete tool kit in a timely fashion?

Do we have the right set of nuclear capabilities to address the very different target set that concerns our military today and in the future? Do we have the right set of delivery vehicles for the conventional and nuclear capability we believe we will need in the future? Have we retained the right infrastructure and expertise to sustain and modernize our forces? How should we use them in the future?

There is another set of questions more distinctly focused on the legacy of the past. These questions are related to our current nuclear force, how we are going to reduce those forces to the level required by the Moscow Treaty and the disposition of those warheads. These are important questions as well, but they comprise, I think, only a portion of our concerns today.

Many of these questions tend to be controversial. I believe that above all what has kept our military the best in the world is the ability to vet new ideas, to think creatively, to bring the American ability to innovate to the forefront. We will inevitably have to deal with serious policy issues in this era of change.

I also believe that the members of the Strategic Forces Subcommittee have the opportunity to establish a serious open-minded tenor to these deliberations.

First let me recognize Senator Reed from Rhode Island for some remarks and then when Senator Nelson comes in, if he shows up, we will give him an opportunity.

Senator REED. Mr. Chairman, I assume that Senator Nelson has a prepared statement and I would simply yield back my time.

Senator ALLARD. Thank you very much.

Again, I would like to thank both our witnesses for being here with us today, and we will move forward. We will start with Ambassador Brooks and then Admiral Ellis.

STATEMENT OF HON. LINTON F. BROOKS, ACTING ADMINISTRATOR, NATIONAL NUCLEAR SECURITY ADMINISTRATION

Ambassador BROOKS. Thank you very much, Mr. Chairman. I appreciate the opportunity to appear before the subcommittee, and I also want to thank all of the members for their strong support of the National Nuclear Security Administration's critical national security activities. I have prepared detailed written testimony which I would like to submit for the record.

Senator ALLARD. Without objection.

Ambassador BROOKS. While that written statement covers the entire NNSA request, I would like to focus my oral remarks on the administration's views on the technical and policy issues relating to U.S. nuclear forces and to the Nuclear Posture Review and, in particular, to the prospects of advanced concepts.

Before I start, I want to say how pleased I am to be sitting here today with a longstanding friend and colleague, Admiral Jim Ellis. I am pleased for two reasons. One is obviously personal, but I am also pleased because it symbolizes the fact that we traditionally must work very closely with the military and with the Department of Defense to make sure that they understand our capabilities and we understand our needs.

As this committee knows, the National Nuclear Security Administration has several complementary missions. We are supposed to provide a safe, secure, and reliable nuclear deterrent; implement the decisions the President made in acting on the Nuclear Posture Review; reduce the threat posed by the proliferation of weapons of mass destruction; support the war on terrorism through aggressive nuclear nonproliferation programs; maintain security at our own facilities and reinvest in those facilities; and support the President's management agenda.

Our budget request to do all this for this year is \$8.8 billion, the bulk of it, \$6.4 billion, for Defense Programs and Stockpile Stewardship that are the primary subjects of this hearing. The budget represents a top line growth of about 11 percent over the enacted fiscal year 2003 budget and it is consistent with the planned program funding levels that we provided to Congress in our future years national security program.

The budget supports the Stockpile Stewardship Program. For the 7th year, that program has enabled us to certify to the President that the nuclear weapons stockpile is safe and reliable and has enabled us to do so without having to consider returning to nuclear testing. The budget includes funds to revitalize the facilities and infrastructure that is the bedrock of our nuclear weapons enterprise, and I will say a bit more about the policy implications of that in a moment.

It supports efforts to push the outer limits of scientific modeling and computing, which, when we couple it to new experimental capabilities, are helping us to understand the complex physical processes associated with nuclear weapons. The budget supports our ef-

forts to produce tritium, to restore full uranium processing operations, and to manufacture certifiable pits for our nuclear weapons.

The budget also helps attack the global nuclear danger in other ways. It supports the President's emphasis on reducing proliferation threats, improves physical security of nuclear materials in the Russian Federation, and helps us to slow illicit trafficking of nuclear material.

My written testimony today highlights our accomplishments as well as the milestones we expect to achieve this year. Because Dr. Beckner, who is on the next panel, will focus on the technical details of stockpile stewardship, I would like to focus on the foreign policy issues. I am very pleased that the Stockpile Stewardship Program has continued to demonstrate the ability to certify safety and reliability. We are charged, the Secretary of Defense and the Secretary of Energy, to assess each year the safety and reliability of the stockpile, and whether there is a need to resume underground testing. I cannot tell you how importantly Secretary Abraham takes that responsibility and how importantly we take our responsibility to support him in that determination.

As the Nuclear Posture Review articulated, the 21st century presents the prospect of a national security environment in which threats may evolve more quickly, be more variable, and be less predictable than in the past. In this environment, nuclear weapons will play an important, although reduced, role in the United States' security posture. At the same time, the Nuclear Posture Review reaffirmed that nuclear forces linked with advanced conventional strike capability and integrated with other capabilities will continue to be essential elements of national security.

Our nuclear capability will strengthen our overall ability to reassure allies, to dissuade arms competition from potential adversaries, and to deter threats to the United States. The Nuclear Posture Review offered a basic reassessment of the role of nuclear forces and of their contribution toward meeting these policy goals and established a need for a capabilities-based force, a dramatic departure from the threat-based approach to nuclear forces in the past.

This change, in combination with the judgment that we no longer need to plan as though Russia presented an immediate threat to the United States, was the basis for the dramatic reductions codified in the Treaty of Moscow in the level of operationally deployed strategic nuclear forces. Over the next decade, operationally deployed warheads will be cut by about two-thirds from today's level.

At the same time, to meet the challenges of an uncertain and unpredictable threat environment, the nuclear weapons enterprise has to be ready to respond rapidly and decisively, and that is the idea behind designating a responsive infrastructure along with strike capabilities and defenses as a separate leg of the new triad. We have to provide the means to respond to new, unexpected emerging threats in a timely manner. Therefore, we need a research and development (R&D) base and the industrial infrastructure to develop, build, and maintain nuclear offensive forces.

With regard to future nuclear forces, the Nuclear Posture Review reaffirmed the stockpile refurbishment plan agreed to previously between the Department of Defense and the National Nuclear Security Administration. The plan calls for three warhead refurbish-

ment programs, the W80, the W76 SLBM warhead, and the B61 bomb, to begin life extensions later this decade. We are working with the Department of Defense to develop the right life extension programs for each warhead type well before we commit production funds.

To support these refurbishments, we have to press ahead with efforts to reverse the deterioration of the nuclear weapons infrastructure, restore lost production capabilities, and modernize other capabilities.

I appreciate the past support of this committee for these efforts and hope that support will continue in the future.

Now, a responsive infrastructure has to be more than just a slogan. There are three specific initiatives endorsed by the Nuclear Posture Review. They involve efforts to enhance nuclear test readiness, to revitalize nuclear warhead advanced concepts at the national laboratories, and to accelerate planning and design for a modern pit facility to produce key plutonium parts for nuclear weapons, something, as the committee knows, we have not been able to do for 14 years.

Each of these initiatives is intended to provide the nuclear weapons enterprise with the flexibility to provide a timely response to surprise or to changes in the threat environment. Regarding these initiatives, there are four items in the budget request that are noteworthy because they are subject to misinterpretation, and I would like to discuss each of them.

First, the budget proposes an allocation of \$25 million to begin the process begun in fiscal year 2003 of improving the underground nuclear test readiness at the Nevada Test Site from the current 36 months to 18 months. Second, the budget proposes an allocation of \$15 million to continue a study that will begin in the next few weeks assessing the feasibility and cost of adapting an existing weapon to serve as a so-called Robust Nuclear Earth Penetrator. Third, the budget allocates \$6 million to begin other advanced concepts work. Finally, the administration has separately recommended that existing legislation prohibiting research and development that could lead—important words—to new low-yield weapons be repealed.

In looking at this issue, it is very important for the committee to understand what we are not doing. We are not planning to resume nuclear testing. The President has made it clear that we have no interim need, no requirement, for such testing. We are not proposing to improve readiness at the Nevada Test Site in order to develop new weapons. Given the time it would take to develop fundamentally new weapons, the current test readiness would be more than adequate. We are not planning to develop any new nuclear weapons at all. The Department of Defense has not identified any requirements for such weapons.

Above all, we are not signaling through these programs any intention to lower the nuclear threshold or to blur the distinction between nuclear and non-nuclear weapons. The fact remains that only the President can authorize the use of nuclear weapons. That will not change in the future, and I do not believe anything we are proposing will make any President any more likely to take such an awesome decision.

That is what we are not doing. What are we doing? We are hedging against the possibility that we may some day need to conduct a test to confirm a problem or to verify that a problem has been solved in a stockpiled weapon that is crucial to the Nation's deterrent. Indeed, we chose 18 months as a test readiness figure because that is a typical value that it would take once a problem is identified to assess the problem, develop and implement a solution, and then plan and execute a test that would let us certify a fix.

We are conducting a study on whether an existing warhead could be adapted without testing to improve our ability to hold at risk hardened, deeply buried targets that may be important to a future adversary. We are seeking to explore in conjunction with the Department of Defense advanced concepts that might some day be needed for a future President or this President or a future Congress or this Congress to implement.

Finally, we are examining these concepts, seeking to free ourselves from intellectual prohibitions against exploring the full range of technical options. We do not want to be limited in our thinking just because some options might imply a hypothetical weapon with a yield below an arbitrary value.

Let me be clear on these last two points. Repeal of the prohibition on low-yield nuclear weapons development falls far short from committing the United States to developing, producing, or deploying new weapons. As Secretary Abraham made clear before the full committee—in fact, I believe, Mr. Chairman, it was in response to a question from you—such warhead concepts could not proceed to full-scale development, much less production, still less deployment, without Congress authorizing and appropriating the necessary funds.

The repeal of this legislation does not authorize anybody to develop anything. What it does is it removes the chilling effect on scientific inquiry that could hamper our ability to maintain and exercise our intellectual capabilities to respond to needs that one day might be articulated by the President.

I believe the steps on nuclear test readiness are a prudent response to hedge against the possibility of future problems in the stockpile. As a completely separate matter, the examination of new concepts unconstrained by artificial limitations is another prudent hedge. It is a hedge against the possibility that the President and the Department of Defense may some day need to consider capabilities we do not now have.

I urge the committee to support both of these prudent steps. But I stress again, they do not represent any intention to return to nuclear testing or any requirement to develop new nuclear weapons.

Mr. Chairman, this concludes my statement, and I look forward to your questions after Admiral Ellis has had an opportunity to present his.

[The prepared statement of Ambassador Brooks follows:]

PREPARED STATEMENT BY HON. LINTON F. BROOKS

Thank you for the opportunity to appear today to discuss the fiscal year 2004 President's budget request for the National Nuclear Security Administration (NNSA). This is my first appearance before this subcommittee as the Acting Administrator of NNSA, and I want to thank all of the members for their strong support of our important national security responsibilities. I would like to begin my testi-

mony here today by providing an overview of the NNSA mission requirements followed by the highlights of our budget request.

OVERVIEW

The NNSA, comprised of Defense Programs, the Defense Nuclear Nonproliferation Program, and the Naval Reactors Program, has several complementary mission requirements:

- Provide a safe, secure, and reliable nuclear deterrent and implement the President's decisions on the Nuclear Posture Review (NPR) recommendations.
- Reduce the threat posed by the proliferation of weapons of mass destruction and continue to support the global war on terrorism through aggressive nuclear nonproliferation programs.
- Maintain a robust security posture at NNSA facilities.
- Revitalize the nuclear weapons complex infrastructure.
- Support the nuclear propulsion needs of the U.S. Navy.
- Support the President's Management Agenda for more effective government.

The fiscal year 2004 budget request totals \$8.8 billion, an increase of \$878 million, about 11 percent, over the enacted fiscal year 2003 budget. The request is consistent with the planned program levels in the Future-Years Nuclear Security Program recently submitted to Congress. This substantial increase reflects the administration's commitment to sustain a stable and effective long term national security program through the NNSA, as well as our obligation to our citizens to conduct this program safely, securely, and in an environmentally acceptable manner.

We are building on recent accomplishments. Although there is a large increase in this year's budget request, there is no single new initiative driving this growth. Rather, we are continuing plans and programs already set in motion, and adjusting to the guidance in the Nuclear Posture Review. We are moving beyond the talking and planning phase of many programs conceived in the 1990s.

This budget supports the Stockpile Stewardship Program, which continues to successfully certify to the President the safety and reliability of the nuclear weapons stockpile without underground nuclear testing. It includes funds to begin a modest Advanced Concepts initiative to provide nuclear deterrence options, begin the transition to a 18-month test readiness posture, continue to revitalize the facilities and infrastructure that are the bedrock of the weapons complex, and push the outer limits of scientific, modeling, and computing ability to apply new experimental capabilities to the processes of maintaining and certifying the stockpile. It supports our efforts to manufacture certifiable pits and to produce tritium.

In the area of reducing global nuclear danger, this budget request for the Defense Nuclear Nonproliferation Program reflects the President's and Secretary Abraham's emphasis on reducing proliferation threats, including the Global Partnership formed at the Kananaskis Summit in June 2002. The fiscal year 2004 request contains funds to support attacking the problem globally, to improve the physical security of nuclear material, to consolidate and reduce that material, and to end its production. It also continues efforts to prevent illicit trafficking of nuclear materials, to improve our ability to detect proliferation, and to stem the "Brain Drain" of weapons experienced scientists from Russia.

Under this budget, the Naval Reactors Program will initiate the design and development of a new reactor that will utilize advanced materials to achieve a substantial increase in core energy. The result will be greater ship operational ability and flexibility to meet increasing national security demands.

BUDGET SUMMARY TABLES

The fiscal year 2003 estimates in the fiscal year 2004 budget documents transmitted to Congress reflect the President's fiscal year 2003 budget request because final fiscal year 2003 appropriations were not enacted until February 20, 2003. The Future-Years National Security Program tables tie to the President's budget request. The table below summarizes the enacted funding levels by appropriation. The fiscal year 2003 appropriations estimates are made comparable to the fiscal year 2004 President's budget request by eliminating fiscal year 2003 appropriations being transferred to the Department of Homeland Security and to the Department of Energy's Office of Security (for COOP/COG activities). The fiscal year 2003 totals detailed in the table below also reflect applications of the general reductions and the government-wide, across the board reduction of 0.65 percent enacted in the final fiscal year 2003 appropriations.

The outyear budget estimates and associated programmatic information for NNSA programs are contained in the Future-Years Nuclear Security Program document I forwarded to Congress in February.

**FY 2004 NNSA President's Budget Request
(Dollars in Millions)**

	FY 2002 Comparable Appropriation	FY 2003 Comp Request	FY 2003 Comp Approps	FY 2004 Request	\$ Change	% Change
Weapons Activities	\$5,542	\$5,846	\$5,895	\$6,378	\$483	8.2%
Defense Nuclear Nonproliferation	1,048 ^a	1,028	1,022 ^{bc}	1,340	318	31.1%
Naval Reactors	688	707	702	768	66	9.4%
Office of the Administrator	307	329	321 ^{de}	348	27	8.4%
Total	7,585	7,909	7,940	8,835	895	11.3%

**NNSA Outyear Budget Requests
Future-Years Nuclear Security Program
(Dollars in Millions)**

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Weapons Activities	\$6,378	\$6,661	\$6,961	\$7,277	\$7,518	\$7,651
Defense Nuclear Nonproliferation	1,340	1,356	1,371	1,389	1,322	1,346
Naval Reactors	768	808	795	811	819	834
Office of the Administrator	348	337	344	353	355	362
Total	8,835	9,162	9,471	9,830	10,014	10,193

Nuclear Forces and the Nuclear Posture Review

^aDoes not include \$10 million appropriated as part of the FY 2002 supplemental (P.L. 107-206) for Domestic Sealed Sources Recovery in the Environmental Management program.

^bDoes not include funding appropriated for programs transferred to the Department of Homeland Security.

^cDoes not include \$9.125 million requested to be transferred in FY 2002 from Defense Nuclear Nonproliferation to the Office of the Administrator. This transfer was approved early in FY 2003.

^dDoes not include \$9.125 million requested to be transferred in FY 2002 from Defense Nuclear Nonproliferation to the Office of the Administrator. This transfer was approved early in FY 2003.

^eDoes not include funding appropriated for activities transferred to Homeland Security, or to Office of Security for COOP/COG.

Before going into Weapons Activities Stockpile Stewardship Program, I will discuss the NNSA's response to the broader policy framework set out in the Nuclear Posture Review (NPR) and its implementation.

As the NPR has articulated, the 21st century presents the prospect of a national security environment in which threats may evolve more quickly, be more variable in nature, and be less predictable than in the past. In this broad threat environment, nuclear weapons will play a reduced role in the overall United States security posture a point reinforced in the NPR. At the same time, the NPR reaffirmed that, for the foreseeable future, nuclear forces linked with an advanced conventional

strike and integrated with the capabilities offered by the other two legs of the New Triad will continue to be an essential element of national security by strengthening our overall abilities to reassure allies of U.S. commitments, dissuade arms competition from potential adversaries, and deter threats to the U.S., its overseas forces, allies, and friends.

The NPR offered a basic reassessment of the role of nuclear forces and their contribution toward meeting these defense policy goals. It established the need for a capabilities-based force, a dramatic departure from the threat-based rationale for the nuclear force of the past. This change, in combination with the judgment to no longer plan our forces as if Russia presented an immediate threat to the U.S., was the basis for dramatic reductions codified in the Moscow Treaty in the level of operationally-deployed strategic nuclear forces. Over the next decade, the number of deployed warheads will be cut by approximately two-thirds from today's level.

To meet the challenges of an uncertain and unpredictable threat environment, and in seeking to mitigate any dangers associated with dramatically reduced nuclear forces, the nuclear weapons enterprise must be able to respond rapidly and decisively. This is the idea behind the third leg of the New Triad. That is, by providing means to respond to new, unexpected, or emerging threats in a timely manner, the R&D and industrial infrastructure needed to develop, build, and maintain nuclear offensive forces and defensive systems (of which the nuclear enterprise is a key component) is itself a principal tool for achieving our overall defense strategy. This concept, and its endorsement by the NPR, has had enormous implications for NNSA in helping to gain strong support for its programs from DOD and others.

We are pressing ahead with efforts to reverse the deterioration of the nuclear weapons infrastructure, restore lost production capabilities and modernize others in order to meet the stockpile refurbishment plan. We are actively assessing the NPR's implications in a number of other related areas. Finally, we are pursuing initiatives endorsed by the NPR which are intended to provide the nuclear weapons enterprise with the flexibility to provide a timely response to "surprise," or to changes in the threat environment.

WEAPONS ACTIVITIES—STOCKPILE STEWARDSHIP

The President's fiscal year 2004 request for Stockpile Stewardship continues to build and expand on the scientific and engineering successes that are the hallmarks of this program. This request totals \$6.378 billion, an increase of 8.2 percent. It will also allow us to meet our requirements under the terms of the Nuclear Posture Review including enhancing test readiness, reinvigorating the advanced concepts work in the weapons laboratories, and restoring the weapons complex to meet the national security requirements of the 21st century. There are a number of significant milestones we expect to achieve this year.

- Manufacture the first certifiable W88 pit.
- Begin irradiation of the first Tritium Producing Burnable Absorber Rods in the TVA's Watts Bar Reactor.
- Continue delivery of W87 Life Extended warheads to the Air Force.
- Complete environmental documentation in support of the Modern Pit Facility.
- Deliver four ultraviolet beams of National Ignition Facility (NIF) laser light to the target chamber.
- Initiate Stockpile Stewardship experiments in NIF.
- Perform two and three-dimensional simulations of aging stockpile weapons focused on Life Extension Program activities.
- Ship nuclear weapons, weapons components, and nuclear materials safely through the Secure Transportation Asset.
- Conduct subcritical experiments at the Nevada Test Site to better understand plutonium aging.
- Begin work on the Advanced Concepts initiative and, in particular, on the Robust Nuclear Earth Penetrator (RNEP) Phase 6.2 studies with the Air Force.

These major milestones will be accomplished by the weapons complex in addition to the manufacture of thousands of components needed to maintain the stockpile. The complex will also carry out hundreds of smaller scale experiments, perform surveillance activities, address Significant Finding Investigations to ensure weapons safety and operability, conduct flight tests with the support of the DOD, deploy new manufacturing tools and processes at the production plants, and safely dismantle weapons excess to national security requirements.

These and other activities are dependent on retaining today's highly skilled workforce and recruiting the next generation of stockpile stewards. Over the last several

years, NNSA has made a significant headway on this all-important front. Critical skill vacancies across the complex have been reduced to 8 percent. Inextricably linked to recruitment and retention is providing the quality workspace and fully functioning tools and technologies needed by our scientists and engineers to carry out their work. We are working diligently to reinvest in the weapons complex infrastructure.

I would now like to highlight several activities under the Stockpile Stewardship Program that I believe are of particular interest to this committee.

Pit Manufacturing and Certification Campaign

Restoring the Nation's ability to manufacture plutonium pits in support of the stockpile has been a central challenge for the stewardship program since the closure of the Rocky Flats plant in 1989. The United States has never before manufactured and certified pits without nuclear testing. I am very pleased to report that late this spring, Los Alamos will manufacture the first certifiable W88 pit. The Los Alamos National Laboratory (LANL) also remains on-track to manufacture a war reserve W88 pit by 2007. To achieve this critical milestone, LANL has produced a number of development pits and has performed a series of engineering tests and physics experiments to confirm pit performance.

While the TA-55 facilities at LANL are adequate to support the W88 pit campaign, they do not appear to be capable of supporting the manufacturing need for long-term stockpile support. NNSA has begun planning for a Modern Pit Facility (MPF) consistent with the Record of Decision for Stockpile Stewardship and Management and the NPR. In May 2002, the Secretary of Energy formally approved Critical Decision "0" (CD-0) for the MPF. The NNSA is now examining five candidate sites—Pantex, Carlsbad, the Nevada Test Site, Savannah River and Los Alamos—as possible locations for the MPF. We expect to issue a Draft Environmental Impact Statement (EIS) later this spring. Following a series of public meetings, a final EIS and associated Record of Decision (ROD) will be issued. The program will prepare site specific environmental documentation if the ROD supports a decision to construct and operate an MPF. The fiscal year 2004 request will allow conceptual design and other planning activities, National Environmental Policy Act (NEPA) work, and technology development activities to proceed on a schedule that will support a CD-1 decision in fiscal year 2006.

Test Readiness

While I continue to have confidence in the ability of the Stockpile Stewardship Program to continue to ensure the safety, security, and reliability of this Nation's nuclear deterrent, we must maintain our ability to carry out nuclear weapons tests. Our current readiness posture to conduct such a test is 24 to 36 months, as established in a 1993 Presidential Decision Directive. Last year's NPR stated that this period should be reduced in order to provide options to deal with defense policy goals, including resolving unanticipated problems in the stockpile. A study completed in July 2002 confirmed that additional work was required to maintain the present posture, but it also led us to conclude that the right posture is to be ready for a test within approximately 18 months. With fiscal year 2003 funding now in place, we intend to begin the transition to a 18-month posture. The Nuclear Weapons Council has concurred that our intended action is appropriate. The transition to this new readiness posture is expected to take approximately 3 years.

Although there have been discussions about a transition to shorter times, there is concern that an unnecessarily expedited time frame may cause adverse effects on critical personnel resources and require significantly more funding. It is not likely that we will be able to match the short lead times when the weapons complex conducted multiple underground tests annually, nor do I think it is prudent to tie-up important resources to indefinitely maintain an extremely short test readiness posture. Since device and diagnostics preparations are driven by the particular weapon to be tested and the questions to be answered by the test, such a posture might not be responsive to a surprise in the stockpile. The NNSA is studying this matter and I will soon be reporting to Congress on these subjects as directed in the fiscal year 2003 Defense Authorization Bill.

Advanced Concepts/Robust Nuclear Earth Penetrator

The NPR also highlighted the importance of pursuing Advanced Concepts work to ensure that the weapons complex can provide nuclear deterrence options well into the next century. To that end, the fiscal year 2004 budget includes \$21 million for Advanced Concepts work. About \$15 million will be allocated to the Robust Nuclear Earth Penetrator (RNEP), with the balance of the funding divided between the weapons laboratories for concept and feasibility studies of possible nuclear weapon modifications, or new designs to meet possible new requirements.

The Department of Defense submitted the report on RNEP to Congress on March 19, 2003, as required by the Bob Stump National Defense Authorization Act for Fiscal Year 2003. The NNSA will begin an in-depth study once the 30 day waiting period has elapsed. As members know, this study will examine whether or not two existing warheads in the stockpile—the B61 and the B83—can be sufficiently hardened through case modifications and other work to allow the weapons to survive penetration into various geologies before detonating. This would enhance the Nation's ability to hold hard and deeply buried targets at risk. The RNEP feasibility and cost study is currently scheduled for completion in 2006; however, we are looking at opportunities to reduce study time.

For other advanced concepts, we will work with the DOD to assess evolving military requirements. We will carry out theoretical and engineering design work. I should stress that we have no requirement to actually develop any new weapons at this time.

Physical Infrastructure

Since its inception, the NNSA has been committed to a disciplined corporate facilities management approach to improve the facility conditions of the nuclear weapons complex. We made this corporate commitment clearly recognizing the drivers and practices of the past decade had ultimately resulted in a complex with significant deterioration in our physical infrastructure and an excessive backlog of deferred maintenance. The NNSA complex is part of our Nation's strategic nuclear infrastructure and the third leg of the New Triad as defined in the Nuclear Posture Review. The Nuclear Posture Review gave a responsive infrastructure equal priority with offensive and defensive weapons. Through our focused and disciplined efforts, we now have underway an effective and integrated program to restore, revitalize, and rebuild our nuclear weapons program infrastructure.

Two complementary accounts in the budget, Readiness in Technical Base and Facilities (RTBF) and the Facilities and Infrastructure Recapitalization Program (FIRP), are essential to the operation, maintenance, and renewal of a physical infrastructure. Funding for RTBF, Operations of Facilities, increases by 4 percent in the fiscal year 2004 request. The RTBF provides the funding needed to operate and maintain the facilities required for certification, thus ensuring the vitality of the NNSA national security complex and its goal of a consistent readiness level. FIRP is a capital renewal and sustainability program designed to eliminate maintenance backlogs. The FIRP addresses an integrated, prioritized list of maintenance and infrastructure projects, separate from the maintenance and infrastructure efforts of RTBF, which will significantly increase the operational efficiency and effectiveness of the NNSA sites.

Importantly, beyond the application of the new and much needed funding, FIRP also brings a series of new facility management processes and best business practices which are improving our corporate facility management. One of the most important practices is the NNSA commitment to deferred maintenance reduction: stabilizing our backlog by fiscal year 2005 and returning it, for our mission essential facilities and infrastructure, to industry standards by fiscal year 2009. To meet this goal, the fiscal year 2004 budget request targets 45 percent of the FIRP Recapitalization subprogram to facilities and infrastructure specific deferred maintenance projects.

Integral to our corporate approach to RTBF and FIRP are the linkages and discipline provided by the PPBE process, and specifically the Ten-Year Comprehensive Site Plans (TYCSP) and associated facilities and infrastructure planning processes. We are now in the third year that the NNSA has approved the TYCSPs, incorporating technical requirements and performance measures within the financial bounds of the FYNSP resource levels. From the field perspective, these plans provide Federal and M&O managers at each site with the tools and processes to propose, prioritize and obtain approval of the work needed to effectively manage their facilities and infrastructure. From the Headquarters perspective, the TYCSP provides the NNSA with a standardization that allows comparisons and planning to be effected complex-wide.

In recent years, the combined and measurable efforts of FIRP and RTBF have worked to assure that we restore, revitalize, and rebuild the weapons complex infrastructure for today and tomorrow's missions. Across the weapons complex both programs are fixing the backlog of maintenance, keeping up with operational needs, and planning for the future to make a clear and visible difference. These combined efforts are crucial, and I urge the committee to support them.

Stockpile Life Extension

While preparing for the future, the labs and plants are working very hard to extend the life of several elements of the existing nuclear weapons stockpile through the Life Extension Program (LEP). The NPR reaffirmed the decision as reached by the Nuclear Weapons Council on the timing, pace, scope, and technical aspects of the LEPs for the W76, W80, B61-7/11, and ongoing W87 work. Through this program new subsystems and components are designed, built, tested and installed, thereby extending the operational service life for these warheads for some 30 additional years.

For the last several years, we have been extending the life of the W87 warhead for the Air Force. This work is ongoing at Y-12 National Security Complex, Lawrence Livermore and Sandia National Laboratories, and the Pantex Plant. We are more than half way through this effort and expect to wrap up the work by early 2004.

Life extension for the W76 involves a comprehensive overhaul of the warhead, including replacement or refurbishment of the Arming, Firing and Fuzing set, high explosives, gas transfer system and other components. We will also be requalifying the weapon primary. For the W80, we will be replacing the Trajectory Sensing Signal and Neutron Generators, the tritium bottles and incorporating surety upgrades. For the B61, we will be refurbishing the secondary. The First Production Units for these systems are scheduled for delivery to the Navy and Air Force in: fiscal year 2007, fiscal year 2006, and fiscal year 2006, respectively.

Tritium

In addition to restoring plutonium manufacturing capabilities, NNSA will begin tritium production later this year when several hundred Tritium Producing Burnable Absorber Rods (TPBARs) are inserted into TVA's Watts Bar Reactor. However, because of significant changes in stockpile size in the outyears as a result of the NPR and the Moscow Treaty, the NNSA has, in concert with the DOD, adjusted the tritium production requirements to reflect these changes. We remain fully committed to exercise all elements of the system for producing, extracting, and purifying new tritium, including initial operation of the Tritium Extraction Facility (TEF) being constructed at the Savannah River Site.

Timing of tritium production, extraction, and purification has also been delayed by approximately 17 months for two reasons: (1) a reduction in the stockpile requirements by the NPR and (2) a delay in completion of the TEF project. This program delay can be accomplished without impacting nuclear weapons readiness. A revised baseline has been approved increasing the Total Project Cost from \$401 million to \$506 million and delaying project completion from mid-fiscal year 2006 to late-fiscal year 2007.

Since the tritium decays by natural radioactivity at a rate of about 5 percent per year, and since irradiation service costs are the dominant operating costs in supplying tritium to the stockpile, it is prudent not to produce tritium beyond the stated national requirements. Since the program intends to complete and exercise all elements of the tritium production and purification system (including TVA's reactor(s) and the TEF) on a schedule that fully protects the stockpile requirements, irradiation services are being deferred in order to use funds planned for these activities to complete TEF.

National Ignition Facility

I am pleased to report that tremendous technical progress has been achieved over the last year at the National Ignition Facility (NIF). Its mission is to obtain fusion ignition in a laboratory setting by imploding a BB-sized capsule containing a mixture of the hydrogen isotopes, deuterium and tritium. The NIF will provide the capability to conduct laboratory experiments to address the high-energy density and fusion aspects that are important to both primaries and secondaries in the nuclear stockpile.

In December 2002, the first four NIF laser beams were activated to generate a total of 43 kilojoules of infrared laser light in a single pulse. In March 2003, NIF delivered its first 4 beam of ultraviolet laser light focused onto a target at the center of the 30 foot-diameter target chamber. With this accomplishment, all elements of each of the NIF critical subsystems have been successfully activated and operated. Stewardship experiments will begin in fiscal year 2004.

Advanced Simulation and Computing

The Advanced Simulation and Computing (ASCI) Campaign is creating simulation capabilities that incorporate modern physics and engineering models to improve our ability to predict with confidence the behavior of the nuclear weapons in the stock-

pile. These models, validated against experimental data from past above ground and underground nuclear tests, are the repositories of expert designer judgment as well as the best scientific representations of our current knowledge of the performance of the nuclear weapons. The ASCI Campaign is driving the integration of the theoretical and experimental efforts within the Stockpile Stewardship Program.

At the same time that ASCI continues the development of the most powerful computer capabilities needed for the future, the modern simulation tools previously developed by ASCI—the Blue Pacific and White Machines at Lawrence Livermore National Laboratory (LLNL), the Red Machine at Sandia National Laboratory (SNL), and the Blue Mountain and Q machines at LANL—are being applied day-to-day to address immediate stockpile concerns. The ASCI codes are being used to close Significant Finding Investigations as well as to support Life Extension Programs for the W76, W80, W87, and B61. These activities are enabled by the ongoing supercomputing infrastructures at the national laboratories, encompassing both continuing operations as well as research in new techniques for storage, visualization, networking, and all aspects of the infrastructure required by modern computing.

By fiscal year 2008, ASCI will deliver a high fidelity, full-system physics characterization of a nuclear weapon. At that time, the campaign will deliver a suite of validated codes, running on supercomputer platforms, acquired through open procurement, with user-friendly environments, advanced visualization tools for analysis, and the entire support structure to integrate the components together. Other program deliverables include high-performance storage and high-bandwidth networks. In support of a true integrated Strategic Systems Programs effort, the ASCI Campaign continues to push the envelope in distance computing as well as in advanced encryption techniques and other approaches to ensure secure, classified networking.

SECURE TRANSPORTATION

The Office of Secure Transportation is responsible for safely and securely moving nuclear weapons, special nuclear materials, select non-nuclear components, and Limited Life Components for the DOE and the DOD. This work is carried out by 225 Federal agents stationed at three sites—Pantex, Oak Ridge, and Albuquerque. These highly dedicated and skilled agents are authorized to use deadly force in the performance of their duties. Employing highly modified tractor trailers and escort vehicles, and secure and redundant communications they have amassed an impressive safety record of more than 100 million accident free miles without cargo compromise. I would note that this office also provides support to other elements of the DOE, including the Offices of Environmental Management and Nuclear Energy.

NONPROLIFERATION—REDUCING THE GLOBAL NUCLEAR DANGER

The NNSA's nonproliferation activities are central to the Bush administration's National Strategy to Combat Weapons of Mass Destruction of December 2002, which lists "Strengthened Nonproliferation" as a pillar of its approach to reducing proliferation threats. Secretary Abraham and the NNSA are committed to this critical mission. This commitment is reflected in the diversity of our programs to address nonproliferation concerns in Russia, other former Soviet States, and, increasingly, throughout the world. The NNSA uniquely integrates technical and policy expertise to guide and implement the full range of U.S. nonproliferation priorities. The fiscal year 2004 request for this program is \$1.34 billion, an increase of about 31 percent.

The NNSA addresses concerns that arise from the two requisites of nuclear weapons proliferation: materials and expertise. Whether ensuring that former Russian weapons experts are able to put their skills to use on peaceful and commercial initiatives, reducing the footprint of Russia's "closed" nuclear cities, or leading on-the-ground programs to secure at-risk nuclear materials in Russia or elsewhere, NNSA is at the forefront of U.S. efforts to halt the proliferation of weapons of mass destruction and advance U.S. nuclear security interests.

The Global Partnership Against the Spread of Weapons and Materials of Mass Destruction, formed at the Kananaskis Summit in June 2002, has recommitted the G8 nations to increase greatly assistance to nonproliferation, disarmament, counterterrorism, and nuclear safety. The partnership pledges to provide \$20 billion over the next 10 years for nonproliferation and threat reduction initially focused in Russia. The United States is committed to provide half that total. The effort of our G-8 partners will complement U.S. programs and meets past congressional concerns that we not carry a disproportionate burden.

I am also pleased to inform you of the substantial progress of the Elimination of Weapons-Grade Plutonium Production Program (EWGPP). The EWGPP is using best project management practices by applying the Department's established direc-

tives on project management. On December 20, 2002, the projects received Critical Decision Zero (CD-0), mission-need justification, and we have started the process to procure U.S. contractors.

These contractors will be responsible for oversight, verification, and payment to the Russian Federation Integrating Contractor for work completed. The U.S. contracts will be performance-based with the award fee provisions focusing on successful completion and the ability of the U.S. contractor to incentivize the Russian Federation Integrating Contractor's performance in meeting or exceeding cost, schedule and quality objectives. The U.S. contractor is being selected from a group of contractors that have extensive experience in both fossil fueled power plants and in Russia. Although the projects will be executed in the Russian Federation, using Russian equipment and personnel, we are implementing a rigorous oversight plan to monitor the progress through a formal project management system.

With three exceptions, our fiscal year 2004 request is essentially the same as last year. Last year, at the President's request, Secretary Abraham sought Russian agreement to dispose of additional Russian highly enriched uranium. We are nearing agreement on the purchase of Russian highly enriched uranium for U.S. research reactors and on purchasing downblended uranium from Russian weapons for a strategic uranium reserve. We have requested \$30 million for this program.

Second, there has been a \$19.7 million increase in the request for programs to secure radiological sources that could be used in radiological dispersal devices, also known as "dirty bombs."

The largest fiscal year 2004 budget increase, about \$272 million, supports our plutonium disposition efforts. The United States and Russia will each dispose of 34 metric tons of weapons grade plutonium by irradiating it as mixed oxide, MOX fuel, in existing nuclear reactors. This program is on track. Over 75 percent of the detailed design of the U.S. MOX facility will be done this year. Russia has told us that it will use the U.S. design for the MOX Fuel Fabrication Facility, thus ensuring the programs remain on roughly the same schedule. Construction of both the U.S. and Russian MOX Fuel Fabrication Facilities will begin in fiscal year 2004.

I would also like to comment on NNSA's efforts to ensure that funding is focused on the highest nonproliferation concerns. Given that adverse impacts of terrorists or rogue nations obtaining nuclear weapons is intangible, we cannot easily assess risks using quantifiable risk analysis methods. However, we have and will continue to conduct qualitative risk analyses to determine that we are applying the most cost-effective approaches to meet the greatest nonproliferation needs.

The NNSA recognizes that proliferation is a multifaceted problem, and reduces the threat in a multitude of ways.

We're attacking the problem globally. The Global Partnership is only the most recent example of U.S. cooperation with the international community on nonproliferation. International cooperation supports our national nonproliferation objectives, and we pursue such cooperation in new ways. The suite of NNSA programs promotes greater international understanding and adherence to export controls, the application of safeguards to secure nuclear materials, and measures to maintain regional security in the world's most volatile regions.

NNSA is improving the physical security of nuclear material. The United States does this primarily through its Materials Protection, Control and Accounting (MPC&A) program in Russia, as well as the Newly Independent States/Baltics. In fiscal year 2004, this will include security upgrades on 24 metric tons of Russian nuclear material and 1200 Russian Navy nuclear warheads. We will also continue our work to ensure the adequate physical protection of nuclear material located in 40 countries around the world.

We are improving our work to secure radiological sources and prevent their use in "dirty bombs." The International Conference on Security of Radioactive Sources delivered a concrete set of findings to guide international efforts to gain better control of high-risk radioactive sources worldwide. Secretary Abraham's announcement of a \$3 million "Radiological Security Partnership" will set in motion a new initiative to address potential threats from under-secured, high-risk radioactive sources.

NNSA is helping to consolidate nuclear material. By reducing the number of locations where this material is stored, the United States is greatly reducing its vulnerability to theft or sabotage. By the end of 2003, we will have removed all weapons-usable material from 23 buildings into fewer locations, thus improving security.

Nuclear material can be reduced. Fissile Materials Disposition conducts activities to dispose of surplus highly enriched uranium and weapon-grade plutonium. By disposing of 68 metric tons of plutonium in the U.S. and Russia, the plutonium disposition program will reduce the threat that this material could pose if acquired by hostile nations or terrorist groups. The plutonium will be irradiated as mixed-oxide

(MOX) fuel in nuclear reactors, making the material no longer readily usable for nuclear weapons.

The production of nuclear material for weapons can be ended. The value of reducing nuclear materials increases greatly if no new material is being produced at the same time. The EWGPP discussed above aims to accomplish just that by replacing Russia's remaining plutonium production reactors with fossil fuel energy plants to meet the energy needs of local communities.

The illicit trafficking of nuclear materials can be slowed. The Second Line of Defense Program and International Nuclear Export Control programs focus on cooperative efforts to minimize the risk of illicit trafficking of special nuclear material, radiological materials, and dual-use technologies across international borders such as land crossings, airports, and seaports. Under the fiscal year 2004 budget request, the program will continue to target strategic border points and transshipment countries around the world for deployment of radiation detection equipment while maintaining existing equipment in more than 20 countries.

The threat of the "Brain Drain" can be alleviated. To prevent adverse mitigation of WMD expertise, the Russian Transition Initiatives (RTI) program commercializes technology and downsizes Russia's weapons complex. This approach transforms the former weapons infrastructure expertise into commercially viable, peaceful business ventures, and shrinks the complex by moving fence lines, closing buildings, and providing alternative employment opportunities to weapons experts.

We can continually improve our ability to detect proliferation. Research and development in proliferation detection provides the United States timely detection of potential threats. These technologies are key to identifying threats at borders or other critical thoroughfares, detecting clandestine proliferation activities, and verifying treaty adherence.

In sum, the United States, with NNSA leading the way, has developed programs to address the threat of the proliferation of weapons of mass destruction in all its dimensions.

NAVAL REACTORS

Naval Reactors (NR) continues the success it has had for more than 50 years and is a prime example of how to manage unforgiving and complex technology. Our Naval Reactors program, which supports the nuclear-powered submarines and carriers on station around the world, remains a vital part of the national security mission and the global war on terrorism. In fiscal year 2004, NR will support 103 reactors in 82 nuclear-powered warships, including the first-of-a-class reactor when the U.S.S. *Virginia* goes to sea. In addition, NR will continue to design and develop the reactor for the new transformational carrier CVN-21. The NR budget request for fiscal year 2004 is \$768 million, about a 7 percent increase above inflation over fiscal year 2003. The increase will allow NR to begin the development of the Transformational Technology Core (TTC) utilizing advanced materials to achieve a substantial increase in core energy. TTC will be forward-fitted into the *Virginia* class submarines, and will result in greater ship operational ability and flexibility to meet increasing national security demands. This budget increase will also allow maintenance and replacement of some of the program's 50-plus year-old infrastructure as well as remediation at sites no longer in use, allowing NR to continue its "clean-as-you-go" policy.

SAFEGUARDS AND SECURITY THROUGHOUT THE COMPLEX

Security continues to be one of the NNSA's highest priorities. The NNSA's Safeguards and Security program focuses on the protection of our people, classified and sensitive information, nuclear and non-nuclear materials, and the vital infrastructure of our laboratory and industrial production complex. Overall, we have a very effective safeguards and security program as validated by internal and external independent reviews across our sites and operations. We then use the results of these reviews to assess and confirm our security postures and areas for improvement. Our fiscal year 2004 budget request maintains a robust safeguards and security posture throughout the weapons complex to protect our facilities, materials, information, and people.

The request also supports evaluation and assessment of options to use cost-effective measures to meet future security requirements. The NNSA sites conduct Vulnerability Assessments that include a review of potential targets and the identification of the variety of methods that an adversary could or might attempt to use against the targets. Tabletop exercises, computer simulations, and actual force-on-force exercises, conducted both internally and through external independent offices, are used to evaluate various scenarios and related options for protection.

In our efforts to assure we have a robust, responsive and adaptable security architecture, we have recently been conducting detailed, site specific reviews, known as Iterative Site Analyses (ISA). The ISAs are analytical, tabletop exercises which address a spectrum of potential threats, both within and beyond the Design Basis Threat. The ISA is conducted by independent and highly skilled security professionals from across the government and private sector. These analytical efforts are designed to give decision makers at each site and NNSA Headquarters a better understanding of how potential changes in threat and protective measures can be factored into actions that improve our system responsiveness and overall security posture. The results are then used in our risk identification and management efforts that assist in determining the safeguards and security program structure and most cost-effective investments at each site.

Immediately following the events of September 11, 2001, NNSA initiated a series of efforts to increase our security posture. As a result, I am very comfortable with the level of our security complex-wide. Most of the increases in our security posture, however, were the result of increases in the level of physical protection, mainly guard forces. As NNSA looks to the future, it is clear that the threat and protection challenges will continue to become more complicated and costly. More effort is needed to identify and deploy technologies and work procedures that can maintain or improve our security responsiveness while reducing physical security force staffing and overtime requirements.

In fiscal year 2004, the NNSA will initiate a modest research and development effort to pursue emerging technologies. In addition to our historic rate of physical protection upgrades, the modest research and development effort will focus on applied technology to define a more robust, flexible, and cost-effective security architecture across all aspects of our work in the coming decade. These areas include earlier detection of adversaries, automated response capabilities, better coordinated communications, more efficient efforts to delay adversaries, better detection of contraband at site perimeters and enhanced cyber-security. This relates to both the current infrastructure and operations as well as our up-front planning for new construction and operations. Early in 2003, we completed an initial review of our technology needs and applications. In fiscal year 2004, we will complete the gap analysis of needed security efforts, review various technologies for near-term application, and target areas that have the potential for significant long-term contributions. Throughout this effort, we will engage with the ongoing efforts and experiences of the Department of Energy's other program areas and National Laboratories as well as other Federal agencies such as Departments of Defense and Homeland Security, to help assure sharing of best practices and maximum leveraging of our resources.

RELATIONSHIP TO DEPARTMENT OF HOMELAND SECURITY

The standup of the NNSA has been shaped by the Nation's response over the past 18 months to the terrorist attacks on September 11, 2001. Because the NNSA is the steward of the facilities and assets for the Nation's nuclear weapons complex, we placed the highest priority on addressing urgent, emergent concerns about the safeguards and security posture of our nationwide complex of facilities and transportation systems. We also upgraded our emergency response assets, which are available to be deployed in emergencies around the world. We have accelerated research and development on chemical and biological agents, and have shared the expertise resident in our laboratories and other facilities with other agencies and municipalities as part of the expanded focus on homeland security across the government. NNSA has contributed research and development and Federal support programs to the new Department of Homeland Security (DHS) and provided expertise and administrative support for startup of the new department. These programs, totaling about \$88 million, include research and development to counter the chemical and biological threats; nuclear smuggling research and development; nuclear assessments program, from MPC&A; and Federal program direction funding in support of these programs.

The legislation establishing the new Department specified that the Nation's radiological response capabilities will remain under the direction of the Secretary of Energy and NNSA Administrator. Funding for the radiological assets will remain within NNSA's Nuclear Weapons Incident Response programs (\$90 million in fiscal year 2004). The assets will continue to respond to radiological accidents at Departmental facilities and will support Federal law enforcement activities where nuclear materials may be involved. NNSA's Office of Emergency Operations will work cooperatively with the DHS, and, when deployed in formally designated situations, the radiological assets will take direction from the Secretary of Homeland Security as the Lead Federal Agency. A Memorandum of Agreement establishing a framework for

DHS to access the capabilities of these assets was finalized between the two Departments last month.

OFFICE OF THE ADMINISTRATOR

Finally, I will summarize the fiscal year 2004 budget request for the NNSA Federal workforce, both Headquarters and field. The Office of the Administrator account provides the corporate direction and oversight of NNSA operations consistent with the principles of protecting the environment and safeguarding the safety and health of the public and workforce of the NNSA. This account now represents the consolidated program direction funds from the former Weapons Activities and Defense Nuclear Nonproliferation accounts; the Naval Reactors and Secure Transportation Asset activities retain separately funded program direction accounts. Our fiscal year 2004 budget request of \$348 million reflects declining staffing levels and includes about \$16 million for re-engineering incentives and relocation costs necessary to bring about the new NNSA organizational model.

MANAGEMENT ISSUES

I would like to conclude by discussing some of the management challenges and successes NNSA has faced. The most obvious challenge has been the ongoing problems at the Los Alamos National Laboratory. There are three specific areas of concern at Los Alamos: improper use of government-issued credit cards; potentially fraudulent use of purchase orders; and poor accountability of government property. These problems taken together reveal significant weaknesses in business practices at the Laboratory.

As soon as we learned about the extent of these problems this past fall, Secretary Abraham and I insisted that the University of California, which manages the laboratory for the Department, take corrective action. Subsequently, the University has replaced the Los Alamos Director and Deputy Director, and demoted or replaced 15 other officials. The University also has subordinated business services and auditing at the laboratory directly to the University, brought in outside firms to conduct detailed audits, and made numerous changes in the internal procedures. Generally, we are satisfied with the corrective action taken to date. The Secretary has directed the Deputy Secretary and me to conduct a review of the future relationship between the University of California and the Department. This review will be complete by the end of April. In addition, we are compiling a comprehensive set of "lessons learned" from the Los Alamos problems to share with all DOE sites.

On a more optimistic note, good progress has been made in implementing the intent of Congress in creating the NNSA. The National Nuclear Security Administration is in its third year of operation, focusing the management of the Nation's nuclear security programs through a single organization. The new organization brought together the Department of Energy's Defense Programs, Defense Nuclear Nonproliferation, and Naval Reactors organizations in a separately organized and managed agency within the DOE. The standup of the organization has been a complex undertaking, and I am pleased to report that NNSA is now fully operational. As a result of our strategic planning exercises last year, and the resulting re-engineering of program responsibilities and organizations, we are getting a better handle on the many diverse components of the NNSA programs. Through an emphasis on our new Planning, Programming, Budgeting and Evaluation (PPBE) process, we are planning programs with a long-term view, budgeting within a firm 5-year resource envelope, and managing program and budget execution with more discipline, all leading to better results for the citizens of the United States.

On December 20, 2002, the NNSA began a fundamental restructuring of its management structure designed to implement the President's Management Agenda to create a more effective NNSA. The NNSA of the future will build upon the successes of the past by giving outstanding people the tools needed for strong and effective management of our vital national security mission. This reorganization eliminated a layer of Federal management oversight in the field by disestablishing NNSA's three Operations Offices at Albuquerque, Nevada, and Oakland; shifting the focus of Federal management oversight to eight Site Offices, closer to where the actual work is performed; and consolidating all business and administrative support functions into a Service Center to be located in Albuquerque to increase overall efficiency. These changes were the culmination of 9 months of functional and business process re-engineering, as first described in the Administrator's February 2002 *Report to Congress on the Organization and Operations of the National Nuclear Security Administration*. These management and organizational reforms are expected to permit NNSA to achieve significant Federal staff reductions of about 20 percent in the nuclear weapons enterprise by the end of fiscal year 2004.

As we continue to implement the NNSA Act, we are particularly mindful of the President's Management Agenda to which we are firmly committed. We have invested much time and energy over the past year to carrying out its five major initiatives. Implementation of a PPBE process as NNSA's core business practice is designed to improve budget and performance integration throughout the organization. During the past 12 months, NNSA has been involved in an intensive effort to design and implement a PPBE framework simultaneously with the standup of the new NNSA organization. The processes have been designed in-house, along the lines of the DOD's PPBS system but tailored to our needs. We are adapting processes to address NNSA's emerging organization and unique business operations, and working within limited administrative staffing levels.

Budgeting structures are being updated and aligned with management structures. We are making excellent progress in finalizing the cascade of performance metrics linked from the NNSA Strategic Plan to the individual budget and reporting (accounting) codes and contractor work authorizations. There is a very significant improvement in the Performance Measures across all programs for fiscal year 2004. Evaluation is becoming formalized through linkage with the budget, and improved by the realignment of roles and responsibilities for program managers and financial managers across the complex.

We are pleased with the early progress of PPBE in becoming the core operating philosophy for NNSA. The first year was spent on process design, integration of the NNSA programs primarily at Headquarters, and in consultations and coordination of our efforts with the DOE Office of Management, Budget and Evaluation/Chief Financial Officer and the administration. The DOE Inspector General is currently auditing the first year's implementation, with a report expected in late spring 2003. Our near term goal is to extend more formalized PPBE roles and missions from our Headquarters organizations to the new NNSA Federal field structure and the M&O contractors as the NNSA re-engineering proceeds during the next 12-18 months. It will take several budget cycles and lessons learned to complete the culture change, and to properly staff the organization to fully realize the benefits of PPBE. The NNSA remains committed to this goal.

The NNSA also participated in the Administration's Performance Assessment Rating Tool (PART) analyses, evaluating four programs that encompass about 20 percent of NNSA's annual funding. The PART assessment noted that the NNSA programs were well managed and that NNSA management was proactively working to make additional improvements to program effectiveness and efficiency. Two of the NNSA programs, Advanced Simulation and Computing and International Nuclear Materials Protection and Cooperation, were rated in the top 5 percent of programs government-wide and received the highest PART ratings of "Effective" from the Office of Management and Budget. The PART analysis tool embodies and reinforces the PPBE processes and discipline we are implementing throughout NNSA. We plan to incorporate the PART assessment for all of NNSA's programs as part of our annual Evaluation cycle, starting with the fiscal year 2005 budget this summer.

CONCLUSION

In conclusion, I remain confident that we are headed in the right direction. Our budget request will support continuing our progress in protecting and certifying our nuclear deterrent, reducing the global nuclear danger from proliferation and weapons of mass destruction, and enhancing the force projection capabilities of the U.S. nuclear Navy. It will enable us to continue to maintain the safety and security of our people, information, materials, and infrastructure. Above all, it will meet the national security needs of the United States in the 21st century.

Mr. Chairman, this concludes my prepared statement. Now, I would be pleased to answer any questions that you and members of the subcommittee may have.

Senator ALLARD. Before I call on Admiral Ellis, I want to check with my colleague, Senator Nelson from Florida, and see if he has any opening statement?

STATEMENT OF SENATOR BILL NELSON

Senator BILL NELSON. I want to thank you for being persistent that we get this hearing before us, and I will save my comments for questions.

[The prepared statement of Senator Bill Nelson follows:]

PREPARED STATEMENT BY SENATOR BILL NELSON

Thank you, Senator Allard. Good afternoon. I want to join Senator Allard in welcoming all of you to the Strategic Forces Subcommittee hearing this afternoon. I am glad we were able to reschedule this hearing, particularly on rather short notice. Senator Allard, thank you for being persistent in making sure we could get this very important hearing in before the subcommittee markup.

In the two panels we have present today we will be able to cover almost all aspects of the U.S. strategic programs. At the outset, however, I would note the success of the bomber fleet in Iraq. The B-52, the B-1 and the B-2 are once again demonstrating how very important they are to any military activity. Bombers are essential to gaining and maintaining control of the skies at the outset of any campaign and in ensuring the success of our forces on the ground.

The U.S. bomber fleet is old, particularly the B-52s, and we are planning on keeping them in the air for a very long time, many until 2040. As such, it is essential that we devote the time and attention needed to modernize and maintain these aircraft and make sure that they are there when we need them.

The primary focus of this hearing today, however, is the nuclear deterrent. Maintaining a reliable nuclear deterrent has been a key to U.S. national security strategy for many years. Nuclear weapons will no doubt continue to play an important role in U.S. national security for the foreseeable future. I look forward to discussing today the nuclear forces from all perspectives including the future for nuclear weapons and nuclear weapons policy.

On the National Nuclear Security Administration side, the stockpile stewardship program has made considerable progress. I believe it is a fair statement that the scientists and engineers in the NNSA nuclear weapons complex understand the stockpile better today than ever before. The various experimental tools that are coming on line are developing a record of success in identifying and resolving a variety of issues.

On the military service side the news is also good. The D5 backfit is progressing on schedule, the Minuteman III upgrade program has successfully resolved most of its issues and the drawdown of the Peacekeeper is on track.

It is no secret, however, that several elements of the administration's budget and legislative request are controversial. In particular, the proposal to repeal the decade old ban on the development of new low-yield nuclear weapons appears to be a significant new step in U.S. nuclear weapons policy.

Nuclear weapons policy is a serious issue. Congress has an obligation to ensure that there is a serious, full, and frank discussion of the policy and changes to that policy. The U.S. is currently engaged in a war in Iraq due in large part to concerns over efforts to develop nuclear and other weapons of mass destruction.

I look forward to continuing this most important discussion today with our witnesses.

Thank you.

Senator ALLARD. Thank you.

Admiral Ellis, you are up.

**STATEMENT OF ADM. JAMES O. ELLIS, JR., USN, COMMANDER,
UNITED STATES STRATEGIC COMMAND**

Admiral ELLIS. Thank you, Mr. Chairman, Senator Nelson, distinguished members of the subcommittee. I, too, have a prepared statement that I would like to submit for the record, sir.

Senator ALLARD. Without objection.

Admiral ELLIS. As always, it is an honor to once again appear before you representing the outstanding professionals of the United States Strategic Command. Following our discussions last month on space operations, I look forward to focusing today on our strategic deterrent mission and the opportunities we now have to shape a dramatically different strategic future for the command and for the Nation.

The forces that underpin our deterrence mission and the men and women who design, plan, sustain, exercise, and operate them have not only helped bring a peaceful end to the Cold War, but also remain an important part of our Nation's future security structure.

I commit to you that a robust and disciplined nuclear planning and oversight, conducted for the Nation for more than half a century, will remain a primary focus for the new United States Strategic Command.

It has been an extraordinary 15 months since the Nuclear Posture Review began movement towards the new triad and dramatic reductions in our nuclear arsenal. In that short time, we completed the most sweeping revision of our Nation's strategic planning in a generation, updating our deterrent posture for the realities of the new international environment. We created an entirely new unified command to better address the Nation's global warfighting and deterrent needs. We assumed new responsibilities under Change-2 to the Unified Command Plan which will bring into even sharper focus our deterrent mission as we blend our now broadened portfolio together in innovative ways to enhance the Nation's security.

We have provided intelligence and planning capabilities to the Regional Combatant Commanders, leveraging our historic expertise and unique tools to assist warfighters faced with the challenge of countering weapons of mass destruction and the systems that could be used to deliver them.

We began reductions to the Nation's deployed nuclear arsenal by initiating the retirement of the Peacekeeper ICBM and removing two and soon to be four ballistic missile submarines from strategic nuclear service.

Finally, we continue to provide missile warning for the Nation and for our forces in the field.

Importantly, as you have alluded to, we are also engaged in the demanding work of charting the course of meeting our future needs. We have recognized that there are many opportunities ahead, and I am committed to working with our strong and growing team of partners to address each one. Opportunities to move our Nation forward that we will address together include the following:

- Implementing the recommendations of the Nuclear Posture Review, to include advocating the development of advanced offensive and defensive capabilities along with their supporting systems and infrastructures;
- Delivering quickly on the promise of information operations;
- Bringing to fruition the same concept of planning non-kinetic efforts with known weapons systems reliabilities and analytically-based consequences of execution that have been done for our nuclear stockpile;
- Integrating global missile defense across regional boundaries, among disparate land and sea-based systems, with our offensive forces to better protect our Nation and our forces in the field;
- Working with those who will provide communications architecture and persistent intelligence capabilities so robust that it not only provides adequate C⁴ISR, but also takes on a substantial deterrent character all its own;
- Ensuring safe, secure, reliable, and credible nuclear systems as they continue to age well beyond the original life expectancy; and,

- Finally, improving anti-terrorism and first protection measures for both our critical deterrent forces and the tremendous capabilities we have on orbit.

We will assist not only in crafting a vision, but also a clear and detailed course of action in each area. We will pursue the dispassionate analysis of advanced weapons concepts, to provide a shared set of analytically derived data on which to base the policy discussion and decisions appropriate at senior levels of government. We will also pursue and participate in discussions of future deterrence concepts beyond 2012.

Mr. Chairman, it is an honor to represent the men and women of the United States Strategic Command and its components who are working harder than ever today to ensure the most effective deterrent force for tomorrow. It is also a privilege to join Ambassador Linton Brooks in this hearing. The NNSA is a strong and vital partner of STRATCOM and the Department of Defense. With their unparalleled expertise, we are together pursuing the life extension and Stockpile Stewardship Programs that will sustain and modernize our forces for the demands of a new and unpredictable security environment in the months and years ahead.

Thank you and I look forward to your questions.

[The prepared statement of Admiral Ellis follows:]

PREPARED STATEMENT BY ADM. JAMES O. ELLIS, USN

Mr. Chairman, Senator Nelson, and distinguished members of the subcommittee, it is an honor to again appear before you, representing the outstanding men and women of United States Strategic Command, to address the strategic issues that remain so vital to the Nation. As you recall, during our last hearing we discussed space operations, allowing us to focus today on strategic deterrence and the actions underway to shape a dramatically different strategic future.

U.S. Strategic Command, our components, and our task forces are crafting an entirely new command, instrumental in fighting the war on terrorism, deterring a wider array of potential adversaries, and focused on recasting the Nation's global military capabilities for the demands of the 21st century.

We are drawing on the best elements of both U.S. Space Command and U.S. Strategic Command in order to eliminate seams, broaden oversight and streamline responsibilities. Significant reductions in the level of operationally deployed strategic nuclear weapons have begun in compliance with Presidential direction, the Nuclear Posture Review (NPR) and the Moscow Treaty while continuing to meet our obligations under START. Associated deactivation or modification of strategic delivery platforms is also well underway.

STRATCOM continues to deploy or provide intelligence, planning, targeting, space, and information operations expertise to operations in U.S. Central Command and around the world. We have reshaped and streamlined the command's component and organizational structure to enable an integrated and trans-regional approach to matching global capabilities to global challenges. Importantly, we also completed a comprehensive update to our deterrent force plans to reflect the needs of the new international security environment.

While these efforts are critical, they represent only the first steps toward a much broader vision of our strategic future. On January 10, 2003, the President signed Change Two to the Unified Command Plan and tasked us specifically with four previously unassigned responsibilities. These are: global strike, missile defense integration, Department of Defense information operations, and command, control, communications, computers, intelligence, surveillance, and reconnaissance (C⁴ISR). This unique combination of roles, capabilities, and authorities under a single unified command will bring new opportunities in the strategic arena, in addition to further refining the global opportunities to support the regional combatant commanders.

We are quickly integrating the efforts of our strong and growing team of service, agency, national laboratory, and Intelligence Community partners to define specific goals, identify milestones and quantify the progress of our collective efforts. Today, the new U.S. Strategic Command is improving our Nation's joint combat effective-

ness by modernizing systems, streamlining processes, and providing a broader range of fully integrated mission capabilities to the warfighter and to our Nation's leaders.

THE FUTURE OF OUR NUCLEAR FORCE STRUCTURE

I am proud to again report that our Nation's nuclear deterrent forces remain fully ready. They are manned by a cadre of true professionals who, around the world and around the clock, effectively support the nuclear pillar of our national security strategy. For more than 56 years, Strategic Air Command and the former U.S. Strategic Command stood at the ready, supporting deterrence through rigorous and disciplined planning, effective training, and robust command and control of our Nation's strategic nuclear forces. The professionals of the new U.S. Strategic Command still willingly shoulder that enormous responsibility. We remain fully confident that STRATCOM's readiness, and that of our service components, is the most effective guarantee that the use of these weapons will never be required. As we reshape our organization and assume broader responsibilities, we remain committed to rigorously ensuring the continued safety and surety of our nuclear arsenal and delivery systems. Zero defects remain our standard.

We are making prudent and measurable progress in achieving the President's goal, codified in the Moscow Treaty, of between 1,700 to 2,200 operationally deployed strategic nuclear warheads by the year 2012. Air Force Space Command, our Air Force component, began deactivation of Peacekeeper ICBMs on 1 October 2002. This effort remains on schedule and will be complete by 2005. The Navy removed two Trident submarines, U.S.S. *Ohio* and U.S.S. *Florida*, from strategic service in fiscal year 2003, to be followed in fiscal year 2004 by U.S.S. *Michigan* and U.S.S. *Georgia*. All four of these capable vessels will be modified into Tomahawk cruise missile carriers, designated SSGN, by the end of 2007. They will also provide a tremendous increase in the size and sustainability of support to our special operations forces. With the 1996 re-role of the B-1 to a non-nuclear role, we are moving to retire several hundred gravity weapons in fiscal year 2003, and are finalizing plans to remove many of the oldest ICBM warheads from the Nation's active nuclear stockpile.

SUSTAINMENT AND MODERNIZATION

With no new nuclear systems under development, the important task of sustaining and modernizing our Nation's aging weapons and delivery platforms must be carefully managed and appropriately resourced. These forces must remain a ready, reliable, and credible element of our Nation's security posture. Other than the Navy's submarine launched D5 missile, still in low-rate production, we are no longer building any of the weapons or platforms that comprise our strategic forces. We appreciate your continued strong support, through service and agency programs, of our key weapon, delivery platform, and communications life extension and upgrade programs. These include:

- Minuteman III Guidance Replacement Program (GRP), which replaces aging electronic components and updates software to preserve reliability, maintain accuracy, and ensure supportability through 2020. The GRP is the foundation of MMIII modernization and is being completed at the rate of 80 per year, with 140 deployed to date.
- Minuteman III Propulsion Replacement Program (PRP), which corrects age-related degradations by repouring the propellant in stages I and II, and re-manufactures stage III. PRP requires GRP software for fielding, and must be sequenced appropriately. It is programmed at the rate of 96 per year, with 49 boosters deployed to date.
- B-52 Avionics Mid-life Improvement, one of STRATCOM's highest priorities, and AEHF upgrade, which ensure mission capability and assured connectivity as this aircraft continues to establish new benchmarks in service longevity.
- D5 SLBM Life Extension and Backfit Programs, which will provide a standardized fleet of 14 SSBNs for the full hull life of the Trident II. Two of four SSBNs have completed backfit with the remaining two scheduled for completion in fiscal year 2006 and fiscal year 2007. D5 life extension requires replacement of guidance and missile electronics on fielded D5 missiles, and procurement of 115 additional missiles to meet reliability testing needs over the 14-year life extension of the hull. The D5 Life Extension Program is adequately funded and on schedule for initial operational capability (IOC) in fiscal year 2013.

- B-2 communications upgrade, which may require acceleration in future years to ensure secure and survivable connectivity as AEHF replaces MILSTAR.
- Strategic War Planning System (SWPS), which recently completed an initial upgrade and is now entering a new phase. This new modernization effort will incorporate the flexibility and responsiveness envisioned by the Nuclear Posture Review and broadened to support our newly assigned non-nuclear strategic and regional support missions.
- Combatant Commanders Integrated Command and Control System (C2IC2S), which will replace aging and unsustainable NORAD/U.S. Strategic Command mission-unique battle management systems with a single, open architecture. CCIC2S is on track to incrementally deliver warfighting C2 capability for NORAD in late fiscal year 2004, strategic missile warning in early fiscal year 2006, with space surveillance and control capabilities being delivered from fiscal year 2003 through fiscal year 2008.

In addition to our vital life extension and modernization programs, we are working closely with our partners in the Departments of Defense and Energy, and Congress to ensure our nuclear stockpile remains safe, reliable, and credible. As the Nation's nuclear stockpile continues to age, we must carefully monitor its condition. Through the National Nuclear Security Administration's (NNSA) science-based Stockpile Stewardship Program, we continue to improve our surveillance, modeling, simulation tools and processes in order to provide the critical data on aging effects, component reliability and physics phenomena we require in the absence of nuclear weapon testing. Past drawdowns in nuclear weapon infrastructure require that the essential warhead life extension programs be carefully sequenced with scheduled warhead dismantlement so as to provide just-in-time delivery to meet operational deterrent force requirements. We are working closely with the NNSA, the national labs and plants to shape their support to our future stockpile. With the production complex operating near its peak capacity, we will need to optimize the balance between essential life extension programs and dismantlement work.

Annually, at the direction of the President, I provide a nuclear weapon stockpile assessment to the Secretary of Defense. In my last assessment, based on the information provided by my staff and independent advice from our expert Strategic Advisory Group, I outlined my confidence in the safety and reliability of the stockpile. This is the first time since the program began in 1996 that a STRATCOM assessment did not indicate a decline in confidence in the reliability of the stockpile. I attribute this directly to the continued improvements in and funding for the Stockpile Stewardship Program, to the steps taken by NNSA and the services to diligently address previously reported technical issues, and to the progress of the ongoing life extension programs. I agree with the rigorous technical analysis conducted, and confirmed to the Secretary there is currently no need to consider resumption of nuclear testing. I appreciate your strong support for funding of the NNSA, enabling continuation of their important work.

As we continue to sustain and modernize our forces, we are also working closely with the services and the Department of Energy to address the critical anti-terrorism and force protection requirements associated with safeguarding the Nation's nuclear systems. The ongoing Mighty Guardian exercise series and the Nuclear Command and Control System Federal Advisory Committee End-to-End Review have helped the services and the Department of Energy better focus their security efforts. While the changing character of the postulated threats requires continuous evaluation, I believe the services are making concrete improvements in physical security, though much remains to be done. We will continue to encourage this effort through the STRATCOM Integrated Priority List and will remain an active participant in the creation of implementation guidance that will flow from completed Office of the Secretary of Defense policy studies such as the NPR and the End-to-End Review.

FUTURE ENHANCED CAPABILITIES

It is well known that much of our current military capability was designed or procured for a dramatically different international security environment. This is especially true of our Nation's deterrent forces. Though sustainment and modernization of these systems remains essential, equally important is the examination of future concepts and the contribution they could make to our deterrent posture. A fundamental assumption of the Nuclear Posture Review is that a mix of advanced capabilities, some yet to be designed, that include conventional, non-kinetic, special operations and nuclear, is needed in order to offer the broadest range of options to our Nation's leaders. Such a spectrum of capabilities will both enable the planned NPR draw down in operationally deployed strategic nuclear weapons and form part of a

New Triad of deterrence in support of the President's goal of reduced reliance on nuclear weapons. While there are certainly significant policy issues associated with this transformational effort, it is also true that much laboratory research and development, detailed analytical study and advanced simulation efforts are an essential underpinning to such a fact-based dialogue. A number of organizations, including the Department of Defense and the Defense Science Board have nascent reviews underway. As the Secretary of Defense has noted, these studies are intended to consider and weigh alternatives and in no way presuppose decisions as to detailed design, production or deployment.

Advanced Conventional Capabilities and Global Strike

U.S. Strategic Command's newly assigned global strike mission extends our longstanding and globally focused deterrent capabilities to the broader spectrum of conflict. We will incorporate conventional, non-kinetic, and special operations capabilities into a full-spectrum contingency arsenal and into the Nation's strategic war plan to further reduce our reliance on nuclear weapons. This innovative approach will enable the command to deliberately and adaptively plan and rapidly deliver limited-duration, non-nuclear combat power anywhere in the world. Our intent is to provide a wide range of advanced options to the President in responding to time-critical, high-threat, global challenges and, thereby, raise even higher the nuclear threshold.

As envisioned, global strike could be decisively conducted at the direction of our most senior civilian leaders. It also represents a powerful tool in support of the regional combatant commander, essentially increasing the forces and options he has available to deter and engage an adversary. In either case, global strike will provide the Nation the ability to engage priority targets by moving rapidly from actionable intelligence, through adaptive planning, to senior-level decisionmaking and the delivery of kinetic or non-kinetic effects across thousands of miles. It can provide what may be the most critical element early in the fight—time. As a regional combatant commander assembles and moves forces into position or needs to strike into temporarily denied areas, U.S. Strategic Command can provide early planning and tangible, long-range combat capability. We are initially building this capability around the bomber force, and are bringing the B-1 back into our force structure in its purely conventional role. This committee's continued support of advanced conventional weapons initiatives such as the SSGN will assist in our immediate efforts to improve joint warfighting effectiveness. We continue to study concepts such as conventional ballistic missiles, Common Aerospace Vehicles, hypersonic aircraft, and unmanned combat aerial vehicles that could play a significant role in improving our global strike capabilities in the mid- to long-term.

Information Operations (IO)

Delivering on the promise of information operations is one of U.S. Strategic Command's top priorities. Incorporating computer network attack and defense, electronic warfare, psychological operations, strategic deception and operational security, this nascent mission area promises to dramatically improve our offensive and defensive capabilities, and may play a large role in shaping the size and character of future force structures. Quite simply, I believe that integrated IO comprise the next revolution in warfighting, and our new role as the integrator of DOD information operations will bring a joint perspective to improvements in capabilities, ensure ready access to IO planning, reduce stovepipes, test and validate new capabilities, and provide a responsive command and control system to the Nation's civilian leaders and combatant commanders.

Our current vision has U.S. Strategic Command serving as the central IO armory. While we need not own service and agency IO programs, or execute all IO missions, we must have full insight and access to all DOD IO capabilities as well as execution capability for strategic efforts. We will capitalize on our proven expertise in detailed intelligence collection, rigorous nuclear planning and consequence analysis to bring a fully integrated, deliberate planning process to the IO realm. We envision providing weapons or capabilities with documented system reliability and analytically based estimates of consequences and effectiveness, just as we have done for decades with the Nation's nuclear forces. We will support an expeditious national-level approval process for conducting IO, and we will work to ensure national leaders and warfighters have what they need at their disposal, not only during crisis but also during the critical planning, training, exercise, and deployment phases. In this vein, we have conducted a number of advanced information operations exercises, spanning the entire planning, approval, execution, and battle damage assessment phases, and have identified valuable lessons for inclusion in our future planning and development processes.

Missile Defense

The danger posed by weapons of mass destruction and their delivery systems is clearly one of our Nation's top concerns. As we discussed during my last appearance, the Missile Defense Agency (MDA) is actively developing an array of land, air, and sea-based missile defense systems to provide an additional level of protection for our homeland, our allies, and our forces in the field. Although still in the early stages of development, global missile defense will become an important third leg of the Nation's New Triad beginning next year.

While the MDA develops and acquires our missile defense systems, U.S. Strategic Command is charged with efficiently integrating and operationalizing global missile defense, enabling an initial defensive operations capability in less than 18 months from today. As General Myers noted recently before the full committee, missile defense is inherently a multi-command and multi-regional task, and we are developing the global concept of operations and command and control architecture to provide the full support needed by the regional combatant commanders to defend their theaters, including the ballistic missile defense of the continental United States by U.S. Northern Command. With the unique combination of missions now assigned to our command, we are also working to integrate the emerging defensive capabilities with our full-spectrum of offensive capabilities, to support rapid and fully informed decisionmaking at the appropriate tactical level. This effort will be aided by the long-existing relationships we have crafted as the historic provider of ballistic missile integrated threat warning.

Command, Control, Communications, and Computers (C⁴)

In the fast-paced and complex national security environment of the 21st century, U.S. decisionmakers and warfighters must have seamless access to superior information to conduct decisive operations. Under the Unified Command Plan, STRATCOM now is assigned the role of tasking and coordinating C⁴ in support of strategic force employment. Our objective is to provide a more capable and flexible means to integrate, synchronize, coordinate, and convey information at any level from the President to the front-line combatant. We will partner closely with U.S. Joint Forces Command and the Defense Information Systems Agency in this critical effort.

The events of September 11, 2001, illustrate the need to improve our national command and control architecture, and we are working with the Assistant Secretary of Defense for Command, Control, and Communications (ASD/C3) and a host of others to craft a new national-level C⁴ system. This system must allow increased access to a broader array of Federal agencies, provide improved information flow, enable rapid decisionmaking, and support the requirements of our network-centric forces in the Information Age. While this is important for the Nation and all of the Department's missions, it is imperative for the strategic deterrent, integrated missile defense, and global strike missions, where data collection, analysis, decisionmaking, and execution must occur within dramatically compressed timelines. We will leverage our experience with nuclear command and control to create a robust, hardened component to the national C⁴ system to preserve and strengthen the deterrent effect that assured communications, rapid decisionmaking and certain action provide. We appreciate your continuing support of the innovative communications initiatives such as the Transformational Communications Architecture and the important delivery platform connectivity upgrades vital to robust command and control.

Intelligence, Surveillance, and Reconnaissance (ISR)

U.S. Strategic Command is also tasked under the Unified Command Plan to plan, coordinate, and integrate ISR for the Department of Defense in support of global and strategic operations. While ISR has always provided intelligence insight and targeting data, recent world events have demonstrated the critical role comprehensive ISR operations can play in senior-level decisionmaking, tactical planning and even deterrence.

We will work closely with Department of Defense and Intelligence Community partners to develop and institutionalize the processes and systems necessary to maximize the capabilities of existing systems and assess intelligence collection priorities. New concepts such as intrusive ISR, incorporating space-based, air-breathing, terrestrial and maritime elements, could take us beyond passive collection benefits, especially when integrated with critical human intelligence and technical data. Our objective is to not only better provide persistent, actionable, predictive intelligence, but also to deter the threatening actions that a robust, global, persistent ISR capability could bring into full view. Systems such as the Space Based Infrared System (SBIRS), Future Imagery Architecture (FIA) and Space Based Radar (SBR) represent the high end of a spectrum that must also bring advanced air-breathing, ter-

restrial and maritime elements into a global architecture. Our ISR needs and regional focus in time of crisis are well known. In the future, global challenges will require an ISR capability that is broad and deep enough to simultaneously meet all national and regional needs across the continuum of peace, crisis, and conflict.

OPTIMIZING THE ORGANIZATION

As you recall from my previous statements, U.S. Strategic Command is realigning our overall headquarters organizational structure in order to effectively and efficiently address a wider range of responsibilities. We will organize along functional and operational lines, rather than administrative in an effort to focus on our primary mission areas. As we move to our new organizational alignment this month, we will expand the use of enhanced planning and analysis tools into our newly assigned mission areas. While we will draw heavily on their tools and skills, we will retain the core nuclear planning staff as a distinct element in our headquarters, organizationally aligned and consolidated to ensure focused and dedicated nuclear planning and expertise continues in the future as it has for more than half a century.

As we design concepts of operations for the new command, we are pursuing innovative new service relationships that will enable the command to efficiently tap into the unique skills and expertise resident in an array of other organizations, without requiring full-time STRATCOM ownership of their forces. We are strengthening our partnerships with the national agencies in order to collaboratively approach our new mission areas, particularly in the highly technical and focused realm of intelligence, information operations, and communications. We have forged new relationships with the National Security Agency, the National Reconnaissance Office, and the Defense Information Systems Agency. Each has incredibly talented professionals and dedicated systems, processes, and procedures that are important to our shared success but which need not be duplicated in our headquarters. We are also excited about the opportunity to leverage our strong relationships with the national laboratories as we expand and develop new capabilities applicable to our recently assigned missions.

As we discussed previously, success in any of our missions depends on our number one asset—our people. Creating a culture of excellence in a broader and deeper range of missions while sustaining the standards still reflected in our nuclear and space communities will depend on recruiting, training, and retaining the best and the brightest, in our military, in public service, in industry, and at the national labs. We will fully support and participate in efforts to create and sustain cadres of space, nuclear, and information operations professionals in both the Department of Defense and the Department of Energy. They are absolutely essential to our future.

CHALLENGES AND OPPORTUNITIES

As we work to achieve the goals, carry out the responsibilities and deliver the capabilities needed for the global challenges of the 21st century, we will encounter many difficulties and find many more opportunities. It will not be quick or easy; few truly important efforts are. We will need to keep in mind our broader objectives, even as we wrestle with the daily technical, operational or policy details. Though the list will doubtless change over time, our specific strategic goals are:

- Fully implementing the guidance of the Nuclear Posture Review, to include advocating the development of advanced offensive and integration of defensive capabilities in order to meet the President's goal of reducing our reliance on operationally deployed strategic nuclear weapons.
- Delivering on the promise of information operations to the warfighter.
- Integrating global missile defenses across regional boundaries, combining land, air, and sea-based systems with capable offensive forces to better protect the Nation and our forces in the field.
- Providing adequate bandwidth and a robust communications architecture for rapid decisionmaking and global combat operations at the strategic and operational level.
- Supporting technical and process enhancements in intelligence, surveillance and reconnaissance so as to provide comprehensive, persistent, predictive, and actionable strategic capabilities.
- Redefining the STRATCOM organizational structure and crafting new relationships with the services and national agencies to effectively and efficiently support our broadened responsibilities.
- Supporting the services' and the Department of Energy's efforts to enhance anti-terrorism and force protection measures for our critical space and nuclear facilities.

- Addressing concepts of deterrence and the associated force structure appropriate for the new international security environment of this decade and beyond.

Each of these challenges will require a team effort, inside and outside the command. As we move forward, we look forward to working with you and the many others who are privileged to share the humbling responsibilities for our Nation's defense.

CONCLUSION

It is a time of great enthusiasm, excitement, and opportunity at U.S. Strategic Command. While 2002 was a year of new concepts, 2003 and 2004 must clearly be years of execution. Driven by new tasking and new responsibilities, in a real sense we at STRATCOM have reclaimed the classic definition of strategic, as articulated by Sun Tzu, Clausewitz, Washington, or Webster. We no longer live in a world where strategic is synonymous with nuclear, and we are integrating and interlinking the command's broad portfolio of missions to better and more flexibly meet the deterrent needs of the Nation. We have taken the first important steps in the evolution of our full-spectrum "new" strategic capabilities, even as we have taken the historic first steps in drawing down our Nation's deployed nuclear arsenal.

I appreciate your continued support of the men and women of STRATCOM and the unique and essential contributions they continue to make to our Nation's security. I look forward to reporting our continuing progress to you in the future, as we take the next important steps in building the new United States Strategic Command.

Thank you, and I welcome your questions.

Senator ALLARD. I thank you both for your testimony.

I will start off with some questions and will direct the first one to Admiral Ellis. It used to be that when we referred to strategic basically we were referring to long-range nuclear. Now with the posture review, when we talk about offensive and defensive weapons, I guess the question comes to mind—I am so much confused myself—as to what is a strategic target. In connection with that, how would you define a strategic weapon? My understanding is that these definitions have changed over time.

Admiral ELLIS. They certainly have, sir. You have highlighted a theme that I have been sounding since the 1st of October last year, when the new United States Strategic Command was established. Many people believe that we kept the name the same and slid a new organization under it. But I remind audiences that in reality we have done just what you have described. We have redefined and recharacterized the term "strategic." We have recaptured in a sense the classic definition of what "strategic" means.

In other words, for many years, as you rightly noted, Mr. Chairman, we have equated "strategic" with "nuclear." But if you go to the dictionary, if you go to Webster's, nowhere in there does the definition of "strategic" mention the word "nuclear." Rather, it states, "essential to the success of large-scale global operations." It talks about "essential to the prosperity of a nation, but available in small quantities domestically."

There are a number of definitions ascribed to "strategic," but none of them are "nuclear." That indeed is what we are about. "Strategic" in my view encompasses a broader range of capabilities, all the capabilities that the Nation's military can bring to bear in its defense and its protection. It really refers to operations and capabilities conducted on a global scale, in support of Regional Combatant Commanders, if necessary, but in response to specific tasking of our own forces, if appropriate.

I hope that helps put things back in context, sir. But you are exactly right, we have recaptured the classic definition of “strategic” at the new United States Strategic Command.

Senator ALLARD. I thank you for that response.

I wish you would go over a little bit for the subcommittee the significance of developing the advanced conventional munitions, particularly in light of the reductions of nuclear arms envisioned by the Nuclear Posture Review as well as the Moscow Treaty.

Admiral ELLIS. Thank you very much, Mr. Chairman. As you rightly allude, one of the fundamental assumptions or underpinnings of the Nuclear Posture Review was that as we draw down the Nation’s operationally deployed strategic nuclear stockpile we would generate over time an enhancement in a number of areas. You have alluded to them in referencing the new triad.

They include the infrastructure to which Ambassador Brooks alluded. They include robust command and control, adaptive planning capabilities. Most importantly, they also include new strategic capabilities, advanced concepts that are non-nuclear in context, and that includes advanced conventional as well as non-kinetic or information operations capabilities.

As I said earlier, we have broadened the term “strategic” and our goal is to provide a full range of options to the Nation’s senior leadership, and the development of those capabilities at a pace that is appropriate for the drawdown in our nuclear forces is what was envisioned in the Nuclear Posture Review and is a capability or direction that I fully support.

Senator ALLARD. How important would you say conventional munitions are today in carrying out your STRATCOM mission? How important do you think they might be 20 years from now?

Admiral ELLIS. Sir, as we have established ourselves on the 1st of October and begun the creation of a nascent global strike capability—that is one of the four previously unassigned mission areas that have come to the United States Strategic Command—that capability obviously involves conventional weapons, as does the capabilities that are embedded in what is called Department of Defense information operations.

As to the future, we see a need, an opportunity indeed, to pursue advanced conventional capabilities across that full spectrum, kinetic and non-kinetic. We believe that by partnering closely with the Services, the agencies, Defense Threat Reduction Agency, DARPA, the advanced development organizations and laboratories, as well as the National Aerospace Initiative and other capabilities that are beginning to take form, these advanced conventional capabilities will be an increasingly significant part of the planning capabilities that fall under our purview.

They are absolutely essential to our future. They were a part of the assumptions that were implicit in the Nuclear Posture Review, and we certainly appreciate your support of these efforts to develop such capabilities.

Senator ALLARD. That gets us down to the issue of delivery systems. Do we have the right mix of delivery systems to put those conventional advanced munitions on target?

Admiral ELLIS. My view is that for the near term I believe we do. We are working through the Services to address issues regard-

ing sustaining our bomber forces, for example. Two weeks from today we celebrate the 51st birthday of the first flight of the B-52. Fifty-one years ago next week, that airplane first flew, and the projection is that it will continue to fly until 2037.

Clearly, we need to pay attention to these aging platforms and continue to examine how to modernize them and how to upgrade them to capably carry the current and future generations of weapons. We also need to explore new capabilities, some of which you are familiar with from your interest in space. Common Aerospace Vehicles and advanced delivery concepts of that type offer some promise for advanced conventional capabilities that would allow us to deal with time-critical targets half a world away in short order.

As these types of things mature, we get more clarity on the capabilities that they do, in fact, deliver, and we are able to fold into the budget the tradeoffs that inevitably are part of this process in which we are all involved, I think it is going to be an important approach that we take for the future.

Senator ALLARD. My time has expired.

Senator Nelson.

Senator BILL NELSON. I am going to let Senator Reed go. I have plenty of questions, so I will just take the time.

Senator ALLARD. Senator Reed.

Senator REED. Thank you very much.

Thank you, gentlemen, for your testimony. Ambassador Brooks, I have been listening closely as you talked about the request to repeal the ban on low-yield nuclear weapons. Your rationale seems to be wanting to sweep away the artificial intellectual constraints, but it strikes me that if that were the only thing that was at issue here you would request modification to the statutory language, not an outright ban. For example, the language could simply say: "It shall be the policy of the United States not to produce a low-yield nuclear weapon, including a precision low-yield nuclear weapon." Is that accurate?

Ambassador BROOKS. It is accurate that that would eliminate one of the concerns that I have with the language, though the language now does have, we fear, a potentially chilling effect on R&D and as you have described a possible modification it might not. Speaking narrowly for the prospect of trying to get a robust advanced concept program working, language like that might be entirely suitable.

My view, the administration's view, is that the ban on a particular class of weapons is a mistake because it substitutes sort of a mechanical limitation for a broad examination. We have low-yield weapons now. Is there a logic to saying that we can have older low-yield weapons, but that we know now that we are not going to ever want to produce new low-yield weapons?

Now, to some extent I admit we are talking about an important signal, since I am not going to develop or produce anything without the permission of Congress and if Congress decides to give me permission it could modify the ban you talk about in the future. To some extent we are talking about an important signal, but I believe that it is wrong as a matter of principle to set forth arbitrary restrictions on even the development of weapons. But I freely concede the point that I would be much better off in terms of my immediate

concern for intellectual development with a modification like you said.

Senator REED. I think, Mr. Ambassador, you are right. This is a very important conversation. It sends off very strong signals, and the signal that you tried or are communicating, at least I thought, was that this is just a technical issue about the breadth of research. But yet, this repeal goes far beyond that. It would signal to many people that we are not only researching, but we have the legislative authority—at least not the legislative prohibition—to produce new weapons, new low-yield weapons. That would be an interesting signal around the globe in terms of many issues, other countries looking at what we do, or the proliferation issues, not discouraging disarmament efforts that we are trying to encourage.

I find it puzzling that if it is simply a narrow, research base, intellectual inquiry base, that such a ban would be urged by the administration. As for the arbitrary nature of setting one class of weapons aside, I think that goes to an issue about this weapon, a low-yield weapon, might be less of a threshold to use than a larger weapon. That may be common sense; it may be wrong, but I think that is what most people think.

Ambassador BROOKS. Yes, sir, and I understand that. Here you have a paradox we have faced in this country for the last 60 years. On the one hand the more that you can see that a weapon is directly relevant to something you might want to do, the more effective a deterrent it is, and on the other hand the more the argument that you make comes into play.

I think that is an inherent part of the dilemma of nuclear weapons: What signal will we be sending? One signal we may be sending is that we are no longer going to constrain ourselves by a reliance on a type of retaliation that was appropriate for the Soviet Union, that, in fact, since deterrence depends on what the adversary values, we are going to hold open the possibility of a deterrent that is adapted to a future adversary.

In my view, that does not lower the nuclear threshold. The nuclear threshold is awesomely high, but we know we are engaged today in an exercise in Iraq which demonstrates that the overwhelming power of the United States is not always enough to ensure rational behavior on the part of other countries. There is a possibility that in the future one may need to have capabilities that we do not have now.

Senator REED. Excuse me, Mr. Ambassador. Are you suggesting that in the Iraq situation if we had a low-yield nuclear device—

Ambassador BROOKS. No, I am not, and thank you for the opportunity to avoid misunderstandings. I am not suggesting that. I am suggesting that it is important to realize that people we try to deter, by and large, do not think like us, and therefore we may need a variety of capabilities to deter them. That is the point that we had in the time of the Soviet Union and that is the point that we have now. I was not meaning to suggest that nuclear weapons have any particular relevance to the Iraqi situation because I do not think they do.

Senator REED. Mr. Chairman, my time has expired. I might not be able to stay and perhaps Senator Nelson might follow up on this. As we look around, where would we use these types of weap-

ons? We are currently engaged in a conflict with Iraq, and I think you, Mr. Ambassador, quite rightly said that we probably would not even contemplate using such a weapon, a low-yield weapon, in Iraq. I just wonder, why are we making the effort to take away all the restrictions, not just research and development leading up to, but all the restrictions with respect to low-yield nuclear weapons? My time has expired. Thank you.

Senator ALLARD. If you want some extra time, your colleague is willing here.

Senator REED. No, I will yield back.

Senator BILL NELSON. I will follow up for you. Why do you not just jump in if you would like to.

Senator REED. We cannot tag team. That is WWF. [Laughter]

Senator ALLARD. Excuse me. Before you leave, I do want to make an announcement. I announced earlier that we would not be able to have as high a level of security in the closed session as we were counting on. I have now been informed that we have a reporter we will be able to use at that session, so we can go into however much detail or whatever clearance level. That will not be a restricted matter when we go into closed session.

Senator Nelson.

Senator BILL NELSON. Mr. Ambassador, I might agree with you on the policy, but on the issue of what is law and obeying the law, sitting right here looking at that nameplate right there causes me to remind the executive branch that this is a government of shared powers and the law-making process is here, with the President signing legislation into law, and that we are a Nation of laws, not of men.

Section 3136 is a prohibition on research and development of low-yield nuclear weapons, and until that law is changed, no matter how you interpret it, the law is the law.

Ambassador BROOKS. Senator, if anything I said suggested anything else, then I apologize. In fact, my point is your point, because I believe, Senator, that you left out the words "that could lead to," and it is precisely the fact that we tried to be scrupulous in our following the law that leads us to the situation in which, in addition to physicists and engineers, we have to have lawyers in thinking about technical development. It is not because we wish to thwart the law, but because we know we are obligated to scrupulously comply with the law, that we are advising the Senate that we think the law should be changed.

Senator BILL NELSON. Well, for the record I think the law is pretty clear. Subsection [b]: "The Secretary of Energy may not conduct, or provide for the conduct of, research and development which could lead to the production by the United States of a low-yield nuclear weapon which, as of the date of the enactment of this Act, has not entered production."

Ambassador BROOKS. Yes, sir, that is absolutely correct. I believe that that law is clear. The words "which could lead to," however, raise issues in terms of, can you do something for a high-yield weapon because what you learn could lead to. That is the point I was trying to make.

In the nuclear area above all, we are pretty meticulous about following the law.

Senator BILL NELSON. Is there a requirement in your opinion for a new low-yield?

Ambassador BROOKS. No.

Senator BILL NELSON. Is there a requirement for such a weapon under consideration or being developed?

Ambassador BROOKS. There is no requirement being developed. To the best of my knowledge, there is no requirement under consideration. There are continued discussions among specialists about what capabilities might be suitable or might be required in the long term. But anything that rises to the level of formal consideration by the Department of Defense of a specific requirement for a specific weapon, I am not aware of.

Senator BILL NELSON. Over at DOD you hear talk that there is justification for the repeal of this law so as not to foreclose the exploration of technical options that could strengthen our ability to deter or to respond. What sort of new emerging threat would a low-yield nuclear weapon be used to deter or to respond to?

Ambassador BROOKS. I am not sure, but let me give you some of the kinds of examples that people have looked at for advanced concepts more generally. For advanced concepts one might look at what is sometimes called Agent Defeat, the idea that a particular biological agent, set of biological agents, might require a large burst of radiation to in essence kill the biological agents. For example, one might want to look at an enhanced cruise missile which has different safety and surety features. For example, one might conclude at the end of the study of the Robust Nuclear Earth Penetrator that I cannot do what I am asking you to let me do and see if I can adapt an additional weapon, and then one might be forced to say the only way you can get a nuclear earth penetrator is to do something fundamentally new.

Now, in all of those cases I do not know whether the most efficient and effective design would be a low-yield design or a high-yield design because, as I tried to make clear in my statement, I am not asking to produce something, I am not asking to develop something. But those are things where our existing capabilities might need to be improved. Those are the kinds of things that we will be looking at under advanced concepts, and in doing that I do not want to set out at the beginning of the exploration a boundary that says I must look at them with higher yields.

I have a bias in favor of the lowest usable yield because I have the bias in favor of something that is the minimum destruction. I accept Senator Reed's point that that means I have a bias in favor of things that might be usable. I think that is just an inherent part of deterrence.

Senator BILL NELSON. I would assume, and you tell me if this is correct, that bunker busters are a function not only of the explosive blast, but would also be a function of the hardening of the case?

Ambassador BROOKS. Yes, sir, that is exactly right.

Senator BILL NELSON. In order to penetrate deeper.

Ambassador BROOKS. That is exactly right, sir.

Senator BILL NELSON. The latter would not get into the question.

Ambassador BROOKS. It does not. What we hope to do on a nuclear earth penetrator is to look at both the B61 and the B83, both

of them gravity-delivered bombs, and take a look at whether, without getting into the redesign of the nuclear package, we can so strengthen—it is not just that you have to be able to penetrate. I mean, we know how to make things that will penetrate. You have to be able to penetrate and still have nuclear weapons, which are actually quite intricate machines to work right, survive the penetration long enough so it will still work with the reliability that we demand. Whether that can be done by adapting an existing weapon is what we are asking Congress to let us spend a fair amount of money to find out.

Senator BILL NELSON. If you can penetrate, you can take care of business with a conventional explosive, can you not?

Ambassador BROOKS. It depends a little bit. I defer to others who are experts in conventional explosives, but, in general, a conventional explosive demands a precision that a nuclear explosive does not. In general, knowing exactly the outline of an underground bunker is not something you can guarantee. For example, if I knew that I was trying to penetrate this room and the conventional explosive ended up three rooms over, that would not be very effective. If a low-yield nuclear weapon ended up three rooms over, that would in fact make this room unusable under any conceivable circumstance.

I do not mean to minimize the importance of conventional penetrators. Everybody would like to be able to do everything with conventional weapons for a whole bunch of reasons, and it may well be that the country will decide that the benefits of a Robust Nuclear Earth Penetrator are not worth having. What we are trying to do is find out what those benefits are and what it would cost to actually have them.

Senator ALLARD. Okay, I think Ambassador Brooks has had a pretty good workout. Admiral, you are next.

Admiral ELLIS. Thank you, sir.

Senator ALLARD. You appreciate that opportunity.

Ambassador BROOKS. Thank you, Mr. Chairman.

Senator ALLARD. We just heard Senator Reed suggest that nuclear weapons could lower the nuclear threshold, and I heard Ambassador Brooks testify that we had lower yield nuclear weapons in our arsenal in the past. Do you know why we did not use those weapons in the past?

Admiral ELLIS. Mr. Chairman, I believe that the decisions that would confront the President on the use of nuclear weapons are the most demanding and challenging decisions that he will likely ever face. It is not clear to me that there is a direct linkage between the size of the weapon and the awesome responsibilities embodying that decision.

You rightly point out, as the Ambassador has already noted, that we have low-yield weapons in the inventory. Quite frankly, we have had many more low-yield weapons in the inventory in the past through the 1950s, 1960s, and 1970s. But now they are removed from the inventory. Each of those periods saw their own challenging, demanding conflicts and, as we all are well aware, thankfully, none of those challenges in any way got close to the threat level that would require their use.

My view is that the decision is an extremely difficult and demanding one. The survival of the Nation, our allies, and friends in significant measure has to be at stake, and I suspect that is why those issues have not come to the fore prior to this.

Senator ALLARD. In your view, can conventional munitions hold at risk the full range of targets you think you need to address today and in the future?

Admiral ELLIS. No, sir. In a word, there are clearly hardened, deeply buried targets, as we are well aware, that even our most capable advanced conventional capabilities cannot touch. Even some of the developmental capabilities that we are now beginning to see and have addressed—the massive ordnance air blast weapon that has been demonstrated and the like, a 21,000-pound weapon there—cannot deal with all of those facilities.

Senator ALLARD. It looks to me like our potential enemies are at least beginning to address this vulnerability aspect. I guess in the last night or so we had, if you looked on TV, the bunker that was blown up there; the thing that struck me was the size of those walls that I saw laying around that room. It looked to me like some of them were 6 feet thick.

So you are telling me that our enemies or potential enemies are perhaps looking at going deeper, with—I do not know if I saw a lot of rebar in them, but—an even stronger wall and even deeper, which our current conventional weapons could not get to, is that correct?

Admiral ELLIS. That is correct, sir. It is even more challenging than that, because many of them are taking advantage of the rock formations and the type of structure that they dig the tunnel into, that to a large degree cannot be easily penetrated by any of our conventional weapons. If you consider that, it makes the challenge even more demanding.

It is not just the depth, it is the character of the matter en route to the target of interest that is of importance as well. If it is a solid rock, granite formation, mountain type structure, as we are seeing proliferating around the world, those are even more challenging to any weapons capability, much less conventional.

Senator ALLARD. Now, my understanding of maybe some of these low-yield weapons that will penetrate down through the earth is that actually contamination on the surface would be much less than our more conventional nuclear weapons that we have now. Is that right?

Admiral ELLIS. Well, again, we have not been able to do the depth of analysis that could give us that type of information.

Senator ALLARD. But that is what it appears?

Admiral ELLIS. There are many experts who believe that as you tunnel down many feet that, particularly with the lower yield weapons, there would be much less probability that the blast would emerge from the hole and contaminate the environment. Conceptually that is a theory. But, again, it needs to be validated by the rigorous and precise engineering analysis that the Ambassador is talking about so that we are all dealing with the same set of facts here as we discuss this very important issue.

Senator ALLARD. I guess the one thing that a nuclear weapon might carry with it on a conventional weapon is a lot more heat.

It would have a lot more heat in that blast. If you had, for example, a bacteriological lab, say anthrax, which is very resistant to most disinfectants, a very strong heat source could be helpful. Is that right?

Admiral ELLIS. Yes, sir, heat could be an element in the agent defeat scenario that the Ambassador described, as well as the larger energy that could couple to rock formations and propagate shock waves through much greater depth and ensure destruction that could not be done by conventional munitions as we know them.

Senator ALLARD. Now, as I understand it, both the administration and you are interpreting the current law, which was just read to us here by Senator Nelson, as saying that you could not do any research at all that somehow or other could be construed to leading toward the development of a particular weapon. There are a lot of lawyers out there that want to carry that language to the ultimate. Does this law preempt us from doing some research out there that we ought to be doing when we look at the full range of possibilities of defending this country?

Admiral ELLIS. Yes, sir.

Senator ALLARD. Is that the way you are looking at that interpretation?

Admiral ELLIS. Certainly the language has been subject to as much scrutiny as anything that has gone into law on the nuclear side in many years. As Ambassador Brooks has properly noted, we have taken a very conservative interpretation to ensure that we carry out fully the—

Senator ALLARD. That nobody would ever question what you were doing.

Admiral ELLIS. The intent—I think the term “possibly” and a number of other generalities associated with that have really engendered a real reluctance to begin to address any of these issues. It really is what you spoke about earlier. I was privileged to be here last month for a hearing and happened to be watching some of the debate going on on the floor with your colleagues. There was a wonderful quotation that one of them used in a different debate, that said: “We are all entitled to our own opinion, but we are not entitled to our own facts.”

That is what this is all about—let us find the facts associated with this and let us understand that there are very important policy issues that need to be addressed. We certainly are very mindful of that, but it is important that we have a dispassionate analytical fact-based discussion on just the issues that you have been questioning me about, and that is the reason that relaxation of this language is so important.

Senator ALLARD. In my own mind I think I can conjure up where this definition could be extended to the point where it could actually interfere with just basic research. For example, just hypothetically, maybe if you run across an element that all of a sudden comes to light and somebody says, “Well, that has the potential of being an element that would be used in a nuclear weapon,” that that could keep you from doing some very basic research as far as chemicals are concerned. Could it be carried that far?

Admiral ELLIS. I would not speak for Ambassador Brooks here, but since I am covering for him in this session, I think that that

is what he is alluding to in his discussion of the chilling effect. It is important.

Senator ALLARD. So it can be interpreted to the point where it interferes with basic physical research, basic chemical research—is that correct? Is that what you are trying to say?

Admiral ELLIS. Our interpretation is all research and development, which could lead to the development of precision low-yield weapons, is precluded by that language, and that is the issue at hand.

Senator ALLARD. My time has expired.

Senator Nelson.

Senator BILL NELSON. Mr. Chairman, I am reminded of debates on other matters that we have as to whether you are a strict constructionist or a judicial activist, and all of a sudden it sounds like you want to be a judicial activist.

Senator ALLARD. Well, no. The problem is we have judicial activists out there.

Senator BILL NELSON. All right. Let me ask you, Admiral. Let us talk about the bomber fleet. The B-1 defensive system upgrade program was cancelled as a result of significant technical troubles and cost overruns. The funding picture is improved for the B-52, but there is still no funding for the Link 16. It is also not clear whether the B-2 radar program will be completed as soon as required, and there is no money for EHF satellite communications in 2004. Are you comfortable with all this?

Admiral ELLIS. In a short answer, no, sir. There are clear issues associated with the B-1 that are important to us because, even though it has now been re-rolled out of its nuclear mission, it now is of great interest to me because of its global strike capabilities and the conventional capabilities that are a part of that capable platform.

It is clearly a defensive countermeasures suite that is appropriate to the challenges that that airplane might confront—and it was a workhorse for me in Kosovo in 1999 and continues to serve us well in the ongoing conflict. It is an ability that we continue to upgrade, as we do all of the systems for the stresses they are going to face in the future.

Senator BILL NELSON. How about schedule change?

Admiral ELLIS. The specifics of schedule will have to be taken in context. I am certainly not waffling here. I need to understand why the schedule has slipped, and I will look into that, sir. If it is to resolve technical issues, then there may be some legitimacy in that if it leads to ultimate success in the overall procurement process. You have rightly identified the issues that are a part of the B-52 piece: the avionics upgrades, the kind of things that are going to keep that airplane flying until it is beyond 80 years old are very important to us.

The B-2 piece, the radar is having to be changed out because the frequency spectrum in which it operates is no longer available after fiscal year 2007 as a result of commercial encroachment issues. It is important that that capability come on line as quickly as possible.

We are working with the Services to address the importance of the reachback capability associated with the communications be-

cause it is important to us, but not just in the strategic mission in the classic context of recallable aircraft, with which you are very familiar. Also, the global strike command and control, the ability to get retargeting information to the platforms in the air, has proven to be very critical to us, as we have seen in the successes we have enjoyed in recent operations.

The bomber road map continues to be an important part of my focus. In fact, it is more important now than it has ever been because it serves me well in at least two, if not more, of my missions.

Senator BILL NELSON. Have you flown B-52s?

Admiral ELLIS. Yes, sir, once.

Senator BILL NELSON. Have you flown the B-1 or B-2?

Admiral ELLIS. No, sir. We are scheduled to do that this spring. They invited me up to Minot, where I am going to have the opportunity to fly both of those aircraft, and I look forward to that.

Senator BILL NELSON. Do they handle a lot easier than a B-52?

Admiral ELLIS. Yes, sir, they do. I have to admit my experience in the B-52 was many years ago when I was a lieutenant in test pilot school, and I thought I was a pretty hot pilot as a fighter guy. That is a pretty humiliating effort when you get in there and crank that yoke over and nothing happens. About that time you say, well, nothing is going to happen, and you try and add more, and you find out it happens and then some. It is a completely different set of intellectual control laws and time delay associated with that aircraft.

I admire and have the deepest respect for the folks that have flown that for a generation. We used to joke that it was older than the pilots that flew it. Now we are going to be able to say that it is older than the grandparents of the pilots.

Senator BILL NELSON. I will address to both of you. Is our nuclear stockpile safe and reliable, even though we are not testing weapons?

Ambassador BROOKS. Yes, sir.

Admiral ELLIS. Yes, sir.

Senator BILL NELSON. Do both of you think that we do not need for the safety of the country to conduct a nuclear test?

Admiral ELLIS. Yes, sir, at this time that is true.

Ambassador BROOKS. Yes.

Admiral ELLIS. I have certified that to the Secretary of Defense on an annual basis.

Ambassador BROOKS. Not at this time, sir.

Senator BILL NELSON. This treaty that we have just passed over the course of a number of years takes weapons off of ICBMs, but it does not destroy them. I would like your comment to make me feel a little better about the safety of those weapons in the hands of the Russians when they stick them into a warehouse. Give us some of your thoughts there.

Ambassador BROOKS. Let me talk both about safety and security. With regard to safety—and we should both be in a different venue and perhaps with a different group of people here to get the full intelligence assessment on safety—I have no reason to believe that there are safety problems with stored Russian nuclear weapons.

With regard to the security of those weapons, it has been part of U.S. policy for a number of years to try and improve that security. The security of Russian Navy nuclear weapons is done by the

National Nuclear Security Administration. We are upgrading security for about 4,200 weapons, and we will finish that process in 2006. The security of the rest of the arsenal is primarily the responsibility of the Defense Threat Reduction Agency under the Cooperative Threat Reduction Program, although recently I have also picked up some responsibility for Strategic Rocket Forces for a bunch of basically Russian bureaucratic reasons.

I have been impressed with the attitude toward security on the part of the Russians. The Russians have no more interest than you and I in having a nuclear weapon get out of their hands. But this is a glass that is half full, but it is also therefore half empty. There is still a fair amount to do in improving the security of nuclear weapons.

Regarding the safety of nuclear weapons, my analysis suggests that that is not a huge problem. The Russians have always been quite concerned with that, sir.

Senator BILL NELSON. Yet, I hasten to add, I have heard Senator Lugar, who has been a leader in this area, talk about the only security on some of those buildings that he has seen is a little padlock.

Ambassador BROOKS. Oh, yes, sir. There is no question at all, and, in fact, I think the Senator is also referring to nuclear materials as well, which we also do for the Ministry of Atomic Energy in Russia. If you look back to where we started, security was appalling. It is less appalling at some places and actually pretty good in others now. We have not gotten into the large serial production facilities. That is probably where they have their best security.

But I guess I am trying to convey an image of a real problem, which we are chipping away at as fast as we know how. I do not want to minimize the magnitude of the problem, but I will say we have gotten huge cooperation from Congress and we are getting huge cooperation from the Russian Federation in improving security over there. But they did have a long way to go. All those horror stories are true.

Senator BILL NELSON. Admiral, is there a need for a conventional ICBM?

Admiral ELLIS. Senator, I think there is a need to look at the full range of advanced conventional concepts, as I said earlier. That is one that has been articulated. There are others. It is important that we look, as we will over this next year, at concepts of deterrence for the future and provide the Nation's leadership with that full range of options I discussed earlier. Obviously, there will be a piece of that that will remain in the nuclear stockpile, but there will be much broader opportunities in advanced conventional capabilities when the technologies we spoke of earlier begin to deliver. That is one that I think needs to be considered for the future.

Senator BILL NELSON. Could it be a bunker buster?

Admiral ELLIS. It could be that. It certainly could be responsive and precise, given emerging technologies. If we can get those types of things together with the speed associated with the reentry of an IC or SLBM, it would certainly have tremendous penetration capabilities as a result of that.

Senator BILL NELSON. To the other guy on the other side of the globe, how would you distinguish between a conventional and a nuclear incoming ICBM?

Admiral ELLIS. In another session, another venue, we can perhaps talk in more detail about those capabilities, and I would be delighted to address that, sir.

Senator BILL NELSON. Let us do that.

Go ahead, you ask some questions.

Senator ALLARD. Senator Nelson, here is our situation. We need to get out of here I think by 4:30 in order to get to the closed session, and we still have another panel we need to give time to testify.

Senator BILL NELSON. Are we going to have a closed session?

Senator ALLARD. We are going to have a closed session.

Senator BILL NELSON. Here?

Senator ALLARD. We are going to move to a different room where it is secure. We are going to have a different reporter who has that security clearance.

Senator BILL NELSON. Okay.

Senator ALLARD. I will go ahead and move forward with the other panel. I would like to thank both of you for coming to testify.

I want to welcome the next panel. On the next panel we have Rear Admiral Charles B. Young, United States Navy, Director of Strategic Systems Programs, Department of the Navy; Brigadier General Robert L. Smolen, United States Air Force, Director of Nuclear and Counterproliferation, Office of the Deputy Chief of Staff for Air and Space Operations; and the Honorable Everet H. Beckner, Deputy Administrator for Defense Programs, National Nuclear Security Administration. [Pause.]

Whenever you are ready, we will start with Dr. Beckner. Or if the panel decides they want to go in a different order, it is okay with me. Dr. Beckner, go ahead.

STATEMENT OF HON. EVERET H. BECKNER, DEPUTY ADMINISTRATOR, DEFENSE PROGRAMS, NATIONAL NUCLEAR SECURITY ADMINISTRATION

Dr. BECKNER. Yes. I think under the circumstances I will abbreviate my oral comments. Much of the material that I would normally cover has already been covered by Ambassador Brooks. I think, therefore, I can save us some time here and merely go through several areas quickly, which he did not spend too much time on, on the assumption that they could be of additional interest.

We have several activities in the research arena, which are very important to us and are a substantial part of our budget, and we have had good success here in the past year. I am thinking particularly of the work with the NIF laser facility at Lawrence Livermore Laboratory, and we are in a position to report good success there. That project is on schedule and on budget.

We have had good success with the DARHT hydrodynamics facility at Los Alamos. It has recently been signed off as completed and is operational. Of course, we have had several of our large computing facilities under the ASCI program, which has come on-line this year, and are producing results there. Some of these relate obvi-

ously to the discussions we were having earlier here today about understanding weapons design and weapon design limitations, much of which we now have to gain from our computing programs. Those three areas in particular I think have been quite successful this year, and more material is contained in my written statement on those as well.

Another area that was not covered was on our secure transportation assets. They have been very busy this year. They have continued to operate, with some limitations during these high security alerts, but for the most part they have continued to operate. They are required for all the weapon moves and all the material moves that occur during the year, and things have gone well there. We have not had any problems. That is a separate budget item, which can be found also in the prepared testimony.

Beyond that, I think what I would say would tend to be redundant to what Ambassador Brooks has already said, and I would yield at this point to the other gentlemen.

[The prepared statement of Dr. Beckner follows:]

PREPARED STATEMENT BY DR. EVERET H. BECKNER

Thank you for the opportunity to appear today to discuss the fiscal year 2004 President's budget request for the NNSA, specifically the Stockpile Stewardship activities carried out by the Office of Defense Programs. The budget request for this vital national security program totals \$6.3 billion, an increase of \$533 million, about 9.1 percent, over the comparable fiscal year 2003 budget request. This request supports the requirements of the Stockpile Stewardship program as defined by Presidential Directives, Department of Defense requirements and the Nuclear Posture Review.

BUDGET OVERVIEW

The budget for Stockpile Stewardship is allocated among three major program lines—Directed Stockpile Work (DSW), Campaigns, and Readiness in Technical Base and Facilities (RTBF). Directed Stockpile Work (DSW) is focused on the maintenance and evaluation of the nuclear weapons stockpile and the refurbishments needed to maintain the stockpile well into the future. The budget request for DSW totals \$1.3 billion, an increase of \$63 million, about 4.9 percent, over the comparable fiscal year 2003 budget request. Campaigns allow the NNSA to move to “science-based” judgments for stewardship, utilizing experiments, simulations, and surveillance data in place of nuclear testing. Campaigns contribute technology needed to carry out the DSW, as well as foster new ideas and concepts that will provide opportunities for cutting-edge improvements to sustain, and, if necessary, enhance the effectiveness of the stockpile over the long term. The budget request for Campaigns totals \$2.4 billion, an increase of \$229 million, about 10.6 percent over the comparable fiscal year 2003 budget request. RTBF funding is devoted to operating key defense facilities activities across the weapons complex. The budget request for RTBF totals \$1.6 billion, an increase of \$111.2 million, about 7.4 percent over the comparable fiscal year 2003 budget request. The remainder of the Weapons Activities budget request is composed of Facilities and Infrastructure Recapitalization Program (FIRP), Secure Transportation Asset (STA), and Safeguards and Security (S&S). The budget request for these activities total \$1.0 billion, an increase of \$127 million, about 14.6 percent over the comparable fiscal year 2003 budget request. FIRP is revitalizing the physical infrastructure of the nuclear weapons complex. STA and S&S protect our assets.

STOCKPILE STEWARDSHIP

The President's fiscal year 2004 request for Stockpile Stewardship continues to build and expand on the scientific and engineering successes that are the hallmarks of this program. It will also allow us to meet our requirements under the terms of the Nuclear Posture Review including enhancing test readiness, reinvigorating the advanced concepts work in the weapons laboratories, and restoring the weapons complex to meet the national security requirements of the 21st century. Significant milestones we expect to achieve this year include:

- Manufacture the first certifiable W88 pit;
- Begin irradiation of the first Tritium Producing Burnable Absorber Rods in the TVAs Watts Bar Reactor;
- Continued delivery of W87 Life Extended warheads to the Air Force;
- Complete environmental documentation in support of the Modern Pit Facility;
- Delivery of four ultraviolet beams of NIF laser light to the target chamber;
- Initiate Stockpile Stewardship experiments in NIF;
- Perform 2 and 3 dimensional simulations of aging stockpile weapons focused on LEP activities;
- Safely ship nuclear weapons, weapons components, and nuclear materials through the STA;
- Conduct subcritical experiments at the Nevada Test Site to better understand plutonium aging;
- Begin work on the Advanced Concepts and in particular, on the RNEP Phase 6.2 activities with the Air Force.

These major milestones will be accomplished by a weapons complex that will also manufacture the thousands of components needed to maintain the stockpile. The complex will also carry out hundreds of smaller scale experiments, perform surveillance activities, address Significant Finding Investigations, conduct flight tests with the support of the DOD, deploy new manufacturing tools and processes at the production plants, and safely dismantle weapons excess to national security requirements.

These and other activities are dependent on retaining today's highly skilled workforce and recruiting the next generation of stockpile stewards. Over the last several years, NNSA has made significant headway on this all-important front. Critical skill vacancies across the complex have been reduced to 8 percent. Inextricably linked to recruitment and retention is providing the quality workspace and fully functioning tools and technologies needed by our scientists and engineers to carry out their work. Two accounts in the budget, RTBF and FIRP, are essential to the operation, maintenance, and renewal of physical infrastructure. RTBF provides the funding needed to operate and maintain the facilities required for certification, thus ensuring the vitality of the NNSA national security complex and its goal of a consistent readiness level. FIRP is a capital renewal and sustainability program designed to eliminate maintenance backlogs and restore, rebuild, and revitalize the physical infrastructure of the nuclear weapons complex. FIRP addresses an integrated, prioritized list of maintenance and infrastructure projects, separate from the maintenance and infrastructure efforts of RTBF, which will significantly increase the operational efficiency and effectiveness of the NNSA sites.

I would now like to highlight several activities under the Stockpile Stewardship Program that I believe are of particular interest to this committee.

TEST READINESS

While I continue to have complete confidence in the ability of the Stockpile Stewardship Program to continue to ensure the safety, security, and reliability of this Nation's nuclear deterrent, we must maintain our ability to carry out nuclear weapons tests. Our current readiness posture to conduct such a test is 24 to 36 months, as established in a 1993 Presidential Decision Directive. Last year's Nuclear Posture Review (NPR) stated that this period should be reduced in order to provide options to deal with defense policy requirements, including the possibility of unanticipated problems in the stockpile. A study completed in July 2002 confirmed that additional work was required to maintain the present posture, but it also led us to conclude that the right posture is to be ready for a test within approximately 18 months. With fiscal year 2003 funding now in place, we intend to begin the transition to an 18-month posture. The Nuclear Weapons Council has concurred that our intended action is appropriate. The transition to this new readiness posture is expected to take approximately 3 years.

Although there have been discussions about a transition to shorter times, there is concern that an unnecessarily expedited time frame may cause adverse effects on critical personnel resources and require significantly more funding. It is not likely that we will want to be able to match the short lead times when the weapons complex conducted multiple underground tests annually, nor is it prudent to tie-up important resources to indefinitely maintain an extremely short test readiness posture. Since device and diagnostics preparations are driven by the particular weapon to be tested and the questions to be answered by the test, such a posture might not be responsive to a surprise in the stockpile. The NNSA is studying this matter, and

I will soon be reporting to Congress on these subjects as directed in the Fiscal Year 2003 Defense Authorization Bill.

ADVANCED CONCEPTS/ROBUST NUCLEAR EARTH PENETRATOR

The NPR also highlighted the importance of pursuing Advanced Concepts work to ensure that the weapons complex can provide nuclear deterrence options for decades to come. To that end, the fiscal year 2004 budget includes \$21 million for Advanced Concepts work. \$15 million will be allocated to the Robust Nuclear Earth Penetrator (RNEP). The remainder of the funding will be divided between the weapons laboratories for Advanced Concepts work. The vision is for small teams in coordination with DOD to assess evolving military requirements, investigate options, and ensure that DOD understands what is and is not possible. The teams will carry out theoretical and engineering design work on one or more concepts. These activities might proceed beyond the "paper" stage and include a combination of component and subassembly tests and simulations to introduce an appropriate level of rigor to challenge our designers. These activities might also culminate in an integral flight or laboratory test, or a subsequent decision to proceed with further development activities.

On March 19, the Department of Defense submitted its report on the RNEP as required by the Fiscal Year 2003 National Defense Authorization Act. Once the 30 days has lapsed, NNSA and the Air Force will begin the required feasibility and cost studies. As members know, this program will examine whether or not two existing warheads in the stockpile—the B61 and the B83—can be sufficiently hardened through case modifications and other work to allow the weapons to survive penetration into various geologies before detonating. This would enhance the Nation's ability to hold hard and deeply buried targets at risk. The RNEP feasibility and cost study is currently scheduled for completion in 2006; however, we are looking at opportunities to reduce study time.

STOCKPILE LIFE EXTENSION

While preparing for the future, the labs and plants are working very hard to extend the life of several elements of the existing nuclear weapons stockpile through the Stockpile Life Extension Program (SLEP). The NPR reaffirmed the decision as reached by the Nuclear Weapons Council on the timing, pace, scope, and technical aspects of the LEPs for the W76, W80, B61-7/11, and ongoing W87 work. Through this program, new subsystems and components are designed, built, tested and installed, thereby extending the operational service life for these warheads for some 30 additional years.

For the last several years, we have been performing the work to extend the life of the W87 warhead for the Air Force. This work is ongoing at Y-12, Lawrence Livermore, Sandia and Pantex. We are more than three quarters of the way through this effort and expect to wrap up the work by early 2004.

Life extension for the W76 involves a comprehensive overhaul of the warhead, including replacement or refurbishment of the Arming, Firing and Fuzing set, high explosives, gas transfer system and other components. We will also be requalifying the weapon primary. For the W80, we will be replacing the Trajectory Sensing Signal and Neutron Generators, the tritium bottles and incorporating surety upgrades. For the B61 we will be refurbishing the secondary. The First Production Units for these systems are presently scheduled for delivery to the Navy and Air Force in: fiscal year 2007, fiscal year 2006 and fiscal year 2006, respectively.

NATIONAL IGNITION FACILITY

I am pleased to report that tremendous technical progress has been achieved over the last year at the National Ignition Facility (NIF). Its mission is to obtain fusion ignition in a laboratory setting by imploding a BB-sized capsule containing a mixture of the hydrogen isotopes, deuterium and tritium. The NIF will provide the capability to conduct laboratory experiments to address the high-energy density and fusion aspects that are important to both primaries and secondaries in the nuclear stockpile.

In December 2002, the first four NIF laser beams were activated to generate a total of 43 kilojoules of infrared laser light in a single pulse. This equates to about 10 times more power than the entire U.S. electrical generation capacity, but only lasting 5 billionths of a second. In January 2003, NIF delivered its first beam of ultraviolet laser light focused onto a target at the center of the 30 foot-diameter target chamber. With this accomplishment, all elements of each of the NIF critical subsystems has been successfully activated and operated.

On March 6, 2003, the NIF delivered four ultraviolet beams of laser light to the target chamber, 15 months ahead of schedule. Stewardship experiments are slated to begin in fiscal year 2004.

ADVANCED SIMULATION AND COMPUTING

The Advanced Simulation and Computing (ASCI) Campaign is creating simulation capabilities that incorporate modern physics and engineering models to improve our ability to predict with confidence the behavior of the nuclear weapons in the stockpile. These models, validated against experimental data from past above-ground and underground nuclear tests, are the repositories of expert designer judgment as well as the best scientific representations of our current knowledge of the performance of the nuclear weapons. The ASCI Campaign is driving the integration of the theoretical and experimental efforts within the Stockpile Stewardship Program.

At the same time that ASCI continues the development of the most powerful computer capabilities needed for the future, the modern simulation tools previously developed by ASCI—the Blue Pacific and White Machines at Lawrence Livermore National Laboratory (LLNL), the Red Machine at Sandia National Laboratory (SNL), and the Blue Mountain and Q machines at Los Alamos National Laboratory (LANL)—are being applied day-to-day to address immediate stockpile concerns. ASCI codes are being used to close Significant Finding Investigations as well as to support Life Extension Programs (LEPs) for the W76, W80, W87, and B61. These activities are enabled by the ongoing supercomputing infrastructures at the national laboratories, encompassing both continuing operations as well as research in new techniques for storage, visualization, networking, and all aspects of the infrastructure required by modern computing.

By fiscal year 2008, ASCI will deliver a high fidelity, full-system physics characterization of the functioning events of a stockpile nuclear weapon. At that time, the campaign will deliver a suite of validated codes, running on supercomputer platforms, acquired through open procurement, with user-friendly environments, advanced visualization tools for analysis, and the entire support structure to integrate the components together. Other program deliverables include high-performance storage and high-bandwidth networks. In support of a true integrated Strategic Systems Programs effort, the ASCI Campaign continues to push the envelope in distance computing as well as in advanced encryption techniques and other approaches to ensure secure, classified networking.

OFFICE OF SECURE TRANSPORTATION

The Office of Secure Transportation is responsible for safely and securely moving nuclear weapons, special nuclear materials, select non-nuclear components, and Limited Life Components for the DOE and the DOD. This work is carried out by 225 Federal agents stationed at three sites—Pantex, Oak Ridge, and Albuquerque. These highly dedicated and skilled agents are authorized to use deadly force in the performance of their duties. Employing highly modified tractor trailers and escorts vehicles, and secure and redundant communications they have amassed an impressive safety record of over 100 million accident free miles without cargo compromise. I would note that this office also provides support to other elements of the DOE, including the Offices of Environmental Management and Nuclear Energy.

PIT MANUFACTURING & CERTIFICATION CAMPAIGN

Restoring the Nation's ability to manufacture plutonium pits in support of the stockpile has been a central challenge for the stewardship program since the closure of the Rocky Flats plant in 1989. Never before has the weapons complex been asked to manufacture and certify pits without nuclear testing. I am very pleased to report that late this spring, Los Alamos is scheduled to manufacture the first certifiable W88 pit. LANL also remains on-track to manufacture a war reserve pit by 2007. To achieve this critical milestone, LANL has produced a number of development pits and has performed a series of engineering tests and physics experiments to confirm pit performance.

While the TA-55 facilities at LANL are adequate to support the W88 pit campaign, they do not appear to be capable of supporting the manufacturing need for long-term stockpile support. NNSA has begun planning for a Modern Pit Facility (MPF) consistent with the Record of Decision for Stockpile Stewardship and Management and the NPR. In May 2002, the Secretary of Energy formally approved Critical Decision "0" (CD-0) for the MPF. NNSA is now examining 5 candidate sites—Pantex, Waste Isolation Pilot Plant, the Nevada Test Site, Savannah River and Los Alamos—as possible locations for the MPF. We expect to issue a Draft Environmental Impact Statement (EIS) later this spring. Following a series of public

meetings, a final EIS and associated Record of Decision will be issued. The program will prepare site specific environmental documentation if the ROD supports a decision to construct and operate a MPF. The fiscal year 2004 request will allow conceptual design and other planning activities, NEPA work, and technology development activities to proceed on a schedule that will support a CD-1 decision in fiscal year 2006.

TRITIUM

In addition to restoring plutonium manufacturing capabilities, NNSA will begin tritium production later this year when several hundred Tritium Producing Burnable Absorber Rods (TPBARs) are inserted into Tennessee Valley Authority's (TVA) Watts Bar Reactor. However because of significant changes in stockpile size in the out-years as a result of the NPR and the Moscow Treaty, NNSA has, in concert with the DOD, adjusted the tritium production requirements to reflect these changes. NNSA remains fully committed to exercise all elements of its system for producing, extracting, and purifying new tritium, including initial operation of the Tritium Extraction Facility (TEF) being constructed at the Savannah River Site (SRS).

Timing of tritium production, extraction, and purification has also been delayed by approximately 17 months for two reasons: (1) under the NPR, stockpile requirements are reduced, and (2) to accommodate delays in completion of the TEF project. This program delay can be accomplished without impacting nuclear weapons readiness. A revised baseline has been approved increasing the Total Project Cost from \$401 million to \$506 million and delaying project completion from mid-fiscal year 2006 to late-fiscal year 2007.

Since tritium decays by natural radioactivity at a rate of about 5 percent per year, and since irradiation service costs are the dominant operating costs in supplying tritium to the stockpile, it is prudent not to produce tritium beyond the stated national requirements. Since the program intends to complete and exercise all elements of the tritium production and purification system (including TVA's reactor(s) and the TEF) on a schedule that fully protects the stockpile requirements, irradiation services are being deferred in order to use funds planned for these activities to complete TEF.

CONCLUSION

Mr. Chairman, let me thank this committee for its strong and enduring support of the Stockpile Stewardship Program for the last 10 years. Your support has allowed us to deploy cutting edge technologies to help ensure that the Nation's nuclear deterrent remains safe, secure, and reliable. Because of these tools and technologies we have a much better understanding of the health of the stockpile and have solved technical issues that in the past would have required underground testing. While we are very pleased with the technical progress we have made, we cannot rest on our success. The men and women of the weapon complex will continue to pursue the advanced technologies we will need to answer the scientific and engineering challenges that will confront us in the years ahead.

Senator ALLARD. Thank you. Who wants to go next? Okay, General Smolen.

STATEMENT OF BRIG. GEN. ROBERT L. SMOLEN, USAF, DIRECTOR, NUCLEAR AND COUNTERPROLIFERATION, OFFICE OF THE DEPUTY CHIEF OF STAFF FOR AIR AND SPACE OPERATIONS

General SMOLEN. Mr. Chairman, thank you for the opportunity to appear today. I too have some written remarks, and I would be honored if you would allow me to just submit those.

Senator ALLARD. We will put those in the record without objection.

General SMOLEN. Yes, sir, thank you.

Thank you again for the opportunity to appear today representing the men and women of the Nuclear and Counterproliferation Directorate. Our team is part of the world's best nuclear force, and I have the highest confidence that our strategic warfighting capabilities will continue to contribute to the Nation's security.

Our directorate establishes Air Force policy and strategy for nuclear weapons systems, has oversight of nuclear operations and requirements, and manages Air Force arms control activities ranging from treaty negotiation support to implementation and compliance. We are also the Air Force lead for activities to counter proliferation of chemical, biological, radiological, and nuclear weapons.

I certainly appreciate this opportunity to discuss those events along with the Nuclear Posture Review, the status of the Air Force strategic forces, and our current efforts as stewards of nuclear expertise. The Nuclear Posture Review, sir, has been discussed in detail, and I would only add that within the Air Force we are working actively towards being a participant in determining the requirements and the status for the reduction from 2,200 to 1,700 by 2012.

In support of Strategic Command, we are working jointly with that office and the Office of the Secretary of Defense to define what the future nuclear force structure might best be. We will continue to ensure that our part of that nuclear force maintains the capability to meet current and emerging threats.

In accordance with the NPR, we are downsizing our ICBM force to 500 Minuteman IIIs by fully deactivating the Peacekeeper system by 2005. This already began in 2002, and it is progressing on schedule. We are not only reducing the warheads, but we are also reducing the infrastructure, communications, and many of the other aspects that will save us in the long term that are associated with that system.

While we are working to implement the NPR transition to the future, it remains essential that we sustain and modernize and enhance the existing systems that we have. As we reduce the number of operationally deployed forces, it is important to highlight the fact that the strategic systems that we do deploy are the best, most reliable, and most secure.

The ICBM missile and cruise missile programs are critical components of the triad. As we examine options for the land-based follow-on system to Minuteman III and the next generation cruise missile, we must also continue to execute a comprehensive sustainment program. The ICBM force must continue to be capable, reliable, and fully supportable. Life extension programs for the ICBM force are under way to sustain it through 2020. These life extension programs include propulsion and guidance replacement, as well as various other sustainment efforts. All of these sustainment programs are important in making the new triad a reality that cannot be neglected.

Since we plan on our bomber fleet remaining operational for another 35 to 45 years, as was mentioned previously, our air-launched cruise missile and advanced cruise missile programs are undergoing life extension programs in support of the B-52 lifespan. Both of these cruise missile systems are implementing life extension programs that include test instrumentation kit modification, subsystem simulator modification, and W80 Warhead Life Extension Program integration. Supporting these programs will sustain them to 2030.

September 11 drove home the importance of homeland security, and in that context a secure strategic force is not debatable. We

have taken aggressive steps to ensure that our nuclear force remains secure from known and postulated threats.

For example, we are implementing advanced delay-denial features and updating detection-assessment technology and data transmission systems from the geographically separated launch facilities to the responsible missile alert facility. This in part deals a little with the question that Admiral Ellis discussed in terms of security.

We also ensure that our helicopters that transport our security response forces to the field to provide nuclear convoy security are properly equipped to protect our resources, and we are providing a forward-looking infrared capability and night vision cockpit capability. We are very serious about the safety and security of the nuclear system and the deterrence that it provides.

I would like to address for just a second the nuclear expertise question. As General Lord stated in his testimony before this subcommittee, the success of all of our missions depends on our number one asset, our people, and our warfighting edge depends on dedication, professionalism, and sacrifice by all of us. Without our people, even our most effective weapons systems are of little value.

As always, we will continue to place the utmost emphasis on recruiting, retaining, equipping, and training our entire nuclear force. However, our cadre of experienced nuclear engineers, scientists, and even military leaders is declining. As they retire, they take years of experience with them. But one of the programs that we sponsored in the Air Force, the Nuclear Technologies Fellowship Program, is a step we have taken in the Air Force as an initiative to solving some of the shortfall in nuclear expertise. The program has a 21-month long educational course in two phases, both academics and applying factual knowledge in a national lab environment. Graduates from this program are being provided to the Air Force and other agencies to provide that new basis of a generation of nuclear experts.

In conclusion, sir, the strategic forces are not a Cold War relic and will continue to remain a vital aspect of our Nation's defense as we respond to current and emerging threats. As we transition into the future, it is essential that we continue to sustain, to modernize, and to enhance our nuclear systems. Today's efforts will help build the foundation required to fulfill our goals, the transformational goals, to protect the United States and homeland and critical bases of operation, and to also deny sanctuaries to the enemy, as well as project and sustain overwhelming combat power in defense of national security.

I appreciate your continued support, sir, and I look forward to the opportunity to answer your questions.

[The prepared statement of General Smolen follows:]

PREPARED STATEMENT BY BRIG. GEN. ROBERT L. SMOLEN, USAF

Mr. Chairman and members of the subcommittee: Thank you for this opportunity to appear before you today representing the outstanding men and women of the Nuclear and Counterproliferation Directorate (XON). Our team is a key part of the world's best nuclear force and I have the highest confidence that our strategic warfighting capabilities will continue to contribute to our Nation's security.

Our directorate establishes Air Force policy and strategy for nuclear weapon systems, has oversight of nuclear operations and requirements, and manages Air Force arms control activities ranging from treaty negotiation support to implementation

and compliance. We also are the Air Force lead for activities to counter the proliferation of chemical, biological, radiological, and nuclear weapons. I appreciate this opportunity to discuss events regarding the Nuclear Posture Review, status of Air Force strategic forces, and our current efforts as stewards of nuclear expertise.

NUCLEAR POSTURE REVIEW

On November 13, 2001, President Bush announced that operationally deployed strategic nuclear warheads would be reduced to a range between 2,200 to 1,700 by 2012. In support of this, we are actively working with United States Strategic Command, the Joint Staff, and the Office of the Secretary of Defense to define the future nuclear force structure. With the nuclear force structure defined, we will continue to ensure the nuclear force maintains the capability to meet current and emerging threats. In accordance with the Nuclear Posture Review (NPR), we are downsizing the Intercontinental Ballistic Missile (ICBM) force to 500 Minuteman IIIs, by fully deactivating the Peacekeeper ICBM system by 2005. Peacekeeper deactivation began in October 2002 and is progressing on schedule. The Air Force is not only reducing warheads, we are also working to ensure that the infrastructure, communications, intelligence and planning resources that integrate our strategic strike force are responsive, robust, and all linked within the construct of the New Triad. While we are working to implement the NPR and transition into the future, it is essential to sustain, modernize and enhance these existing strategic systems.

STRATEGIC FORCES

As we reduce the number of operationally deployed strategic forces to a range between 2,200 to 1,700 warheads, it is important to highlight the fact that the strategic systems we deploy are the best, most reliable, and most secure systems available. Our ICBM and cruise missile programs are critical components of the New Triad. As we examine options for the future, such as the land-based follow-on system to Minuteman III and next-generation cruise missiles, we must also continue to execute comprehensive sustainment programs.

Our ICBM force must continue to be capable, reliable and fully supportable. Life extension programs for the ICBM force are underway to sustain it through 2020. These life extension programs include propulsion and guidance replacement, as well as various other sustainment efforts. All of these sustainment programs are important in making the New Triad a reality and cannot be neglected.

Since we plan on our bomber fleet to remain operational for another 35 to 45 years, our Air-Launched Cruise Missiles (ALCM) and Advance Cruise Missile (ACM) programs are undergoing life extension programs to support the B-52 life span. Both of these cruise missile systems are implementing life extension programs that include Test Instrumentation Kit modification, Subsystem Simulator modification, and W-80 Life Extension Program integration. Supporting these programs will sustain the ALCM and ACM to 2030.

September 11, 2001, drove home the importance of homeland security. In that context, a secure strategic force is not debatable, so we have taken aggressive steps to ensure our nuclear force remains secure from known and postulated threats. For example, we are implementing advanced delay/denial features, and updating detection/assessment technology and data transmission systems from the geographically separated launch facilities to responsible Missile Alert Facility to counter emerging threat technologies and methods. We will ensure the helicopters that transport our security response forces in the ICBM field and provide nuclear convoy security are properly equipped to protect national resources by adding a Forward Looking Infrared capability and night vision cockpit capability. We are very serious about the safety and security of the nuclear weapon systems that provide us the deterrent force for our Nation.

NUCLEAR EXPERTISE

As General Lord stated in his testimony before this subcommittee, the success of the mission depends on our number one asset—our people. The warfighting edge depends on the dedication, professionalism, and sacrifice of the men and women in our Air Force. Without our people, even our most effective weapon systems are of little value. As always, we will continue to place the utmost emphasis on recruiting, retaining, equipping, and training our entire nuclear force. However, our cadre of experienced nuclear engineers, scientists, and even military leaders is declining. As they retire, they take years of experience away with them. One of the programs we sponsor on behalf of the Air Force is the Nuclear Technologies Fellowship Program (NTFP). NTFP is a key initiative in solving the shortfall in nuclear expertise by serving as a sustainment program. The NTFP uses a 21-month long educational

course in two phases. Phase One focuses on academics in a classroom environment, and Phase Two applies classroom knowledge in a national lab environment. Graduates from this program are providing the Air Force with a new generation of nuclear force experts. These graduates are placed in nuclear-related positions across the Department of Defense and as they grow in experience and assume leadership roles, they will contribute greatly to our nuclear foundation.

CONCLUSION

Strategic forces are not a Cold War relic and will continue to remain a vital aspect of our Nation's defense as we respond to current and emerging threats. As we transition into the future, it is essential that we continue to sustain, modernize and enhance our strategic systems. Today's efforts will help build the foundation required to fulfill DOD's transformational goals, protect the U.S. homeland and critical bases of operation, deny sanctuaries to our enemies, as well as project and sustain overwhelming combat power in defense of national security.

I appreciate your continued support, and again thank you for the opportunity to appear and discuss our contributions to national defense.

Senator ALLARD. Thank you, General.
Admiral Young, you are next.

STATEMENT OF REAR ADM. CHARLES B. YOUNG, USN, DIRECTOR, STRATEGIC SYSTEMS PROGRAMS, DEPARTMENT OF THE NAVY

Admiral YOUNG. Mr. Chairman, Senator Nelson, I really thank you for inviting me to have this opportunity to testify before the subcommittee on the status of my programs. I do have a written statement, and I request that it be submitted for the record.

Senator ALLARD. We will make it a part of the record without objection.

Admiral YOUNG. Last year, sir, the Strategic Systems Programs office was extremely busy and also very successful. The Nation now has D5 capability on both coasts. The U.S.S. *Nevada* SSBN-733 launched the 100th successful Trident II test missile, and the *Nevada* was also the second *Ohio*-class submarine to complete backfit conversion to Trident II D5 from her previous status as a Trident I C4 strategic weapon system. That ship is currently undergoing final certification and testing.

Through our direct support, we also have been busy in the SSGN program. The U.S.S. *Florida* SSBN-728 successfully launched two Tomahawk missiles during an SSGN demonstration and validation test off the southern coast of Florida.

To achieve these accomplishments, it took our people an enormous amount of planning and hard work to execute the programs during these challenging fiscal and geopolitical times. In spite of the significant challenges, the Navy can say with confidence that the strategic submarine force continues to cost-effectively provide a survivable, reliable, and flexible strategic deterrent.

The Navy has been aggressively modernizing our deployed strategic weapons systems, shifting to commercial off-the-shelf equipment where practical, developing plans to effectively and economically provide payload flexibility with increased effectiveness against hardened targets, incorporating strategic retargeting capability, and providing hardware and software updates to prevent the obsolescence of our weapons systems.

Strategic Systems Programs is working diligently towards the new strategic framework as outlined in the Nuclear Posture Review that was forwarded to Congress in December 2001. In addition to

initiating the D5 life extension program that increases the life of the Trident II strategic weapons system to match the 45-year life of the Trident hull, Strategic Systems Programs is working with the Department of Defense to develop the planned reduction of deployed nuclear warheads to support the NPR objectives.

Strategic Systems Programs is also developing and acquiring an Attack Weapon System that will be deployed on the four Trident submarines being converted to SSGNs. The success of this important transformational program is a major priority at Strategic Systems Programs.

Our role in nuclear weapons security has expanded recently. The Navy's goal is to have an integrated security approach at our Atlantic and Pacific Trident submarine bases, providing an appropriate level of security to the submarines coincident with their status as critical strategic assets. It is imperative to provide the highest level of protection for our strategic facilities and submarines against the postulated threats.

In summary, we are pleased to report that the Trident II D5 Strategic Weapon System continues to meet or exceed all design objectives. Also, in spite of significant challenges ahead, we are confident that the SSGN Attack Weapon Systems will meet and exceed design objectives to support the SSGN program, and we will be able to achieve a commensurate level of protection for our strategic submarines as we have for our strategic weapons facilities.

On behalf of the Strategic Systems Programs family, I want to thank you for your support for our strategic weapons and the submarine force and I would like to invite you to visit our facilities and submarines so that you can witness first-hand the esprit de corps of our people. I am looking forward to answering your questions, Mr. Chairman.

[The prepared statement of Admiral Young follows:]

PREPARED STATEMENT BY REAR ADM. CHARLES B. YOUNG, USN

INTRODUCTION

Mr. Chairman, members of the subcommittee, I am Rear Admiral Charles B. Young, Director, Strategic Systems Programs. Thank you for inviting me to brief the subcommittee on the status of my programs. Strategic Systems Programs is the Program Manager for the Trident I (C4) and Trident II (D5) Strategic Weapon Systems; the Navy's Executive Agent for all arms control treaties and agreements; the Executive Agent for the US/UK Polaris Sales Agreement, which was amended to encompass the UK procurement of the Trident II system; and the Navy's Technical Program Manager for Nuclear Weapons Security. Strategic Systems Programs is also responsible for the integration of the Nuclear Powered Guided Missile Submarine (SSGN) Attack Weapons System in the four Nuclear Powered Ballistic Missile Submarines (SSBN) being converted to SSGNs.

Before giving you an overview of the Trident II (D5) Acquisition Program, there are several recent significant events and achievements of the program that are noteworthy. In June 2002, the Strategic Weapons Facility, Pacific in Bangor, Washington, achieved Initial Operational Capability (IOC) to support the Trident II Strategic Weapon System in the Pacific. The Navy now has Trident II capability on both coasts. In August 2002, U.S.S. *Nevada* (SSBN 733) completed her engineered overhaul and backfit conversion to the Trident II Strategic Weapon System at the Puget Sound Naval Shipyard—she was the second ship to complete the Trident II backfit and overhaul ahead of schedule and under budget. In October 2002, U.S.S. *Ohio* (SSBN 726) and U.S.S. *Florida* (SSBN 728) completed their final strategic offloads of Trident I (C4) missiles in preparation for their refueling overhauls and conversions to SSGNs. In December 2002, U.S.S. *Nevada* successfully launched the 100th Trident II (D5) flight test missile. Finally, in January 2003, U.S.S. *Florida* (SSBN 728) successfully launched two Tomahawk missiles during an SSGN Demonstration

and Validation test—demonstrating Tomahawk missiles can be launched vertically from a modified *Ohio* class submarine.

OVERVIEW

The Trident II (D5) program achieved IOC on 23 March 1990, when the U.S.S. *Tennessee* (SSBN 734) was deployed with 24 tactical D5 missiles. The Trident II Strategic Weapon System (SWS) represents the sixth generation of the Navy's Fleet Ballistic Missile (FBM) Systems, which have served as significant deterrents to aggression and major war since Polaris (A1) achieved IOC in 1960. The Nuclear Posture Review (NPR), which was forwarded to Congress in December 2001, outlined the Strategic Submarine Force structure: 14 SSBNs outfitted with the Trident II (D5) Strategic Weapon System in 2 oceans. In accordance with the NPR, the remaining 4 of the original 18 Trident SSBNs will be converted to SSGNs.

To achieve an all D5 SSBN force, backfit of four of the submarines to the D5 Strategic Weapon System from the Trident I (C4) Strategic Weapon System has been initiated. The C4 SWS will be retired in fiscal year 2005. The Trident SWS and support facilities were designed from the beginning to handle the newer and larger missile system with minimal impact and cost. To date, two of the four SSBNs have completed backfit; one is fully operational and making deployments in the Pacific, and the other is finishing its final certification and testing. The second submarine will also be homeported in the Pacific. The last two SSBNs are scheduled to start their backfit in fiscal year 2005 and fiscal year 2006. The contracts have been awarded and much of the required hardware has been procured.

The four oldest of the *Ohio* class submarines were selected for conversion to SSGNs because of their age and scheduled maintenance periods. As mentioned previously, two of the four submarines have already completed their final strategic offload. The first two SSBN engineered refueling overhauls (EROs) are scheduled to start in fiscal year 2003, followed by conversion to SSGN starting in fiscal year 2004. The third and fourth SSBN EROs are scheduled to start in fiscal year 2004 and fiscal year 2005, respectively, followed by conversion to SSGN starting in fiscal year 2005.

Both backfit and SSGN conversion operations are examples of transformational programs that provide an improved capability for the Navy and the Nation, extend the life of the submarines beyond their planned life, and represent the return on investment the American people have made in our Navy.

The Navy can say with confidence that the Strategic Submarine Force continues to cost-effectively provide a survivable, reliable, and flexible strategic deterrent. We've been aggressively modernizing our deployed Strategic Weapon Systems, shifting to commercial off-the-shelf equipment where practical, developing plans to effectively and economically provide payload flexibility with increased effectiveness against hardened targets, incorporating strategic retargeting capability, and providing hardware and software updates to prevent the obsolescence of our weapon systems. These efforts are a part of the Navy's strategic vision of Sea Power 21.

PROGRAM

Strategic Systems Programs is focused on three primary areas: D5 life extension (D5LE), nuclear weapons security (NWS), and NPR objectives.

Trident II (D5) Life Extension

The Trident II D5 life extension (LE) program is required due to the *Ohio* class Ballistic Missile Nuclear Submarine (SSBN) service life increasing from 30 years to 45 years. The impact of the SSBN hull life extension is significant in two ways. First, it delays the replacement of these platforms by 15 years, effectively delaying the expenditure of up to \$25 billion in current year dollars for follow-on strategic submarine platforms. Second, it requires the service life of the Trident II D5 Strategic Weapons System (SWS) carried by these ships to also be extended by 15 years.

The extended service life requirement affects flight hardware (missile, guidance and reentry) and shipboard hardware (launcher, fire control, navigation and test instrumentation).

With respect to flight hardware, D5 life extension requires procurement of an additional 115 Trident II D5 missiles, revising the total D5 procurement objective from 425 to 540. In addition, the guidance system and missile electronics must be replaced due to aging and obsolescence issues.

The service life extension for flight hardware requires a strategy that effectively addresses two key issues: (1) supporting the existing systems, recognizing that some parts will fail due to age or become obsolete, and (2) producing the additional flight test missiles required to assure credibility and safety of the deterrent. These flight

test missiles support qualification of new or modified components, as well as the additional annual reliability tests required due to extended program life.

With the SSBN service life extended to 45 years, a missile inventory shortfall will occur starting in approximately fiscal year 2014 when the oldest *Ohio* class submarine would have originally been decommissioned. The 30-year service life procurement objective of 425 Trident II D5 missiles does not support the additional flight tests necessary to extend the Trident II D5 SWS to 45 years.

The Navy is currently executing a low rate production continuity procurement strategy for critical components of Trident II D5 missiles. Several missile components are designated as critical, the most important being the rocket motor sets. These critical components are being procured at their minimum rate in advance of when they would be required for full missile assembly to sustain component quality and maintain the supplier base. The production continuity procurement strategy has been extensively reviewed and approved by the Department of Defense (DOD) and Congress and has been in execution for nearly 15 years. This procurement strategy has proven successful, based on the demonstrated superb performance of the Trident II D5 Strategic Weapon System. The fiscal year 2004 Trident II WPN budget request includes the continued production of rocket motors and other critical components. The current program fully funds the additional 115 Trident II D5 LE missiles in fiscal year 2008 through fiscal year 2013, supporting lead-time away from need requirements. Rocket motor sets and other critical components in support of the 115 missile requirement are currently being procured as described above. Rocket motor procurements in support of the additional missiles for life extension began in fiscal year 2002.

The current Trident II D5 Mk-6 Guidance System improved accuracy by a factor of four over the previous Trident I C4 Mk-5 Guidance Subsystem. As successful and reliable as the Mk6 Guidance Subsystem has been to date, there are significant technology limitations that make this design impractical to maintain throughout the extended life period. The Mk-6 design is based on early 1980s technology. Production ended with the fiscal year 2001 procurement. Restarting production would be cost prohibitive, and attempting to integrate today's electronics technology into a 20-year old design would be inefficient and high risk. The Mk-6 guidance subsystem, in its current form, will not support the life extension requirements. The Navy program includes the most affordable and lowest risk approach to meet Trident II D5 LE requirements by the pursuit of a system to replace the Mk-6, designated the Next Generation Guidance (NGG). Due to the advancements made in technology, both in components (solid state sensors and electronics) and in modeling and simulation, stringent cost targets have been established for NGG with the requirement to meet current Mk-6 performance. The ability to develop precision instruments, sensors, and radiation hardened architectures for NGG requires investment in underlying commercially supported technologies to adapt them for the unique strategic requirements. The redesign approach leverages off of current Air Force/Navy cooperative strategic-unique technology efforts and will result in a Navy Trident II D5 LE solution and government owned design package that can be used by other services to leverage off the Navy investment.

Similarly, missile electronics packages must also be redesigned for the same aging and obsolescence issues described above for guidance. The technology used for D5 electronics is obsolete and for most components there is no longer an industrial base. Thus, the Trident II D5 electronics subsystem will require new package designs for the additional missile procurements and for backfit into existing missiles, since legacy electronic components are no longer available. The Navy's fiscal year 2004 WPN request continues the missile electronics and guidance system redesign efforts begun in fiscal year 2003.

The D5 missile is capable of carrying both the W76/MK4 and the W88/MK5 reentry bodies. While the W88/MK5 was designed specifically for the D5 during the early 1980s and will not need to be immediately refurbished, the W76/MK4 warhead and fuze carried on the MK4 reentry body was designed in the early 1970s and began deployment in 1979 on the Trident I (C4) missile with a design life of 20 years. The W76/MK4 program was based on the older W68/MK3 design and some of the components were carried over from that program. There are technical and programmatic issues that require both a refurbished warhead and a refurbished fuze for the W76/MK4. The Department of Energy and the Navy are executing a refurbishment program for the W76/MK4 reentry body. The Navy's refurbishment of the W76/MK4 fuze is supported in the Navy's fiscal year 2004 WPN budget request.

With respect to shipboard hardware, life extension is taking place on a somewhat continuous "refreshment" basis, with the computing and electronic component parts of these systems moving rapidly towards the integration of commercial off-the-shelf

(COTS) products. Because of the low cost of COTS hardware components, it is more cost-effective to adopt a shorter refresh cycle than possible with previous generations of custom hardware/software. This strategy reduces support costs while maintaining high reliability and safety. All shipboard SWS Subsystems have life extension programs planned or in place to support the SSBN 45 year life. In addition to the COTS components, there is specialized equipment required to support the mission, such as the highly precise strategic submarine inertial navigation equipment. Prudent investment in these equipments is also contained in the Navy's fiscal year 2004 OPN request. The goal for each subsystem will be to mitigate known obsolescence and supportability problems, providing both cost avoidance and reduced life cycle costs. The Navy's fiscal year 2004 OPN budget request supports these shipboard subsystem life extension efforts.

Trident II (D5) life extension efforts ensure a credible, survivable and affordable strategic deterrent capability well into the 21st century.

Nuclear Weapons Security

The Navy continues to meet all current DOD policy regarding nuclear weapons security. There was a significant investment during the design and construction of both Strategic Weapons Facilities in Bangor, Washington, and Kings Bay, Georgia, primarily in the weapons storage areas (WSA) and the assignment of sizable dedicated security forces to protect nuclear weapons within the WSA. However, the attack on the U.S.S. *Cole* and the events of September 11 caused the DOD and Navy to re-evaluate the security posture of all our nuclear weapon storage facilities around the globe from all three axes of threat—land, sea, and air. In regard to nuclear weapons security, the Navy has determined a security posture similar to what is currently established in the WSA should be extended to the waterfront and during transit to and from the dive point at which point the submarine can submerge and protect itself. Therefore, we have initiated an integrated nuclear weapons security program. This program will provide a layered defense under a command structure with centralized command, control, communication, monitoring and surveillance. Utilizing a balanced mixture of technology and manpower, the Navy will have the capability to ensure this security posture is sustainable over the long term. This integrated program will be implemented, provided resources are available, in a phased approach with initial investments beginning in fiscal year 2003, and taking approximately 6 years to reach full operational capability. The lengthy implementation time is driven primarily by the lead-time for military construction project design, construction and outfitting. Interim measures are being undertaken to mitigate risk with initial investments focused on our highest vulnerability areas.

NUCLEAR POSTURE REVIEW (NPR) OBJECTIVES

Research and Development (RDT&E,N)

The most significant change in the Navy strategic programs budget is in research and development. Strategic Systems Programs' RDT&E,N budget increases from about \$34 million in fiscal year 2003 to about \$102 million in fiscal year 2004. This arises from the need to enable the dramatic changes articulated in the new Strategic Framework outlined by the December 2001 NPR. The inherent flexibility in warhead loading of the Trident submarine launched ballistic missile force enables the Department of Defense to execute the reduction of deployed nuclear warheads to achieve the Moscow Treaty and congruent NPR objectives in force structure. The NPR goes beyond a mere changing of force levels to describe the changes in the framework for, and nature of the Nation's strategic forces needed in the future. Navy efforts in contributing a Sea Shield element of missile defense are implemented in other programs, while the Trident program makes significant Sea Strike contributions to the offensive and infrastructure legs of the new Triad described in the NPR. These contributions are achieved by "Applications" programs in specific technology areas and in focused development programs for specific capabilities. Applications programs develop and evaluate new technologies for potential use in existing and future strategic systems. The strategic guidance and reentry body applications programs have existed for about 8 years. This effort is increased in fiscal year 2004. New applications programs in strategic propulsion and radiation hardened electronics are contained in the fiscal year 2004 budget. Separate from the applications programs, a specific technology solution, Enhanced Effectiveness (E2), has been identified and included in the fiscal year 2004 budget. E2 is a technology development effort fully supported by the Commander, U.S. Strategic Command, for achieving improved missile accuracy. It aims at enhancing the accuracy of an existing weapon system, the W76/MK4 reentry body used on the Trident submarine-launched ballistic missile (SLBM).

Applications programs have the major goal of sustaining unique strategic technology, design talents and infrastructure needed by the Nation to maintain dominant strategic forces. In essence, these applications programs are the Nation's "seed corn" in strategic offensive missile systems. This is needed to both develop future replacement systems and to fix any performance issues within existing systems. Since the Navy and Air Force have a common need for this talent in strategic missile (ICBM and SLBM) technologies, the Department of Defense has a strategy of executing coordinated, complementary programs in each service. The Navy and Air Force carefully coordinate technology areas and critical skills to obtain maximum synergy in meeting the Nation's need in this critical area.

The Navy has four major applications program efforts included in the fiscal year 2004 budget request: Reentry System Applications Program (RSAP), Strategic Guidance Applications Program (GAP), Strategic Propulsion Applications Program (SPAP), and Radiation Hardened Applications Program (RHAP). Each of these is briefly described.

Reentry Systems Applications Program (RSAP). Unique strategic reentry environments require technologies in materials needed to provide long service life while being able to survive the extreme atmospheric reentry and possible radiation environment. Critical and unique attributes necessary for the design, development and testing of ICBM and SLBM reentry systems have been defined and will be maintained. Critical technologies are heat shield and nose-tip material and fuze electronics. Navy requirements have been integrated with Air Force requirements into a comprehensive program that maintains close coordination with the DOD Science and Technology (S&T) community to leverage S&T programs and avoid unintended duplication of effort. To ensure these efforts are focused on real solutions, RSAP demonstrates appropriate emerging technologies through actual reentry flight test evaluations.

Strategic Guidance Applications Program (GAP). Unique strategic guidance requires technologies that provide extreme accuracy over long ranges while potentially operating in a hostile radiation environment. The GAP provides a strategic guidance core technology development capability consistent with the Strategic Advisory Group (SAG) recommendation to COMSTRATCOM. System accuracy and functionality depends upon key technologies, which provide radiation hardened accelerometer, gyroscopes and stellar sensing capabilities. A critical skill is the ability to integrate these elements together in a extremely high performing and reliable system. As the underlying technologies that currently provide these capabilities age and are no longer technically supportable, modern alternatives must be made available to allow for orderly replacement. There is no commercial market for these technologies and their viability depends on the strategic community.

RSAP and GAP have increased their combined funding of \$34 million in fiscal year 2003 to \$44 million in fiscal year 2004 to better meet these unique strategic needs.

Strategic Propulsion Applications Program (SPAP). Strategic propulsion requires technologies to provide large high performance solid rocket motor systems that have a long shelf life, high reliability and safe handling and storage. The SPAP, commencing in fiscal year 2004, will be a coordinated Navy and Air Force effort to exercise these unique design talents and infrastructure needs. Key elements of SPAP are investment in propellant technologies, nozzle and case materials and integrating these into an effective solution. Boost propulsion (missile stages), post boost propulsion (missile payload delivery vehicle) and ordnance (separation events and flight termination events) are all integral parts of missile propulsion application efforts.

To focus on developing real system solutions, an annual large-scale rocket motor test firing of developed technology is planned. A sound base of demonstrated technologies suitable for Strategic Missile applications will be maintained and will provide the Nation a talent base and source of technologies suitable for current and follow-on development programs. The Navy SPAP starts at \$8 million in fiscal year 2004 and increases in future years.

Radiation Hardened Applications Program (RHAP). Radiation hardening electronics for potential strategic radiation environment results in technology challenges as well as industrial base issues. The Radiation Hardened Oversight Council (RHOC), chaired by the Director, Defense Research and Engineering (DDR&E), coordinates these efforts. The RHAP will focus on a coordinated productization and qualification effort, which provides a transition between ongoing science and technology (S&T) efforts and production for actual use. The RHOC has developed a technology road map that coordinates these efforts into the Department of Defense investment strategy. In addition, the RHAP will sustain critical skills in radiation hardened electronics design and simulation techniques to support the ability to design radiation hardened strategic missile, guidance and reentry systems. These ef-

forts become of greater importance because of the shrinking industrial base for radiation hardened electronics, the fast-moving commercial electronics market, the unavailability of underground testing resources and the loss of radiation hardened expertise. The RHAP will compliment RSAP and GAP efforts by specifically focusing on those tasks required to ensure producibility of radiation hardened parts. The fiscal year 2004 budget requests \$20 million for the radiation hardened applications program.

Enhanced Effectiveness Program (E2). Enhanced Effectiveness provides increased capabilities articulated in the NPR, such as prompt accurate strike, defeat of critical targets and selective nuclear options. This program is a 3-year effort culminating in a flight test demonstration of a Trident reentry body with dramatically improved accuracy. The approach is to integrate existing technologies into a reentry body extension. The extension would attach to the existing W76/MK4 warhead, giving it the size and weight of the larger W88/MK5 warhead. Since the current D5 missile is capable of carrying either the MK4 or MK5 warhead, the changes to the missile are minimal.

The fiscal year 2004 budget contains about \$30 million for the Enhanced Effectiveness effort. The E2 program is an R&D effort; it includes no funding for procurement. Any procurement program that employs this technology will be presented to Congress for authorization in future budget requests.

SSGN

Strategic Systems Programs is playing a major role in support of one of the Navy's initiatives in Sea Power 21. The SSBN-to-SSGN conversion will provide a near-term transformational capability to the Nation, removing four *Ohio* class submarines from strategic service, refueling their reactors to permit an additional 20 years of operation, and converting them into conventional strike platforms.

Strategic Systems Programs, in support of the SSGN program manager, is providing the Attack Weapons System for the SSGNs. As part of the development of that system, a demonstration and validation was conducted in January. U.S.S. *Florida* (SSBN 728), an *Ohio* class submarine, successfully launched two Tomahawk cruise missiles, confirming the ability to launch a Tomahawk from a configuration similar to the tightly packed cluster of Tomahawk All-Up-Rounds (AUR) we will use in the SSGN. In addition to this demonstration and validation supporting the multiple all-up-round canister development and design, the firings supported the Navy's Sea Trial experiment, Giant Shadow, which also explored how a network of forces, including special warfare forces, and various unmanned aerial, underwater and ground vehicles and sensors could be used to provide surveillance, collect real-time intelligence, and develop and launch a time critical strike in support of the joint force commander. This included the first vertical launch of an unmanned underwater vehicle (UUV), testing of nuclear-biological-chemical sensors, and the insertion of Navy SEALs from one of the submarines the Navy will convert to an SSGN.

For the Attack Weapons System for SSGN, Strategic Systems Programs is leveraging existing strategic weapons systems technology and expertise including the use of commercial off-the-shelf technology in shipboard systems to minimize the life cycle cost. The fiscal year 2004 budget request supports the continued design, development, and procurement of the Attack Weapons System.

Our future SSGN forces will provide large volume clandestine strike with cruise missiles and the capability to support and insert Special Operations Forces. The flexibility provided by missile tube volume supports payload adaptability to meet emerging mission requirements.

The Navy will leverage the existing Trident submarine infrastructure to optimize their on-station time. The first two ships, the U.S.S. *Ohio* and U.S.S. *Florida*, enter the shipyard in fiscal year 2003 to begin their engineered refueling overhauls (EROs) and conversions. U.S.S. *Michigan* and U.S.S. *Georgia* will begin their EROs and conversions in fiscal year 2004 and fiscal year 2005, respectively. We expect the first SSGN to be operational in fiscal year 2007.

SUMMARY

In summary, I am pleased to report the Trident II (D5) Strategic Weapon System continues to meet or exceed all design objectives. The fiscal year 2004 President's budget supports the NPR-directed force structure requirement of 14 D5 SSBNs; fully funds D5 Life Extension requirements; provides funding to ensure an integrated approach to nuclear weapons security; and includes R&D investments and funding for SSGN conversion that meets the NPR objectives. In spite of significant challenges, I reiterate with confidence that the Navy's Strategic Submarine Force continues to cost-effectively provide a survivable, reliable, and flexible strategic deterrent.

Thank you.

Senator ALLARD. Thank you very much, Admiral. We appreciate your testimony.

Dr. Beckner, the first question I have for you relates to Savannah River. Section 2137 of the National Defense Authorization Act for Fiscal Year 2001 prohibited the decommissioning of F Canyon until both the Secretary of Energy and the Defense Nuclear Facilities Safety Board certified that all materials present in F Canyon were safely stabilized and all future fissile materials disposition can be met by H Canyon or other facilities. Do any of the programs within NNSA plan to use F Canyon now or in the future?

Dr. BECKNER. They do not. Our plans are consistent with utilizing H Canyon for the future.

Senator ALLARD. Is there any reason now or in the foreseeable future in which the NNSA would need F Canyon to meet their national security mission?

Dr. BECKNER. No, there is none.

Senator ALLARD. Are there any materials held by NNSA which need to be disposed of and which must be or should be processed through F Canyon to reach a safe disposition?

Dr. BECKNER. There are none.

Senator ALLARD. Does NNSA have any reason why F Canyon should not be decommissioned?

Dr. BECKNER. We do not.

Senator ALLARD. One of the responsibilities of Readiness in Technical Base and Facilities (RTBF) is the current and future maintenance of facilities across the NNSA. What specific criteria and methods of discipline are being used to make sure that RTBF meets all current and future maintenance and repair needs?

Dr. BECKNER. That is a fairly complicated question to answer because of our interface with the other elements of NNSA programs that is devoted to the condition of our facilities, that being the facility and infrastructure section of the budget. Our activities are such that we plan together between RTBF, which is the part of the budget that I manage, and the Facilities and Infrastructure (F&I), the part of the budget that Mr. Greg Rudy manages, both for Ambassador Brooks. We work the problems jointly so that we understand the way they are spending money to assure that our facilities are maintained properly and brought back up to conditions which are better for future utilization. Then the RTBF budget will be in a position to carry them forward as necessary until we can shut them down if that is appropriate.

There is a very elaborate planning activity there which we use to be sure that we can go forward with the facilities. I guess the best thing I can offer there would be to spend more time with your staff or with committee staff showing you the way we schedule that work and the way we budget it, because there is never an excess of money for this sort of thing.

Senator ALLARD. We would like to hear what you have to say on how you are working the two programs together and coordinating it.

Dr. BECKNER. We would be happy to do that.

Senator ALLARD. General Smolen, I know some of the Peacekeepers have been removed from their silos and the rest will be re-

moved over the next couple of years. What does the Air Force intend to do with the Peacekeeper silos once these missiles are removed?

General SMOLEN. Sir, for now the silos will be maintained in caretaker status. There has not, to the best of my knowledge, been any decision on what the silos may be used for in the future. However, in the analysis of alternatives that Space Command may be considering, that can certainly be a possible option for some future consideration.

Senator ALLARD. Admiral Young, the Navy's current plan is to extend the life of the D5—you mentioned this in your testimony—ballistic missile from 30 to 45 years. Do we have any experience with trying to sustain rockets that old, and do you have that kind of confidence in the rocket motors? If they need to be refurbished, for example, do you reach a point there where what you used originally in the motors are not available in our high-tech, rapid turnover society 10, 15, 20 years down the road? Can you comment on that?

Admiral YOUNG. Yes, sir, Mr. Chairman. That certainly is a concern.

To answer your first question, we have limited experience in very old rocket motors. We flew the C4 for about 21 years, so we have that type of experience, but not out to 45 years. For our current D5 rocket motors, our oldest one is about 13½ years old right now.

We have seen nothing in any of our surveillance programs that indicates any aging problems at this point, but we have a specific milestone to look at as we go forward. We believe that in the POM 2008 time frame we will have to make a decision whether or not we will need to maintain those rocket motor manufacturing facilities because, as we continue building the D5 life extension rockets, that is when we think that decision will be coming up. Right now, we have no indication that we are going to have any aging problems. However, we are continuing to look at the aging of rocket motors very closely, with the understanding that it could impact the industrial base.

Senator ALLARD. Dr. Beckner, the secure transportation assets of the National Nuclear Security Administration are responsible for securely and safely transporting nuclear weapons, nuclear weapons components, and special nuclear materials. With the closure of Rocky Flats and other environmental management sites, there is an increased demand on the STAs. This has placed stress apparently on some of the assets.

Has NNSA put together a plan to replace the aging assets within the secure transportation assets and hire enough security guards to keep up with increasing demand for shipments over the next several years?

Dr. BECKNER. We believe we have. This is a part of the system that is obviously impacted by the security status in the country generally. When we move to Security Condition-2 (SECON-2), for instance, that forces us to make some changes in the way we operate those assets. We have done that this year largely with more overtime.

We have a program to replace equipment. We are completing the Rocky Flats shipments this year, and so that part of the program

will no longer be on our schedule book. We are uncertain at this time as to the Department's plans for moving material out of Hanford, which is again a substantial amount of surplus material that is at the Hanford site. So for now we have to view that as work that we probably will have to conduct, but is at this time uncertain.

Our priority continues to be the weapon program and then to work other areas, other program areas, as available to do so. Based on that, we have the 5-year plan that takes care of new equipment as required.

Senator ALLARD. Thank you.

Senator Nelson.

Senator BILL NELSON. General and Admiral, if there were a new low-yield nuclear weapon developed, what platform would be used to deliver it?

Admiral YOUNG. For the Navy, sir, our D5 missile has a very capable and adaptable, flexible payload system on it. It can carry both the W76 Mark IV payload as well as the W88 Mark V. If a low-yield were developed and were required, we could fly that on that missile. We have some limitations about how many RVs you would have to put on the missile bus. Essentially, there is a limited number just because of the balance of how you would fly the warheads. That would be our delivery plan.

Senator BILL NELSON. General?

General SMOLEN. Sir, I think any of the systems, both the intercontinental missile as well as bomber delivery, could possibly be used. I think part of the discussion goes to the heart of the nature of the type of weapon, the kind of target that might be held at risk, and the desired weapon effects that you would want to achieve. With the balance of that, I think any one of the platforms could conceivably field that weapon.

Senator BILL NELSON. For any new nuclear weapon, not necessarily low-yield, plus existing nuclear weapons, does either the Air Force or the Navy have a requirement for a new delivery platform?

Admiral YOUNG. The Navy as far as I am aware, Senator, does not have a requirement for a new delivery platform.

General SMOLEN. Senator, the Air Force would, I believe, have the same position.

Senator BILL NELSON. Dr. Beckner, what work will NNSA carry out using the advanced concepts funding in 2004?

Dr. BECKNER. It will be a broad assessment, largely to explore ideas that could lead to systems which would, as they say, potentially be of interest for future targets. This is mostly sitting and attempting to answer the question, "What will be the threats that this country will be confronted with, and, based on those threats, what would be an appropriate weapon to put against those threats?" Mostly paper studies, conceivably a bit of hardware work just to prove out some ideas, but invariably, whenever you do advanced thinking—whatever term you want to give to it—it is driven very much by the target that is put to you as something that would be a threat to this country, and then you work backwards from that. Given such a threat, what would be the best way to attack that threat?

Sometimes you will see applications for instance, for specialized outputs, one target might need a higher percentage of X-rays or gamma rays, or another one might be one where you want to enhance the neutron output. All those things would have to be done within the context of what the package would need to look like so that it could fit on a certain delivery system.

That is all those things that you work for the most part on paper.

Senator BILL NELSON. This week's edition of Aviation Week has an article titled "Rapid Response."

[The information referred to follows:]

RAPID



Quick-response space systems, such as this conceptual spaceplane, will assure combatant commanders that in-orbit assets will be available to support critical military operations.

War, terrorism and U.S. dependence on space assets are prompting fresh looks at launch timelines, payload designs and the role of Cold War weapon systems

WILLIAM B. SCOTT/F.E. WARREN AFB, WYO., and COLORADO SPRINGS

Using several GPS satellites or a critical imaging spacecraft during the hard-fought war in Iraq could leave combatant commanders essentially lost and blind, screaming for "space" support. Today, they would be told: "Generals,

we'll get that constellation replenished just as fast as we can—say, in a month or two."

Gulf War II has made it abundantly clear that U.S. and coalition forces are highly dependent on military and commercial space assets. Without GPS navigation, high-resolution imagery, signals

intelligence and near-real-time missile warning via communication satellites, allied troops would lose battlefield advantages they now take for granted. And absent those space-provided edges, airmen, soldiers, sailors and Marines would be reduced to fighting a 1960s-era war again, a war of attrition instead of precision.

Whether battling a traditional army or radical terrorists, the U.S. can no longer afford the loss of its space-based capabilities—or the luxury of waiting months to put a replacement satellite in orbit after a legacy system fails. Long recognizing how critical these assets are, Air Force Space Command (AFSPC) has made "quick-response space" one of its highest priorities. Ultimately, it hopes to have the means to launch satellites within hours or days of notification, quickly re-

RESPONSE



pair a critical system in space and strike an enemy on the other side of the globe in less than an hour, using conventional weapons. The command has embarked on several paths to reach that goal.

On Mar. 1, AFSPC kicked off a year-long Operationally Responsive Space/Analysis of Alternatives focused on putting payloads into space on short notice. Col. Pamela L. Stewart is directing the ORS/AOA study, which will be conducted by USAF personnel, in-house contractors and the Aerospace Corp. NASA will be involved, primarily at the technology-assessment level. The broad review will address ORS application to key mlspace mission areas—force enhancement, space support, force application and counterspace.

"The key element is responsiveness.

The goal [of ORS] is hours-to-days versus weeks-to-months in order to have an asset on-orbit," Stewart said. "That requires responsive payloads, because just launching something, then taking three months to initialize it, does not make for responsive space."

The approximately \$8-million ORS analysis is grounded in a Mission Needs Statement validated a year ago by the Pentagon's Joint Requirements Oversight Council, and a military spaceplane concept-of-operations approved by AFSPC. By shooting for a 2014 initial operational capability, the AOA is bounded by real-world, relatively near-term constraints. These are evident in payload examples that will be used by the AOA team:

- Common Aero Vehicle, a munition that can be delivered from or through space.
- A navigation payload that could augment or replenish the GPS constellation.
- A representative electro-optical payload, such as a low-cost visible-light imager.
- A counterspace device—something in orbit that could protect friendly force satellites, or disable an adversary's.
- A payload that would augment a space-based radar equipped with a ground moving target indicator, perhaps in a latitude not covered by the primary system.

"[These] examples will affect the campaign model, so we can see the potential military utility of quickly getting these responsive payloads in orbit and available for the joint force commander to use," Stewart said.

U.S. political and military leaders are reevaluating a full spectrum of space-based capabilities and strategic weapons, looking for new ways to counter both rogue nation states and the threats posed by terrorism and weapons of mass destruction (WMD). For one, they are looking at the potential of existing weapon systems being used to quickly strike a target halfway around the world—especially one that could threaten thousands of American or allied lives if not attacked within hours.

A Nuclear Posture Review released by the Bush administration last year redefined the concept of "deterrence," and put new demands on the Pentagon

A USAF study will assess the pros and cons of equipping a few Minuteman III ICBMs with conventional weapons. The missiles could hit targets halfway around the world in less than an hour.



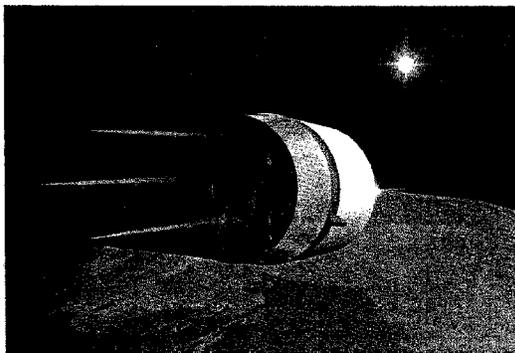
for dealing with WMD and terrorism threats. It also expanded the role of existing nuclear forces.

As a result of this new environment, the military space community is looking at near-term options to fulfill two objectives: putting systems in orbit quickly, and rapidly striking WMD or other time-sensitive threats anywhere on the globe. Long-term systems, such as rapid-response reusable launch vehicles and

space-based laser weapons, for example, are still far from becoming operational realities. Milspace leaders need something now, if they are to answer a battlefield commander's demand for revitalized space support, or a President's call to head off a terrorist-caused catastrophe.

The need to reconstitute a satellite constellation or get a specialized imager or other sensor into orbit on short notice has led Pentagon space officials to look favorably on a variety of quick-response launchers. Some may become part of a rapid-response military fleet dedicated to placing off-the-shelf spacecraft into orbit within hours or days of notification (see pp. 70, 74).

The Air Force Research Laboratory



Conceivably, a Minuteman III could carry three reentry vehicles fitted with conventional high-explosive warheads. The missiles might hit terrorists before they could use weapons of mass destruction.

is taking a hybrid approach, resurrecting a decades-old concept of a supersonic fighter carrying a booster to high altitude, then firing it into space. But, unlike a 1985 test, where now-Maj. Gen. Doug Pearson—the current Air Force Flight Test Center commander—demonstrated an F-15-launched anti-satellite system, the latest version will attempt to place a microsatellite in orbit (see p. 72).

Air Force Space Command is looking at reusable launch vehicles, but these could be years away from being operationally useful as either launch systems or quick-response weapon-delivery plat-

forms. On the other hand, the command has near-term options that might be effective in countering terrorists or a nation threatening to use WMDs against the U.S. or an ally. One option requires careful assessment and possible revisions to national policies: putting conventional munitions on intercontinental ballistic missiles (ICBMs).

The concept will be one of many given serious consideration during another Analysis of Alternatives study now scheduled to begin in November (*AW&ST* Jan. 13, p. 398). Among other topics, it will look at options for replacing the Minuteman III (MM III) ICBM with a follow-on nuclear missile, sometimes referred to as a Minuteman IV.

The existing MM III fleet is scheduled to remain in service until 2020, and is now undergoing an extensive life-extension program.

"The table is set for us to do new and innovative things with this current [Minuteman III] weapon system," said Maj. Gen. Timothy J. McMahon, commander of 20th Air Force, the AFSPC unit responsible for maintaining and operating the nation's ICBM force. "My recommendation to [AFSPC commander] Gen. [Lance W.] Lord and his staff is to look at concepts . . . that could give us a broader capability, to include the employment of conventional munitions—or the deployment of a strictly kinetic system with no munition on board at all—[so-called] 'rods from God.'" For example, a nonexplosive device, such as a titanium rod-based munition delivered at hypersonic speeds from space, would have enough kinetic energy to destroy a ground target.

The nation probably would not need many of these specialized conventional weapons, but even a small fleet could give leaders valuable options during international crises. Say, if U.S. or allied intelligence agencies ascertained that a terrorist group in central Asia had a WMD, and was planning to move it within the next few hours, launching an ICBM with a conventional warhead might be a viable way to destroy the threatening weapon and group. Conversely, if a U.S.-led coalition was bogged down in a fierce war halfway around the world, the President might want a quick-response weapon that could discourage the use of WMDs.

"If the U.S. is involved in a struggle where WMDs are being deployed, and we're taking 5,000-10,000 casualties per day—or far more if WMDs are being used—the question will be: How long do you want this to go on?" McMahon asked. "This [ICBM] system has an inherent capability to go far, and go urgently. What [warhead] we put on top of it is a matter of policy and technology. And the technology is a piece of cake."

Missiles with upgraded navigation/targeting systems and fitted with Mk. 21 reentry vehicles (RVs) housing high-explosive conventional warheads could be stored and launched from test pads or silos at Vandenberg AFB, Calif., for example. Today's operational MM III silos in the north-central U.S. are not designed for reuse, and probably would be reserved for nuclear-armed ICBMs. Theoretically, some type of terminal guidance system could be installed, turning a strategic-type missile into a near-precision conventional weapon.

"One thing that makes an ICBM unique is its ability to get to its [maximum] range in less than an hour—about 45 min., depending on how you shape the flight [profile]," McMahon said. "That's the real appeal of this system. If you can afford to wait 12-24 hr., or whatever it takes to deploy a system with the same types of effects, then [an MM III] may not have utility."

"But it's important to understand the deterrent value of [a conventional ICBM], as well as its warfighting value. We tend to think in terms of battlefield effects. This current [nuclear] system's primary purpose is not battlefield effect. It's [intended] to have political effect," the general continued. "I think a [conventional ICBM] broadens our deterrence capabilities. In simplified terms, it puts us at the conventional end of the deterrence spectrum, and [en-

ables] being even more effective than we are today. And if we can do that at reasonable cost, then why wouldn't we do it?"

Using conventional ICBMs may be an attractive military option, but it also presents policy-makers with difficult political problems. What are the diplomatic issues associated with an ICBM overflying other nations to hit a WMD or terrorist target? How would Russia, for example, distinguish between a nuclear- and conventional-armed ICBM flying over its territory? Ballistic flight profiles would be the same, no matter what warhead was carried, and seeing an ICBM coming over the horizon from the U.S. would cause considerable anxiety.

"Overflight is an issue—just as manned vehicles are—but the political dimension is different," McMahon said. "It's no harder than getting permission

to overfly with [air refueling] tankers when you base them in another country, in my opinion. But I'm not a policy-maker."

Employing ICBMs at the operational and tactical levels of warfare will force a rethinking of USAF and Pentagon doctrine, but such a shift from Cold War concepts has been underway since the Sept. 11 terrorist attacks. How doctrine will change remains uncertain, but most officials agree it will change.

"Our doctrine has basically always reserved the employment of these systems for the strategic level of violence," McMahon explained. "Today, there are other countries that either [threaten] or have deployed weapons of mass destruction at the operational level of war—or to cause terror."

Although the idea of converting some nuclear-armed Minuteman IIIs to a con-

ventional role may seem far-fetched, McMahon noted that similarly altering the B-52's role caused the same angst. "It was just a different place, different time and different vehicle."

The AOA study that begins this autumn will examine technical, policy and doctrinal issues associated with conventional ICBMs. On the technical front, the AFSPC staff has been urged to look at work done years ago under USAF's Advanced Ballistic Reentry Systems Program. It considered maneuvering RVs, ablative shields and other elements, and many were tested. Archived data from the program could shorten any near-term effort to give the Minuteman III a new conventional role, McMahon suggested, adding the decades-old warhorse to what many hope is an emerging arsenal of quick-response missile capabilities. ●

Senator BILL NELSON. The idea is a rotational conventional reentry vehicle for the Minuteman III. The article acknowledges that conventional ICBMs present policymakers with difficult political problems.

What do you think about that? Could you explain, any of you, the activity each of your Services has undertaken in support of or related to conventional ICBMs, either sea or land-based?

Admiral YOUNG. Senator, the Navy has no specific programs at all that are developing a conventional submarine-launched ballistic missile. Now, having said that, as I mentioned earlier, the D5 is a very capable, flexible platform. If you wanted to develop and fly a conventional warhead on that platform, you could do that.

As a matter of fact, we do a series of flight tests each year and we obviously fly inert heads on them, which could essentially, at the velocity at which they come down, be considered a weapon that could be used. We obviously fly those into the ocean at points. But we have no specific programs developing a conventional capability. Again, that capability to fly those types of weapons is available if we wanted to develop that for the country.

General SMOLEN. Sir, from the Air Force perspective, certainly, with the advancements in technology, a conventional ICBM could be a possibility. Certainly, overflight issues would be a consideration, as well as where the booster might be placed should they be launched from an existing current facility somewhere in the United States. There are technical issues that might be associated with determining whether or not that could be a feasible option.

But in the Air Force Space Command's charter to look at an analysis of alternatives for the future, I am certain that they will be adapting some of their thinking toward looking at what possibilities may exist. But technologies might make some of that feasible which might not necessarily be feasible today.

Senator BILL NELSON. Mr. Chairman, the reason I am asking is, as we confront the problem of terrorists and we need to knock out terrorists before they suddenly activate a weapon of mass destruction, can we do it better by using an ICBM as opposed to a cruise missile?

General SMOLEN. Quite possibly, sir.

Senator BILL NELSON. Why? Because you would have a bigger payload, conventional payload, on an ICBM, on a reentry vehicle?

Admiral YOUNG. I think that is one factor, sir. I think the other factor is time. A ballistic missile, be it coming from the sea or from land, flies fairly quickly. If, therefore, you have a target that is only there for some short period of time, then you can get there quicker with one of these weapons, as opposed to a cruise missile that takes a lot longer to get from its launching platform to the target.

General SMOLEN. Yes, sir. With the retargeting capability, I think the timeliness of an ICBM type of weapon would certainly pose an advantage.

Senator BILL NELSON. Thank you.

Senator ALLARD. Gentlemen, it is about 4:22. It is going to take us about 7 or 8 minutes to go over for the closed hearing, so I just want to bring this to a close. Dr. Beckner, I want to thank you for your efforts in setting up the tour during Easter here. I am going to be visiting labs, visiting with you, and also going out to Pantex, so I am looking forward to that during Easter break.

Dr. BECKNER. Thank you.

Senator ALLARD. We are going to SR-222. If you just follow the staff, they can get you over there. We are adjourned.

[Questions for the record with answers supplied follow:]

QUESTION SUBMITTED BY SENATOR WAYNE ALLARD

ADVANCED CONCEPTS

1. Senator ALLARD. Ambassador Brooks, to help clarify the record on the National Nuclear Security Administration's (NNSA) Advanced Concepts initiative, please list examples of the types of activities you envision Advanced Concepts will be working on in fiscal year 2004 or beyond.

Ambassador BROOKS. We see a large number of potentially valuable projects in the next few years, more than our resources will allow us to pursue. NNSA will work with the Joint NNSA-DOD Advanced Concepts Steering Group and the Nuclear Weapons Council to prioritize the most significant efforts. We anticipate that the Air Force will initiate a concept study of an Enhanced Cruise Missile in late 2003 that will extend into 2004. Air Force Space Command has begun looking at alternate yield options for a small quantity of Minuteman ICBM warheads. The Navy has expressed interest in examining the utility of alternate yields for the W76 sometime in the future. The Foster Panel urged us to investigate warhead designs with reduced fission yield and the military could ask us to study those concepts. In addition, the DOD NPR Implementation Plan calls for a number of other concept studies in the future. Some of the studies are classified, but among the unclassified studies are an Air Force Analysis of Alternatives for a follow on ICBM with an Initial Operational Capability in 2018, and USD (AT&L) is directed to study long term (at least 20 years out) strategic strike capabilities for the New Triad as well as non-strategic nuclear strike capabilities. I expect that NNSA advanced concepts studies will be a part of these DOD led studies.

QUESTIONS SUBMITTED BY SENATOR BILL NELSON

PLUTONIUM PITS

2. Senator BILL NELSON. Admiral Ellis, is there a validated annual requirement for pit production? If the answer is yes, what is the requirement? Is the requirement general or is it specific as to the number and type per year and when must production start? What is the size of the nuclear weapons stockpile on which the requirement is based? If the answer is no, what is the process for establishing a validated requirement?

Admiral ELLIS. There are two aspects to plutonium pit production requirements, each under the purview of NNSA. The first is replacing plutonium pits consumed by the Stockpile Stewardship Program, which is essential for stockpile safety and reliability. As an example, the short-notice termination of W88 warhead production

in 1989 did not allow the production of extra pits to replace those consumed during the warhead's service life. Therefore, we are now at the point of deferring for up to 2 years the destructive tests of the warhead to preclude decreasing the active stockpile. This requirement can be satisfied by small facilities capable of producing 10–20 pits per year of all types.

The second aspect is providing pit replacements, in quantity, at a time in the future before the plutonium pits in the current stockpile reach the end of their service life. With few exceptions these plutonium pits were produced over a short period of time, and it is reasonable to expect they will reach the end of their service life in a similarly short timeframe. NNSA initiated and Congress funded a program to begin work on a Modern Pit Facility to address this future need.

Regarding the size of the stockpile on which requirements are based, work is currently underway on the fiscal year 2003–2007 Nuclear Weapons Stockpile Plan, which will incorporate the tenets of the 2001 Nuclear Posture Review.

3. Senator BILL NELSON. Ambassador Brooks, NNSA is currently in the process of designing a new pit facility and conducting an environmental impact statement to support construction of such a facility. What is the requirement to which the facility is being designed?

Ambassador BROOKS. The NNSA has the requirement to support the Nation's nuclear stockpile. The NNSA must be in a position to respond to future stockpile requirements as well as address any issues that may arise impacting the performance of pits. It is anticipated that all pits have a functional lifetime (currently estimated at 40 to 60 years) and will need to be replaced to maintain a reliable stockpile. The basic design strategy is modular so final sizing can be made when we have a better assessment of the impact of the NPR and our efforts to restore and modernize other production capabilities on the size of the future nuclear stockpile.

4. Senator BILL NELSON. Ambassador Brooks, is there an estimate of the total project cost for the facility, and, if so, what is the estimate?

Ambassador BROOKS. Since the project has just initiated conceptual design, only a pre-conceptual estimate of \$2 to \$4 billion has been developed. This range of estimated cost covers both design and construction and will depend upon the initial capacity, among other factors, approved for design and construction. More detailed baseline costs will be available at the conclusion of preliminary design (Critical Decision 2) in fiscal year 2008.

5. Senator BILL NELSON. Ambassador Brooks, is there an estimate of the annual operating cost of the facility?

Ambassador BROOKS. A pre-conceptual design estimate for operation of the facility beginning in fiscal year 2019 is \$200 to \$300 million annually.

6. Senator BILL NELSON. Ambassador Brooks, when will a site selection decision be made for the pit facility?

Ambassador BROOKS. Activities under the National Environmental Policy Act were initiated at the beginning of fiscal year 2003 for a Supplemental Programmatic Environmental Impact Statement on Stockpile Stewardship and Management for a Modern Pit Facility. Should the Secretary of Energy decide to continue with the Modern Pit Facility project, a Record of Decision (ROD) can be issued as soon as April 2004 that announces a site location. After that, the Department will prepare a site specific Environmental Impact Statement.

MANAGEMENT OF DEPARTMENT OF ENERGY LABS

7. Senator BILL NELSON. Ambassador Brooks, the Los Alamos National Laboratory has had a series of well-publicized financial management problems. These problems resulted in your request for the resignation of the laboratory director. You are now, I understand, in the process of reviewing the University of California contract for Los Alamos to determine if it should be cancelled, competed, or extended. Could you explain the full nature of the ongoing review, who is conducting it, when it will be done, and the criteria that will be used to base any recommendations?

Ambassador BROOKS. At the direction of Secretary Abraham, Deputy Secretary McSlarrow and I conducted a review of the relationship between the University of California, the responsible contractor, and Los Alamos National Laboratory. We also explored the relationship among the University of California, Los Alamos and the NNSA of the Department of Energy. We completed our review and reported the results to Secretary Abraham on April 26, 2003. Our review included the history of

the contract since it was revised and extended in 2001 including the Appendix 0 process which was focused on improving security practices and other operations; examinations of relevant Inspector General and DOE Office of Independent Assessment and Oversight reports; and interviews and meetings with senior University, laboratory, and NNSA individuals. Our report to Secretary Abraham recommended that he announce a decision now to compete the University's contract for Los Alamos which expires at the end of September 2005. Secretary Abraham accepted our recommendation and announced his decision to compete on April 30, 2003. The main criteria for our recommendation were that the University bears responsibility for what Secretary Abraham termed the systematic management failures in business systems that came to light in 2002, and the Department's policy is to compete contracts unless there is compelling reasons not to compete. We are currently developing the criteria we will use for evaluating competing proposals for the contract. We announced this decision about a year ahead of the normal schedule to ensure adequate time for developing those criteria, and we chartered a Blue Ribbon Commission to advise the Secretary on the Department's competition policy and asked them to provide input on suggested criteria for the competition.

8. Senator BILL NELSON. Ambassador Brooks, in addition, could you explain how the review impacts the University of California contract to run the Lawrence Livermore National Laboratory?

Ambassador BROOKS. Our review did not explicitly cover Lawrence Livermore National Laboratory. That decision can await the recommendations of the Blue Ribbon Commission and also address other issues that we may want to consider.

NUCLEAR POSTURE REVIEW AND OTHER STUDIES

9. Senator BILL NELSON. Ambassador Brooks and Admiral Ellis, has the Nuclear Posture Review implementation document been signed, and, if so, can we get a copy of that document?

Ambassador BROOKS. The NNSA Nuclear Posture Implementation Plan was signed out in April 2002. We can provide you with a copy of that document. The DOD NPR Implementation Plan was signed out in March of this year; you will need to request a copy from DOD directly.

Admiral ELLIS. The Nuclear Posture Review Implementer is complete and signed. The Office of the Under Secretary of Defense (Policy) is the releasing authority for all requests for copies of the document.

10. Senator BILL NELSON. Ambassador Brooks and Admiral Ellis, when do each of you anticipate the annual stockpile memo will be signed and submitted to the President?

Ambassador BROOKS. This year's Nuclear Weapons Stockpile Memorandum (NWSM) will be approved by the Nuclear Weapons Council Standing and Safety Committee in the near future and put out for vote by the Nuclear Weapons Council (NWC). After approval by the NWC, the NWSM will be signed by the Secretaries of Energy and Defense and submitted to the President.

Admiral ELLIS. The Office of the Assistant to the Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs is responsible for coordination of the annual NWSM and is best qualified to provide an estimated completion date.

11. Senator BILL NELSON. Ambassador Brooks and Admiral Ellis, what is the status of the End-to-End Review and when can we get a briefing on that document?

Ambassador BROOKS. The End-to-End Review of the Nuclear Command and Control System was completed last year under the chairmanship of Brent Scowcroft. The Department of Defense and the Department of Energy's National Nuclear Security Administration are working together on a plan for implementation of the End-to-End Review. A request for a briefing on the conclusions of the Review should be addressed to the Department of Defense.

Admiral ELLIS. The United States Nuclear Command and Control System Federal Advisory Committee End-to-End Review is complete and the implementer is in the very early stages of development. The Office of Under Secretary of Defense (Acquisition, Technology and Logistics) will serve as the releasing authority for the report.

12. Senator BILL NELSON. Ambassador Brooks and Admiral Ellis, what is the status of the nuclear mission management plan and the NNSA Green Book?

Ambassador BROOKS. The Green Book will be signed shortly by the Secretary of Energy and copies will be delivered to Congress.

Admiral ELLIS. Defense Research and Engineering distributed the most recent Nuclear Mission Management Plan in October 2001. I respectfully defer to Ambassador Brooks on the status of the NNSA Green Book.

REPEAL OF THE BAN ON PRODUCTION OF LOW-YIELD NUCLEAR WEAPONS

13. Senator BILL NELSON. Admiral Ellis, the Department of Defense has asked for a repeal of the ban on production of low-yield nuclear weapons from 1993. The current law prohibits the Secretary of Energy from conducting research that could lead to production of a new low-yield nuclear weapon. Is there a requirement for a new low-yield nuclear weapon?

Admiral ELLIS. To date, the Department of Defense has not identified a specific requirement for a new low-yield nuclear weapon.

14. Senator BILL NELSON. Admiral Ellis, is a requirement for such a weapon under consideration or being developed?

Admiral ELLIS. The Nuclear Posture Review put in motion a major change in our approach to the role of nuclear forces in our deterrent strategy. As we investigate the full range of possibilities in defending our Nation, it is incumbent upon the Department of Defense to not only reevaluate the overall capabilities of our nuclear arsenal, but to thoroughly analyze the potential of advanced concepts that could enhance our overall deterrent posture. Repeal of Section 3136 of the Fiscal Year 1994 National Defense Authorization Act will allow rigorous and precise engineering analyses necessary to validate facts related to nascent advanced concepts. In turn, the results of the research will enable dispassionate, fact-based discussions on very important defense and policy issues.

15. Senator BILL NELSON. Admiral Ellis, why does the United States need a new low-yield nuclear weapon?

Admiral ELLIS. At present there are no established requirements for a new low-yield nuclear weapon. Responding to the realities of a new international security environment, U.S. Strategic Command recently completed the most comprehensive revision of our Nation's strategic war plan to date. It is focused on crafting the framework to integrate a full range of capabilities, old and new, regaining the classic definition of strategic deterrence.

U.S. Strategic Command sees great value in investigating a deterrent strategy that is global in nature and includes the most effective mix of capabilities available, including nuclear, advanced conventional, non-kinetic, and special operations forces. We are interested in conducting rigorous studies of all new technologies, and examining the merits of precision, increased penetration, and reduced yields for our nuclear weapons that will provide the overall capabilities that we will need in the new international security environment.

16. Senator BILL NELSON. Admiral Ellis, the DOD justification for the repeal is "not to foreclose exploration of technical options that could strengthen our ability to deter, or respond to new or emerging threats." What sort of new or emerging threat would a low-yield nuclear weapon be used to deter or respond to?

Admiral ELLIS. We are very interested in advanced concepts that may prove effective against new or emerging threats. Examples of these advanced concepts include earth penetrators, increased accuracy, and lower nuclear yields that, separately or together, may better hold at risk or defeat weapons of mass destruction and hard and deeply buried facilities—two target sets that are growing in both number and importance for our adversaries due to their perceived asymmetric counter to U.S. capabilities.

17. Senator BILL NELSON. Admiral Ellis, is a low-yield nuclear device effective against hard and deeply buried targets that cannot be held at risk by a conventional weapon?

Admiral ELLIS. When combined with increased penetration and precision, many experts anticipate a low-yield nuclear device will hold a large number of hard and deeply buried targets at risk that cannot be destroyed by conventional warheads, while also dramatically lowering expected collateral damage from those levels that would result from today's higher-yield nuclear weapons. Detailed analyses will be required to validate the effectiveness of the full range of technical options.

W-80 LIFE EXTENSION PROGRAM

18. Senator BILL NELSON. Dr. Beckner, in the NNSA fiscal year budget request, what is the assumption for the first production in the W-80 Life Extension Program?

Dr. BECKNER. The NNSA fiscal year budget request supports a Nuclear Weapons Council approved First Production Unit (FPU) date of February 2006 for a Block 1 quantity of refurbished Air Force W80-1 warheads. Although this date is somewhat earlier than the Air Force requirement, it appears, at present, to work better in our production plants, considering other workload schedules that also have to be met.

19. Senator BILL NELSON. Dr. Beckner, can the Air Force support this date?

Dr. BECKNER. The Air Force cannot support this date. The W-80 Life Extension Program is being rebaselined to establish a joint W-80 refurbishment program with the Air Force based upon the availability of Air Force Fiscal Year 2003-2009 Program Decision Memorandum (PDM) funding. The rebaselined program will be presented to the Nuclear Weapons Council for approval later this year.

20. Senator BILL NELSON. Dr. Beckner, are there any plans to do life extension on the Navy W-80s?

Dr. BECKNER. There are currently no plans to refurbish the Navy W-80 warheads. The DOD and NNSA have agreed through the Nuclear Weapons Council to refurbish a Block 1 quantity of Air Force W80-1 warheads by the end of 2010. The NNSA and DOD will work together to adjust the Post-Block 1 refurbishment plans and quantities to reflect the total quantity of W-80 warheads that will need to be refurbished, if refurbishment of the Navy W-80s should be required.

21. Senator BILL NELSON. General Smolen, when does the Air Force need the first production unit of a refurbished W-80?

General SMOLEN. Current Air Force funding supports an Air Force desired W-80 Initial Operational Capability (IOC) of fiscal year 2008.

22. Senator BILL NELSON. General Smolen, what is the life extension program, including providing test assets, that can be supported by the Air Force?

General SMOLEN. The W-80 Life Extension Program (LEP) Integration is funded for both Advanced Cruise Missiles (ACM) and Air-Launched Cruise Missiles (ALCM) over the FYDP. The funding supports:

- Interface Control Document Evaluation
- Flight Testing
 - 4 Free Flight, 4 Captive Carries, and 8 REST Tests
 - Missile Interface Compatibility Tests
 - Range and Flight Test Support
 - Test Instrumentation Kits (TIKs) procured in the current ALCM and ACM programs
- Transportation and shipping costs
- ALCM and ACM cable and hoist beam modifications
- ALCM, ACM, and B-52 Tech Orders

23. Senator BILL NELSON. Admiral Young, has there been a decision to retire the nuclear Tomahawk missile?

Admiral YOUNG. No.

24. Senator BILL NELSON. Admiral Young, can and will the nuclear Tomahawk missiles be converted to conventional Tomahawks?

Admiral YOUNG. No action would be taken until a retirement decision is made. Although they can be converted, it would not be recommended because conversion costs would average \$1.53 million per converted missile plus a one-time non-recurring cost of \$32.4 million, compared to \$612,000 per TACTOM missile (fiscal year 1999 dollars).

25. Senator BILL NELSON. Admiral Young, if the TLAM-Ns will be retired or converted, will this obviate the need to extend the life of the Navy W-80s?

Admiral YOUNG. Nuclear warheads are managed, as directed by National Security Presidential Directive, via the Nuclear Weapons Stockpile Plan. The requirements for W-80s would depend on the retirement plan for TLAM-N and other potential future weapon system options.

NEW NUCLEAR WEAPONS

26. Senator BILL NELSON. Admiral Young and General Smolen, do either the Air Force or the Navy have a requirement for a new nuclear weapon or are either developing such a requirement?

Admiral YOUNG. Navy has no requirement for a new nuclear weapon and is not currently developing such a requirement.

General SMOLEN. The Air Force does not have a requirement for a new nuclear weapon and currently is not developing such a requirement. The Air Force is leading a joint DOD–NNSA “Phase 6.2/6.2A” (Feasibility, Downselect, and Cost Estimate) study for a Robust Nuclear Earth Penetrator (RNEP) version of an existing nuclear weapon. This study will examine modifications of current stockpile weapons to improve our capability to meet a longstanding requirement for defeating hard and deeply buried targets.

ADVANCED CONCEPTS

27. Senator BILL NELSON. Dr. Beckner, what work will NNSA carry out using the advanced concepts funding for fiscal year 2004?

Dr. BECKNER. Right now, the most likely candidate besides RNEP is a concept study for an Enhanced Cruise Missile with the Air Force, which could also lead to the start of a feasibility study in fiscal year 2004. Air Force Space Command may also request a feasibility study of alternate yields for a small number of Minuteman III warheads.

28. Senator BILL NELSON. Dr. Beckner, is there any advanced concept work ongoing in fiscal year 2003, other than the RNEP, and, if so, what is it?

Dr. BECKNER. The only activity is programmatic planning and related activity.

29. Senator BILL NELSON. Dr. Beckner, is NNSA planning on doing advanced concepts work that will support modifications to existing nuclear weapons to meet new military requirements?

Dr. BECKNER. NNSA is restoring the capability to design, develop and field new or modified warheads to meet future military requirements. There are no current military requirements for new or modified warheads.

30. Senator BILL NELSON. Dr. Beckner, the structure of the NNSA budget request for fiscal year 2004 does not comply with the statutory requirement to request advanced concept funding in a single line item set out in section 3143 of the National Defense Authorization Act for Fiscal Year 2003. Will NNSA submit an amended budget request that will comply with the statutory direction? When will the amended budget request be submitted?

Dr. BECKNER. We have assembled the necessary information and are working through the DOE CFO office and OMB to determine the best method and timeline for submitting that change.

[Whereupon, at 4:22 p.m., the subcommittee adjourned.]

