S. HRG. 112–590, PT. 4

# DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 2013 AND THE FUTURE YEARS DEFENSE PROGRAM

## HEARINGS

BEFORE THE

## COMMITTEE ON ARMED SERVICES
## UNITED STATES SENATE

ONE HUNDRED TWELFTH CONGRESS

SECOND SESSION

ON

**S. 3254**

TO AUTHORIZE APPROPRIATIONS FOR FISCAL YEAR 2013 FOR MILITARY ACTIVITIES OF THE DEPARTMENT OF DEFENSE, FOR MILITARY CONSTRUCTION, AND FOR DEFENSE ACTIVITIES OF THE DEPARTMENT OF ENERGY, TO PRESCRIBE MILITARY PERSONNEL STRENGTHS FOR SUCH FISCAL YEAR, AND FOR OTHER PURPOSES

**PART 4**
**AIRLAND**

MARCH 27 AND MAY 8, 2012

Printed for the use of the Committee on Armed Services

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# AIRLAND

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**TUESDAY, MARCH 27, 2012**

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

## ARMY MODERNIZATION

The subcommittee met, pursuant to notice, at 3:58 p.m., in room SR–222, Russell Senate Office Building, Senator Joseph I. Lieberman (chairman of the subcommittee) presiding.

Committee members present: Senators Lieberman, Blumenthal, Brown, and Inhofe.

Majority staff member present: William K. Sutey, professional staff member.

Minority staff member present: Paul C. Hutton IV, professional staff member.

Staff assistant present: Brian F. Sebold.

Committee members' assistants present: Brian Burton, assistant to Senator Lieberman; Ethan Saxon, assistant to Senator Blumenthal; Anthony Lazarski, assistant to Senator Inhofe; and Charles Prosch, assistant to Senator Brown.

### OPENING STATEMENT OF SENATOR JOSEPH I. LIEBERMAN, CHAIRMAN

Senator LIEBERMAN. The hearing will come to order.

This is my first time in the refurbished room. It is quite beautiful, isn't it? This is meant to be progress, I am sure.

Do you remember how long and hard Senator John Warner worked to design that previous table, and it was grand.

Senator BROWN. It was.

Senator LIEBERMAN. Yes. I know.

I apologize to our distinguished panel of witnesses. We, and I particularly, were held up on the floor because there is a bill on the Postal Service, and it comes out of the other committee that I am privileged to serve on. But we thank you.

Senator BROWN. We are cosponsors on it.

Senator LIEBERMAN. Senator Brown and I, marching in tandem.

Senator BROWN. Lockstep again.

Senator LIEBERMAN. Lockstep again. Yes. He is a courageous man to put himself in that position.

Good afternoon. The Subcommittee on Airland will come to order.

We meet today to receive testimony on Army modernization, as we do every year before we go into markup of the National Defense Authorization Act at the full committee level. This happens to be my last annual Army modernization hearing as a Senator. Don't be shocked, Senator Brown.

In 1993, I became a member of this subcommittee, which was then called the Coalition Defense and Reinforcing Forces Subcommittee, chaired at that time by none other than Senator Carl Levin of Michigan. The following year, I attended my first hearing on the Army long-term modernization requirements and modernization programs.

In 1995, the subcommittee was renamed Airland Forces, and since 1999, I have had the great privilege of being either the subcommittee's ranking member or chairman. I must say in that capacity, I have had the really high honor of getting to know a succession of leaders of the U.S. Army and members of the U.S. Army who really are the best of the best. So it has been one of the great parts of my service here in the Senate.

As I recall, the first Army modernization hearing I attended in 1994, the subcommittee was pursuing a better understanding of the Army's plans for improvements in equipment and joint operations based on the lessons of the First Gulf War. At that time, the Army was beginning a very large end strength reduction from the Cold War high of 780,000 soldiers to 530,000. Subsequently, even lower, finally stopping at 480,000 soldiers in 2001 before September 11. Rising again in recent years, and now the target of 480,000 sounds vaguely familiar, close to that for end strength reduction in the current Future Years Defense Program.

The Active Army force structure went from 18 divisions down to 10. At that time, we were already 7 years into what was a 13-year decline in Army procurement spending.

Today, as I sit in this last Army modernization hearing, it is ironic that we find ourselves for very different reasons in a very similar situation. I hope we have learned some of the lessons of the past 10 years about how unpredictable future threat environments can be.

Because the budget submitted to us this year for fiscal year 2013 I think includes unacceptable levels of strategic risk, mostly brought about by compliance with an act of Congress, which was the Budget Control Act (BCA). But as I keep saying, part of our responsibility, I think, as we go through the authorization process, is to decide whether everything we did in the BCA makes sense or whether we want to adjust some of the numbers. Of course, I hope we do because the obvious fact is we face an uncertain and dangerous global security environment.

The Army fiscal year 2013 budget request includes several program cancellations, earlier than planned completions, or delays of equipment modernization that not only would increase strategic and operational risk, in my opinion, but could undermine the health of our national combat and tactical vehicle industrial base.

This is particularly concerning, given the real progress that the Army has been able to make in stabilizing its requirements and modernization efforts under the leadership of former Secretary of Defense Gates, but really to give credit where it is due, former Vice Chief of Staff for the Army, General Peter Chiarelli, who launched the Army's comprehensive review of its investment strategies across the capabilities we need and expect the Army to have.

The subcommittee today looks forward to an update on the progress achieved in what came to be known under General Chiarelli as the Capability Portfolio Review (CPR) process, also how you will sustain the momentum of this important part of your requirements determination process, and how portfolio reviews are leading changes in the acquisition strategy.

The top three modernization efforts identified in the Army's fiscal year 2013 budget request are the tactical network, which will conduct the various communications data, video, and applications systems used by the Army, which I think there is broad support for and consensus about; the Ground Combat Vehicle (GCV), a developmental program to replace some of the armored infantry fighting vehicles in the Army's armored Brigade Combat Teams; and the Joint Light Tactical Vehicle (JLTV), another developmental program to replace some of the Humvees that do not provide sufficient crew protection to operate adequately in an improvised explosive device (IED) environment.

I do want to ask our witnesses today whether the higher costs of those two new vehicle programs are justified by increased capabilities they will buy, as opposed to sustaining current programs for the Bradley fighting vehicle and the Humvee.

I am going to jump around a little bit in deference to the time. I do want to make this point finally. I am very encouraged that the Army has taken pains—and I mean it, pains—in this fiscally difficult environment to protect its investments in aviation.

One of the most important lessons, I think, from the wars in Iraq and Afghanistan is Army aviation provides unique capabilities that are absolutely essential to our soldiers in the field. I am pleased that even amidst all the planned cuts to end strength and force structure, the Army is going to continue to expand its aviation force to 13 brigades.

Though it represents a significant investment, I think it is a necessary one, and essential, I think, to see that this process goes to completion. I say that because I am sure that the Army is going to be under pressure to cut into aviation funding to pay for other modernization areas.

We have a great panel of witnesses here with extraordinary experience. I will introduce them when we get to that point.

At this point, I am delighted to call upon my friend and colleague and ranking member, Senator Scott Brown, whose own military experience, as well as his personal insights, have proven extremely valuable to the work of this subcommittee. We will again work together to produce our mark for the full committee this year.

Senator Brown.

**STATEMENT OF SENATOR SCOTT P. BROWN**

Senator BROWN. Thank you, Mr. Chairman.

Thank you for your service and your leadership. Out of all the committees, I have truly enjoyed this one the most. I know we have tackled some really good issues, and what you did on the insider trader bill has showed a lot of courage.

Thank you all for your service. I know we spoke earlier. I am not going to do a long and extensive opening, but I do recognize that the Army faces great challenges in the fact that in the Army, change is a constant because the threats against our country are constantly changing. We need to adjust and adapt.

I know that. You know that, probably much more than I do. You have an unprecedented history, and you are ready for any mission that comes forth. I understand that, and I appreciate that.

I am concerned about the role of the Guard and Reserve. In particular, I am concerned about the sequestration cuts and how that is going to affect our military preparedness. I want to make sure that we can respond professionally and provide the tools and resources to our men and women to serve, serve well, serve safely, and then come home. That is very important.

Then what do we do with them thereafter? Being a member of the Senate Veterans' Affairs Committee, I take that role very seriously as well.

The success or failure of the Army's efforts to realign and become the most effective possible fighting force depends on what we do in this committee, what we are doing here today, and what we do in the markup. I think it is critically important to try to wrestle with a lot of these challenges, these budgetary restraints, and the like.

It is our responsibility here in this committee to understand what those challenges are so we can better advocate for you and make sure that we do the things as they should be done with the limited budgets that we have.

Senator LIEBERMAN. Thanks, Senator Brown.

The witnesses before us are Lieutenant General Robert P. Lennox, who is Deputy Chief of Staff of the Army G–8; and Lieutenant General William N. Phillips, who is Principal Military Deputy to the Assistant Secretary of the Army for Acquisition, Logistics, and Technology, and the Director, Acquisition Career Management.

Appearing for the first time before the subcommittee, and we welcome you with thanks, is Lieutenant General Keith C. Walker, Deputy Commanding General, Futures, and Director, Army Capabilities Integration Center at U.S. Army Training and Doctrine Command; and Lieutenant General John F. Campbell, who is Deputy Chief of Staff of the Army G–3/5/7.

I gather that General Lennox will begin? Thank you, sir, for being here, and we welcome your testimony at this time.

**STATEMENT OF LTG ROBERT P. LENNOX, USA, DEPUTY CHIEF OF STAFF OF THE ARMY (G–8); ACCOMPANIED BY LTG WILLIAM N. PHILLIPS, USA, PRINCIPAL MILITARY DEPUTY TO THE ASSISTANT SECRETARY OF THE ARMY FOR ACQUISITION, LOGISTICS, AND TECHNOLOGY, AND DIRECTOR, ACQUISITION CAREER MANAGEMENT; LTG KEITH C. WALKER, USA, DEPUTY COMMANDING GENERAL, FUTURES, AND DIRECTOR, ARMY CAPABILITIES INTEGRATION CENTER, U.S. ARMY TRAINING AND DOCTRINE COMMAND; AND LTG JOHN F. CAMPBELL, USA, DEPUTY CHIEF OF STAFF OF THE ARMY (G–3/5/7)**

General LENNOX. Chairman Lieberman, Ranking Member Brown, Senator Inhofe, and all the members of the subcommittee, on behalf of the Secretary of the Army, Secretary McHugh, and the Chief of Staff of the Army, General Odierno, and all of the 1 million plus men and women in the Army, we want to thank this subcommittee for its enduring support and commitment to our soldiers.

Chairman Lieberman, on behalf of all the members of the subcommittee, we want to thank you for your support, your 24 years of service, your leadership, and your personal care and commitment for our soldiers. I want to make sure we say that up front.

In modernization, the Army really has two priorities, and the first is to win today's fight. General Campbell has come back from a year of command of Regional Command (RC) East. General Phillips and I have had a chance to visit over there in Afghanistan in the last month, and we bring insights as far as what we are doing to support those soldiers today.

Our commitment to support them is number one. I want to thank you all for your support in equipping those soldiers to be successful today in combat.

Our second priority is to make sure we are prepared to win in an uncertain future. The Secretary of Defense published in January the new strategic guidance, and we have attempted to shape our forces and our strategy to support that in a way for the armed forces for the foreseeable future.

For the Army, we really have three priorities for the future, and the first is empower, protect, and unburden soldiers. We have tried to do that with a number of programs, improvements to things like body armor, sniper weapons, indirect fires, improved helmets, protective ballistic undergarments, and things like that.

The second priority is to network the force, and we would be happy to talk to you about any of those programs from Net Warrior to the Warfighter Information Network-Tactical (WIN–T), and any of the Joint Tactical Radio Systems that we think are foundational to that approach.

The third priority is to be able to deter and defeat hybrid threats by looking for improvements for our aviation, our combat vehicle fleet, and our tactical wheeled vehicle fleet. Chairman Lieberman, you mentioned some of those areas and those programs.

One of the key facets for us is looking for parity across all the components in the Army—the Active Force, the National Guard, and the Reserve. We think we have achieved that, both in equip-

ment on hand. We have reached the high 80 percent level for equipment on hand for all different components.

Then in percent modernized, and we are in the 70s for all components. So we have reached parity, we think, in both those aspects for all components for the Army.

We are facing tight fiscal challenges in the next couple of years. In order to address that, we have looked at things like incremental modernization, and we have really looked at our acquisition processes and the tradeoff in requirements early on in the process and then throughout the process to get affordable modernization programs.

We would be happy to talk to you about areas like the JLTV, and the GCV, where we think we have made good trades, and we have yet to finish some of those trades in the way ahead. It is a real tremendous effort led by Acting Secretary Shyu and General Phillips in that regard.

In closing, the Army's goal is really to equip soldiers for the current fight and future contingencies. Although we are a force in transition in a period of declining resources, we have to continue to provide our warfighters with modernized and capable equipment so they can prevail on any battlefield against any foe.

Mr. Chairman, distinguished members of the subcommittee, I thank you again for your steadfast and generous support for the outstanding men and women of the Army, the Army civilians, and their families. We look forward to answering your questions.

[The joint prepared statement of General Lennox, General Phillips, General Campbell, and General Walker follows:]

JOINT PREPARED STATEMENT BY LTG ROBERT P. LENNOX, USA; LTG WILLIAM N. PHILLIPS, USA; LTG JOHN F. CAMPBELL, USA; AND LTG KEITH C. WALKER, USA

INTRODUCTION

Chairman Lieberman, Senator Brown, and distinguished members of the Subcommittee on Airland, we thank you for this opportunity to discuss the fiscal year 2013 budget request as it pertains to Army Modernization. We are pleased to represent U.S. Army leadership, members of the Army Acquisition workforce, and the more than 1e million courageous men and women in uniform who have deployed to combat over the past 10-plus years, and who have relied on us to provide them with world-class weapon systems and equipment to ensure mission success. On behalf of our Secretary, the Honorable John McHugh and our Chief of Staff, General Ray Odierno, we would like to take this opportunity to thank the members of this committee for your steadfast support and shared commitment in this endeavor.

ARMY EQUIPMENT MODERNIZATION STRATEGY

Today we are faced with uncertain strategic and operational environments coupled with declining resources. The Army's equipment modernization strategy reflects the need to be able to support the current fight, respond to uncertainties and implement the emerging Army strategy for the force in 2020. The President's budget 2013 Research and Development request reflects the Army's priority materiel programs and highlights the critical capabilities we need to give our soldiers and units the decisive edge in the range of military operations. This strategy is focused on equipment needed to: (1) empower, unburden, and protect our soldiers; (2) network the force; and (3) replace, improve, or transform our combat platforms in order to deter and defeat hybrid threats.

We recognize we must shape the Army with an understanding of both our national security obligations and current fiscal constraints. The equipment modernization strategy for the Army aligns the ends, ways, and means to develop and field a versatile and affordable mix of the best equipment available to enable soldiers to succeed in current and future complex operational environments. This entails four lines of effort:

- Modernize. Develop and acquire new equipment or improve, upgrade or adapt existing equipment to meet identified capability gaps and to achieve dominance in core capabilities while evaluating modernization efforts for redundancy.
- Sustain. Close capability gaps or avoid creating them by extending the useful life of existing equipment and divest or store equipment providing less value.
- Mitigate. Procure mission-specific equipment for immediate capability needs.
- Distribute. Provide the appropriate quantity and type of equipment to soldiers and units at the proper time in accordance with the Army Force Generation (ARFORGEN) readiness model and Army priorities to enable training, preparation and employment for mission success.

To meet the challenges of strategic, operational, and fiscal realities, the Army is working toward a truly collaborative process for requirements, resources and acquisition. The Army aims to develop and field a versatile and affordable mix of equipment to enable soldiers and units to succeed across a full range of missions today and tomorrow and to maintain our decisive advantage over any adversary we face. "Versatile" encompasses the characteristics of adaptable (to changing missions and environments); expansible (able to add, update or exchange capabilities in response to changed circumstances); and networked (to enable interoperability within our formations and with those of our partners). "Affordable" relates to making fiscally informed decisions that provide greatest capability value in accordance with senior leader priorities, within projected resources and within acceptable risk parameters. To achieve that goal, the Army is transforming its Requirements and Acquisition processes.

## REQUIREMENTS TRANSFORMATION

Our future is filled with uncertainty with respect to operating environments, adversaries, resources, and other constraints; the Army continues to evolve its requirements generation process to find improved ways to shape future requirements.

The Army has vigorously implemented processes and procedures to put the most capability in the hands of our warfighters. We are consistently challenging costly, duplicative, or unrealistic requirements and embracing innovation and warfighter feedback. Synchronization of our analytical efforts with combatant commanders, Combat Developers, Capability Portfolio managers, requirements generators, analysts and analytical agencies, and the acquisition community is leading to refined, realistic, and innovative requirements. Our goal is to have the" right" requirement at the start of a program.

## ACQUISITION TRANSFORMATION

Over the past year, the Army has continued to make progress on changing the paradigm for acquisition to one that emphasizes affordability and agility throughout the acquisition cycle. We are challenging costly or unrealistic requirements, implementing systems engineering, and cost estimating, early in the acquisition cycle backed up by developmental testing and operational assessments. We are also embracing incremental modernization, commercial innovation and soldier-industry feedback to deliver improved capabilities as technology matures, or resources are available. Integrated Portfolios are used to align the modernization community to ensure integration across requirements, acquisition, resourcing and sustainment. We are also actively supporting increased competition and rewarding technological maturity during the developmental cycle followed by open competition during the procurement cycle, to the maximum extent possible. The men and women of the Acquisition Corps are working hard to deliver capability to our warfighters and they are doing outstanding work.

This approach is evident in several programs, to include JLTV, Nett Warrior and GCV, where we have already shown success in revising military requirements to avoid unnecessary cost and to develop executable strategies. For instance, in the JLTV program, a thorough review enabled us to revise our Acquisition Strategy which reduced the schedule for the next development phase from 48 to 33 months while reducing the projected cost of the vehicle by $400 million, a 50 percent reduction.

The Stryker Double-V Hull (DVH) program is yet another example, In the DVH program, we partnered with the testing community to efficiently conduct simultaneous test and production on an expedited basis. By taking a more collaborative approach, we provided soldiers with critical improvements and enhanced protection on

a timely and effective basis. In a recent trip to Kandahar, Afghanistan, we saw and heard first-hand from soldiers the remarkable capability the DVH provides.

PRIORITY ARMY PROGRAMS IN FISCAL YEAR 2013

Based on the Equipping Modernization Strategy, the priority equipment modernization programs in our President's budget 2013 request are:

*Warfighter Information Network-Tactical (WIN–T)*

Provides the broadband backbone communications necessary for the tactical Army. It extends an Internet Protocol (IP) based satellite and line-of-sight communications network through the tactical force, supporting voice, data, and video. Increment 1 fielding is completed in fiscal year 2012 and will begin Increment 1b Engineering Change Proposal (ECP) implementation for interoperability with increment 2. Increment 2 extends the network to the Company and provides on-the-move IP communications for the first time. It begins fielding in fiscal year 2013. President's budget 2013 will procure 7 new Brigade Combat Team (BCT) sets and funds fielding Increment 2 systems to 9 BCTs and procuring upgrades for 32 additional brigades to provide interoperability with Increment 2 systems.

*Joint Tactical Radio System (JTRS)*

Provides the future deployable mobile communications family of tactical radios. It provides advanced joint tactical end-to-end networking data and voice communications to dismounted troops, aircraft and watercraft platforms. President's budget 2013 procures Handheld/Manpack Small Form Fit (HMS) and Rifleman Radios to provide voice/data communications to eight BCTs. These radios will link mounted and dismounted soldiers and leaders into a robust, integrated network. The Ground Mobile Radio (GMR) was the primary JTRS vehicular radio. This program was restructured in favor of a more competitive Non-Development Item (NDI) program called the Mid-Tier Networking Vehicle Radio (MNVR) using the government-owned programmable waveforms developed as part of the JTRS program. This change in acquisition strategy will allow rapid delivery of capabilities (fielding in fiscal year 2014) at lower cost while meeting the mobility requirement of the restructured GMR program. In fiscal year 2013, the Army will field the PRC–117G as a bridge solution for the MNVR.

*Joint Battle Command-Platforms (JBC–P)*

Provides a foundation for achieving information interoperability on current and future battlefields and will be the principal Command and Control/Situational Awareness system for the Army and Marine Corps at the brigade-and-below level. Leverages our investment in 88,000 Force XXI Battle Command Brigade and Below (FBCB2) systems (all maneuver formations) with improved situational awareness capabilities. JBC–P is the incremental improvement to the already fielded Blue Force Tracker (BFT) family of systems.

*Nett Warrior*

Provides an integrated situational awareness system to the dismounted leader which allows for fast and accurate decisions in the tactical fight. As a result of Network Integration Evaluations and soldier feedback, the Army rebaselined the program to achieve a smaller, lighter handheld capability at significantly reduced cost to the Army. President's budget 2013 funds delivery of this capability to maneuver BCTs in support of next deployers.

*Distributed Common Ground System-Army (DCGS–A)*

Provides integrated intelligence, surveillance, and reconnaissance processing, exploitation, and dissemination of data from airborne and ground sensor platforms. DCGS–A satisfies 100 percent of the Army intelligence enterprise requirements by pulling data from over 300 Department of Defense (DOD) and national databases. No other system completely addresses the broad range of intelligence requirements satisfied by the DCGS–A program. President's budget 2013 funds development of the Army Common Operating Environment and Command Post Environment and procures equipment for 1 Army Service Component Command, 10 theater commands, 3 division headquarters, 14 BCTs, one Special Forces Group, and 15 support brigades.

*Ground Combat Vehicle*

The Ground Combat Vehicle (GCV) is the U.S. Army's replacement for Infantry Fighting Vehicles in Heavy Brigade Combat Teams (HBCTs). Modernization imperatives include improved protection, mobility and sustainment; built-in growth capacity; and network integration. President's budget 2013 funds two competitive Tech-

nology Development (TD) contracts leading to a Milestone B decision in first quarter 2014 and Engineering and Manufacturing Development (EMD) Phase. The Milestone B decision will be informed by a comprehensive analysis, an examination of nondevelopmental vehicles, and progress made during the current TD phase.

*Joint Light Tactical Vehicle (JLTV)*

Provides Army and Marine Corps Warfighters more payload, protection and network capability than High Mobility Multipurpose Wheeled Vehicle (HMMWV), and more fuel efficiency than the HMMWV or Mine Resistant Ambush Protected (MRAP). President's budget 2013 fully funds JLTV Engineering and Manufacturing Development (EMD) using an acquisition strategy that maximizes full and open competition opportunities for interested companies and reduces EMD costs and schedule. The program is scheduled for a Milestone B decision in July 2012.

*Paladin Integrated Management (PIM)*

The PIM program replaces the current M109A6 Paladin and M992A2 Field Artillery Ammunition Supply Vehicle by incorporating Bradley common drive train and suspension components. PIM addresses a long standing capability gap in the self-propelled artillery portfolio brought about by an aging fleet and the termination of prior modernization efforts. President's budget 2013 funds continued development and integration of Bradley common components (Engine, Transmission, and Suspension System) into prototype vehicles for government testing. The program remains on schedule to meet a Milestone C in June 2013.

*Armored Multi-Purpose Vehicle (AMPV)*

The AMPV program is an essential element of the Army's Combat Vehicle Modernization strategy to replace an aging M113 fleet that lacks protection, mobility, and the ability to accept future upgrades. The AMPV addresses critical capability gaps in protection, networking interoperability, and mobility for critical enablers (mortars, medical evacuation and treatment, mission command, and company command and control) of the combined arms team. The current M113 fleet has reached its growth margin in these areas and a new design is needed. President's budget 2013 funds development of the competitive source selection package. The AMPV program is an essential element of the Army's Combat Vehicle Modernization strategy.

*Kiowa Warrior*

President's budget 2013 funds continued development of the Cockpit and Sensor Upgrade Program (CASUP) and procurement of fielded fleet upgrades and CASUP long lead items. CASUP replaces the OH–58D's outdated systems with a new onboard processor, communications suite, and navigation equipment along with a lighter, more capable sight to fill the immediate interoperability gaps existing in the fleet today. The fielding of these improvements begins in fiscal year 2016 and will be complete by fiscal year 2021. A decision to pursue either the development of a new aircraft to replace Kiowa Warrior or a Service Life Extension Program (SLEP) of Kiowa Warrior will be made in fiscal year 2013.

OTHER PROGRAMS OF INTEREST

*Support to the Warfighter in Afghanistan*

President's budget 2013 fully funds priority warfighter equipment requirements and supports efforts toward a successful conclusion of Army missions in Afghanistan. President's budget 2013 Overseas Contingency Operations funding procures replacement aircraft, missiles, rockets and C4I equipment; specialized Distributed Common Ground System-Army (DCGS–A) equipment for Intelligence units; Carl Gustav Recoilless Rifles for selected units; Enhanced Combat Helmets, and OEF Camouflage Pattern clothing for deployers. The President's budget 2013 Base funding procures seismic/acoustic intrusion devices for deploying Military Police and Engineer Companies, BCTs and Special Operations units; Command, Control, Communications and Intelligence equipment for Civil Affairs units; Enhanced AN/TPQ–36 (EQ–36) Radars and Lightweight Counter Mortar Radars; M2 and M240 Machine Gun modifications; and Precision Guided Artillery Fuzes for example.

*Lightening the Load*

The Army is committed to a continuous, holistic effort to lighten the individual soldier's load. We have continued to reduce the weight of individual protection equipment while improving the level of protection provided. The weight of crew-served weapons like machine guns and mortars has also been reduced. We are expanding the scope of our weight reduction efforts to address consumable items. For example, we are developing case-less ammunition which will reduce the weight of

ammunition. A lightweight solar battery charger is under development to reduce the number of batteries a soldier carries on patrol.

*Combat Vehicle Programs*

Two Combat Vehicle Programs are Priority Programs in fiscal year 2013 and discussed above. They are the GCV and the Advanced Multi-Purpose Vehicle. Other combat vehicle programs include:

- Stryker Family of Vehicles. Provides an integrated combined arms team with maximum versatility across Unified Land Operations. The Stryker fleet has emerging capability gaps in Protection, Network Interoperability, and Mobility due to a lack of space, weight, power, and cooling capabilities (SWaP–C). Modernization of the Stryker Fleet is focused on an ECP that will buy-back SWaP–C to integrate future protection technologies, provide the electrical power to integrate the future network, and regain some mobility lost through wartime protection enhancements.
- M1 Abrams. Provides the main battle tank capabilities to defeat armored vehicles in Unified Land Operations. The capability to integrate future protection improvements, integrate network technologies and regain mobility lost through wartime protection improvements is needed. Modernization efforts are currently focused on engineering changes that will provide increased space, weight, power, and cooling capabilities.
- M2/M3 Bradley Fighting Vehicles. Provides the current Infantry Fighting Vehicle, Cavalry Fighting Vehicle, and armored fire support, engineer and reconnaissance capabilities with the Bradley Fire Support Team Vehicle, Engineer-Bradley Fighting Vehicle. Capability gaps exist with respect to SWaP–C to integrate future protection improvements, integrate network technologies and regain mobility lost through wartime protection improvements. Modernization is currently focused on engineering changes that will provide increased space, weight, power and cooling capabilities.

*Army Aviation Programs*

The Kiowa Warrior, OH–58D is a Priority Program in fiscal year 2013 and discussed above. Other Aviation programs include:

- Apache, AH–64D. Fiscal year 2013 funds the continuation of the Block Three incremental modernization strategy which includes the remanufacturing of block one and block two aircraft along with a small number of new build helicopters. Fielding of the first Block Three unit began 1st quarter of fiscal year 2012 and remains on schedule to be complete by the first quarter fiscal year 2013. Apache Block Three will ensure the Apache remains a viable combat multiplier well into the future.
- Armed Aerial Scout. The Army strategy is to pursue a replacement for the OH–58D Kiowa Warrior through the Armed Aerial Scout (AAS) Analysis of Alternatives (AoA) and a voluntary flight demonstration to inform the acquisition process. If it is determined in mid fiscal year 2013 that an affordable alternative does not exist, the Army will apply a Service Life Extension Program. Should the Army determine that an affordable Kiowa Warrior replacement is available; the Defense Acquisition Executive will determine the milestone entry point for the AAS program.
- Chinook, CH–47F. This program is currently in the last year of its first 5 year, multiyear contract. The current budget request includes a second multiyear contract that would complete the modernization fielding in 2018 with a fleet end state of 533 aircraft.

*Transformation for Network Capabilities*

In support of the transformation of our requirements and acquisition processes, the Army is designing a suite of network systems and equipment to answer the projected requirements of a 2-year cycle. Every year, we integrate the next capability set, reflecting any changes or advances in technology. This incremental modernization allows the Army to buy fewer capabilities, but more often, to ensure that we leverage industry advancements and provide our formation the most up-to-date capabilities. These Capability Sets are aligned to units in the queue for deployment or in the available pool to provide mission command capability from the command post, commander on the move, to the dismounted soldier.

We have and will continue to encourage industry to participate in the acquisition process by submitting material solutions to solve capability gaps on a semi-annual basis. This allows for large and small scale industry involvement and leads to increased competition and lower costs.

Capability Sets are a break with tradition in another very important way. Rather than conducting limited user tests of individual systems, the entire Capability Set undergoes two operational evaluations prior to fielding to assess the collective functionality, compliance with architectural standards, and interoperability with existing network capabilities.

The Army will assess capability gaps, rapidly form requirements, solicit mature industry solutions, and perform laboratory and field evaluations in order to inform acquisition decisions semi-annually through the Network Integration Evaluation (NIE) construct. The intent of the NIE construct is three-fold: (1) reduce/eliminate the integration burden on operational formations; (2) develop/integrate network enabled mission command Capability Sets (CS); and (3) provide a forum to leverage industry innovation and to rapidly acquire promising capabilities that solve operational gaps. Fiscal year 2013 President's budget fully funds the semiannual NIE which provides a venue to evaluate new commercial technologies and network capabilities, in an operational environment, for possible inclusion into the Network. Resources have been added to the fiscal year 2013 President's budget request to allow procurement of commercial products evaluated and recommended for fielding based on NIE results.

## MAJOR PROGRAM CHANGES IN FISCAL YEAR 2013

Fiscal realities caused us to make significant changes in almost 100 programs. Nevertheless, the Army is committed to maintaining the most capable Army in the world with the resources the American people provide us through Congress. In order to do so in an era of decreasing resources, we must make hard choices to maintain balance. To that end, we continuously examine programs to find where we may have overlapping or joint capabilities that meet the need, or where programs are simply unaffordable or where the resulting capability risk is acceptable. We believe that even with these changes, we still have balance in our equipping strategy and are on track to equip the Army of 2020. However, further reductions run the risk of upsetting that balance and force us to make very hard choices about where we sacrifice capabilities for the Army of 2020.

Among the changes in our President's budget 2013 request is the restructure of over 20 programs, primarily due to affordability issues, honed requirements or availability of off-the-shelf items. These include Nett Warrior, JTRS, Joint Land Attack Cruise Missile Defense Elevated Netted Sensor (JLENS), Joint Air-to-Ground Missile and JLTV. In more than 50 programs we accepted risk by slowing deliveries of systems based on the current operational environment. These include EQ–36 radars, Heavy Expanded Mobility Tactical Trucks, and Apache III Attack Helicopters. Finally, funding will cease for eight programs. These include: Mounted Soldier System; Long Range Advanced Surveillance Systems; Knight Targeting Under Armor; Liquid Logistics Storage and Distribution (Camel); HMMWV Recap; Family of Medium Tactical Vehicles; Joint Precision Approach and Landing Systems; and Airborne Common Sensor and Enhanced Medium Altitude Reconnaissance and Surveillance System.

We also accelerated 11 programs to provide new capabilities to our warfighters faster. Examples include: Improved Target Acquisition System for Soldiers, Patriot PAC–3 Missiles, and Combat Communications for Casualty Care (MC4).

## EQUIPPING STRATEGY

The goal of our Equipping Strategy is to ensure soldiers are equipped for the current fight and for future contingencies as we transition the Army. With the support of Congress, the Army significantly improved the Equipment On Hand (EOH) and modernization levels for the Army National Guard (ARNG), the U.S. Army Reserve (USAR) and the Active components (AC). The EOH levels for the individual components as of November 2011 are as follows: the AC 87 percent, ARNG 87 percent and the USAR 86 percent. Based on planned procurements and assuming the inventory in theater and depot is made available for redistribution, EOH levels have the potential to be AC 94 percent, ARNG 92 percent and the USAR 90 percent for fiscal year 2013. The modernization levels for the individual components as of November 2011 are as follows: AC 70 percent, ARNG 71 percent and the USAR 66 percent. Modernization has the potential to be AC 76 percent, ARNG 74 percent and the USAR 69 percent for fiscal year 2013, if theater and depot stocks are made available for redistribution. Although we are a force in transition during a period of declining resources we must continue to provide the Army with the best equipped most modernized and most highly capable units that will prevail on any battlefield against any foe.

CLOSING COMMENTS

These continue to be challenging times for our Nation and for our military. We can assure the members of this committee—your Army's senior leaders remain focused and are working hard to address current challenges and the needs of the Army now and in the future enable continued readiness and expansion should the Army be needed. We will do this with affordability as our watchword as we endeavor to remain good stewards of our Nation's resources.

Mr. Chairman, members of the subcommittee, we thank you again for your steadfast and generous support of the outstanding men and women of the U.S. Army, Army civilians, and their families. We look forward to your questions.

Senator LIEBERMAN. Thanks very much, General Lennox.

General Phillips? Am I right that the three of you are prepared to, at least for now, accept General Lennox's statement as your own?

General PHILLIPS. Sir, that is correct.

Senator LIEBERMAN. Okay. Thank you.

We will proceed to the questions. We will have 7-minute rounds. I want to welcome my colleague from Connecticut and fellow member of the committee and subcommittee, Senator Blumenthal.

I mentioned in my opening statement my concern about the GCV and the JLTV programs, and the unit costs of those new systems, which are projected to be double or triple that of the upgraded current generation Bradley fighting vehicles and Humvees that they are replacing.

Obviously, the two new programs bring some improvements. The broad question I want to ask you first is to elaborate, if you would, on the operational need for those new development systems. Why, given the tremendous fiscal restraints we are all under, you think that the incremental money we are spending on the GCV and the JLTV is worth it, essentially, as opposed to maintaining and upgrading the two existing programs.

General LENNOX. If I could start, Senator Lieberman.

Senator LIEBERMAN. Please.

General LENNOX. I think others on the panel may want to join in.

In the infantry fighting vehicle, we found over the last 10 years that there is a number of shortfalls that we are aiming to correct with the GCV program. The Bradley is underpowered, cannot carry a full squad, has limited growth potential for the future, and has a number of shortfalls along those lines.

Right now, we are right after Milestone A. So we have just really launched the GCV, and I think we are on a very good path of investigating whether we have our requirements right, is our cost range right or not.

We are also looking at nondevelopmental vehicles by other countries, and we are experimenting with them as part of our network evaluation at Fort Bliss, TX, this spring.

Finally, we are looking at what industry has been able to provide us in terms of technical development, the new starts, by both the two industry partners. We are evaluating those to see if we have our requirements right and if this is the right path ahead.

I think we are taking a very prudent, measured approach to making sure we have our requirements right for the GCV.

For the JLTV, we have spent the last year really working with the Marine Corps to make sure that we have the requirements

right in that regard. We have driven down the price substantially. It was about $450,000 a copy. We now think in the request for proposal it is around $250,000 a copy.

We think it has the capabilities we need for the future. The Humvee is not a vehicle that soldiers can operate in today outside of the fence line. We desperately need a replacement for that, and we think we are on a good path for that as well.

Senator LIEBERMAN. So why don't you talk just a little more about the advantages of the two new programs over the two existing ones, the Humvee and the Bradley fighting vehicle? Particularly, what potential is there to upgrade the two existing programs so they could do better than they are doing now for our troops?

General LENNOX. I would be happy to be joined by anybody who has thoughts on this. But for me, the Humvee, for example, is incapable of going off the forward operating base.

Senator LIEBERMAN. Right.

General LENNOX. It doesn't provide the protection for soldiers today. We have overburdened it with the weight and things on that frame. There are roles that it is probably suitable for, and we are going to have a number of them in the force for probably 10 or 15 years.

Senator LIEBERMAN. We have a large number, don't we?

General LENNOX. Yes, sir. So they will probably remain in there for Homeland defense, those kind of mission areas. Or if the environment is permissive, we could use those vehicles.

What we found with the Bradley based on an analysis of alternatives (AOA) is that the price is much closer to a new vehicle for fixing up the Bradley, to give it the growth potential and protection that we would need in a similar version.

We are not done with that analysis. Improving the Bradley is an option for the Army in the future, and it is being looked at as well.

Senator LIEBERMAN. General Walker, did you want to add anything?

General WALKER. Sir, you had asked about what we do for risk mitigation, given the uncertain future. We do our concepts work based on strategic guidance we receive and informed by joint concepts. We have a broad mission set.

But there is a part of that mission set that remains, and that is our ability to conduct combat operations. When we look at ways that we might mitigate risk, that capability is fundamental, and only—the Bradley does not have the maneuverability and the protection for our rifle squads that we believe we might encounter for those adversaries that would employ hybrid-like tactics against us.

I am reminded of the fight in Fallujah in November 2004. Three Army task forces led three axes of advance with the Marine Corps. We talk about the counterinsurgency (COIN) operation; but it was a tank fight, protected by riflemen in Bradleys.

If we did that again today, given the advances that we have seen in IEDs and explosively formed penetrators, we would lose a lot of people. I think we can expect more of that in the future. So this does mitigate risk.

Senator LIEBERMAN. Okay. I appreciate that.

What I am hearing is that it is hard to, at this point, conceive of a sensible upgrade to the Humvee to meet the challenges. But

on the question of the GCV, although as you have just said, there are problems with the Bradley, that that is still a question that is being pursued. Am I hearing it right?

General PHILLIPS. Sir, if I could just add?

Senator LIEBERMAN. Please.

General PHILLIPS. You are absolutely right, sir. We think we have the absolutely right strategy going forward for GCV. We call it the three-pronged strategy. We have the two contractors in the technology development phase that General Lennox mentioned that are actively looking at, through modeling and simulation, how to build this vehicle. At the same time, we are looking at what a stretch Bradley might look like or what it might be able to do.

We are also looking at potential foreign systems, like the Namer. Other systems, like Puma, we will look at as well. That is going to inform us going into the Milestone B about 20 months from now the exact right vehicle that we will enter into Milestone B through engineering, manufacturing, and development. So we think we have it about right.

In terms of cost, sir, if I could just add, we refined the cost of the GCV as we pulled back the original request for proposal (RFP) and then reset. We think we can bring this vehicle in, and we are pretty confident, somewhere between $9 million and $10.5 million.

As General Lennox mentioned earlier, that is not far above what it would cost to do a stretch Bradley to give it the capability of the GCV.

Senator LIEBERMAN. Just a final question because my time is up. You are looking at the German Puma and the Israeli Namer. What is possible there? That we would adapt those designs to our own use, or that we would actually purchase from them?

General PHILLIPS. Sir, I will start and then turn it over to General Walker to finish. What we want to do going into Milestone B is to make sure we get our requirements documents as right as we can. We learn as much from those systems to include what the two contractors are doing and to make sure that we are fully informed so the Army can make the best decisions.

Senator LIEBERMAN. Gotcha.

General WALKER. Sir, to follow up, by putting those vehicles in the hands of soldiers in a brigade operational context at Fort Bliss and White Sands, what we can do is we can dynamically adjust our requirements if we have the requirements wrong. It is a way to really ask ourselves do we have it right, based on seeing some other alternatives.

Senator LIEBERMAN. Very good. My time is up.

Senator Brown.

Senator BROWN. Thank you, Mr. Chairman.

The reduction in end strength will not only impact the availability of soldiers, it is going to affect the Army's equipping plan. There are going to be some excesses which include modernization of tanks and fighting vehicles.

What does the excess in vehicles mean for the continuation in production of tanks, trucks, and Bradleys? How do you plan to distribute the excess equipment caused by the reduction in end strength? For example, do the Guard and Reserve play a role in that?

General LENNOX. Senator Brown, we are undergoing analysis right now on what the future force structure will look like. So what is our actual force design as we draw down from 547,000 to 490,000 in the Active Force?

That final decision, to be made by the Secretary of the Army and Chief of Staff of the Army, will drive whether or not we do have excess or whether or not we are employing our Bradleys and our Abrams tanks today. It will help us define whether or not we do have excess.

We don't see a lot of excess, frankly, in tanks and Bradleys. We do see some excess tactical wheeled vehicles, trucks in particular. Our plan is to make sure that we get rid of the oldest trucks in all our formations, Active and Guard, first and then divest the excess trucks. Make them available for divestment.

Senator BROWN. Thank you.

The Guard and Reserve's more active role in the President's new national security plan is evident. How does the Army intend to resource training and equipping of the Reserve components? I am a little unclear. Are the Army Reserve and National Guard sufficiently funded to support the current and prospective missions?

General CAMPBELL. Sir, I can take a shot at that. First off, sir, thank you, and the members of the committee, for your continued support.

Senator Lieberman, thank you very much for your service.

Sir, we have what we call now the Army Force Generation (ARFORGEN) model, and that has been used for the last several years to make sure we provide manned, equipped, and trained ready forces for the combatant commanders. We are going through a process right now to make sure that we take all the lessons learned from the last 10 years and apply that as we revamp the ARFORGEN process. Included in this is the National Guard, Reserve, and the Active component.

As we go through that, we will determine how many brigades are required to combatant commanders over a certain amount of time, and we can provide those resources at that time. We have really gone from a tiered readiness piece to a progressive readiness piece with the ARFORGEN getting supply/demand, and now we are looking hard, as we move forward, how many National Guard brigades and Reserve brigades we will actually need in an operational reserve concept versus strategic reserve.

We talked earlier, sir. In Afghanistan, I had two National Guard brigades underneath my command and control. They had battle space just like the Active components. You couldn't tell the difference unless you knew the patch that was on their shoulder.

They are manned, equipped, and trained just like the Active brigades. They perform excellent, and we have to make sure that we can do everything we can to maintain that capability we have had in the past.

Senator BROWN. Thank you.

General Walker, in regard to the new weapons programs, they sometimes seem to be weighed down with unaffordable or in some cases, technologically unrealistic requirements. In some circumstances, requirements change in the middle of program development and, as a result, generate poor cost and schedule outcomes

and increase the chances that a program will be canceled prior to fielding it. We all know instances of that.

What is the Army doing to improve the requirements generation process, and what could the Army acquisition community do to assist in this area?

General WALKER. Senator Brown, to start at the beginning of when we do requirements, we have adjusted how we go about it. We formed integrated capability development teams with all stakeholders early in the process so that we don't come up with something that might defy the laws of physics or not make sense. That is one thing that we have started doing routinely that helps the process.

The other is we have adjusted the way we write requirements so that the requirements have a more open architecture, and we don't end up painting ourselves into a corner early in the process when we don't know enough about that capability that we seek to develop.

The other thing we are doing is not being so resistant to changing a requirement once we write it, and we can do that by getting that capability in the hands of the soldier earlier in the process and let them try it in an operational context and give us some feedback. I like to say that we can dynamically adjust the requirement as we go.

Those have already started helping a lot as we get into the trades process when that time comes, working with my partner, General Phillips.

General PHILLIPS. Senator, I would just add that we are very serious about changing the acquisition paradigm. I used to call it acquisition reform, but I really now refer to it as acquisition transformation. Ms. Shyu and I are both really, really focused on that aspect.

We are teamed with our partners to my left and right. We are serious about teaming with the requirements generation, Keith Walker and his folks. We now have program executive officers and program managers embedded with those that are looking at the requirements not only to review the requirements, to make sure that we have cost analyst folks, smart folks that have modeling and simulation to make sure that we know the cost of those programs as they come forward.

Two of the programs that have been critical for the way that we changed the acquisition paradigm have been the GCV and the JLTV. In the case of GCV, we went from the original RFP that was going to cost about $20 million per vehicle, through cost-informed trades, looking hard at the requirements, looking at how we can do it faster and bring it in within 7 years, and we went to a cost of about $9 million to $10 million per vehicle.

For the JLTV, it was well over $400,000 per copy, and we got it down to about $250,000, working with our Marine Corps counterparts, bringing forth mature technologies, using competition, and using fixed-price incentive fee or cost-plus incentive fee type contracts.

One of the key aspects, sir, that I want to emphasize is industry builds these systems. So, in the past, we have probably not listened to industry to the extent we could, and now we are listening to in-

dustry and taking their feedback to make sure that we build our requirements and our acquisition strategies appropriately.

Senator BROWN. Just one final question. If Congress doesn't do anything with regard to sequestration, when do you need to start planning for sequestration?

General LENNOX. Tough question, Senator Brown, and a good one. It really doesn't take much planning for us to know that there is a catastrophe coming with sequestration.

For us, it is about manpower first. That is relatively fixed. In the Army, you can get rid of it very quickly. But if you get rid of the manpower quickly, you have to pay unemployment, and you have to pay for people to go. So you won't get any savings in manpower. We will come back and ask for reprogramming money to pay those bills.

We can't close our installations very quickly. You can't put a padlock on them and send people home. We will have to pay those bills, and we will have to come back and ask for help.

The billpayers for those have to be modernization. They have to be training accounts, and the cost of those is that will very quickly have hollowing effects on the Army. I don't want to predict the outcome.

So it doesn't take a lot of preparation or mathematics to know the impacts for us are going to be catastrophic in this case.

Senator BROWN. Okay. Thank you.

Senator LIEBERMAN. Thanks, Senator Brown.

Senator Inhofe.

Senator INHOFE. Thank you, Mr. Chairman.

I will make this quick because I have a time conflict. I will direct this question to both General Phillips and General Lennox, since I know what your answer is going to be.

As an old Army guy, you have heard me talk about before I came to the Senate my last year in the House on the House Armed Services Committee. I remember we had expert witnesses that came in, and they said that in 10 years we would no longer need ground troops.

As time went by and we looked forward, it seemed like that was an attitude at that time we were not modernizing our ground capability. Other countries around the world were. I remember the Crusader came along. That was going to be the answer to all this. We were all excited about that.

As a Republican, I readily admit it was a Republican President that axed that program.

Senator LIEBERMAN. So noted.

Senator INHOFE. So noted is right.

Then the non-line-of-sight came along. Then, of course, Shinseki was there. We had the Future Combat Systems. They just axed all these things.

Now we are down to the Paladin Integrated Management (PIM) program, recognizing the Paladin was actually just a little after World War II technology. But still, this PIM system is a good one. I have been watching it very carefully. After seeing the others slide by, I just want to see what level of assurance the two of you would give us that this program is going to be seen through, and then also why it takes so long to do it?

General PHILLIPS. Senator Inhofe, I will start off, and then turn it over to General Lennox to add to my comments. But upfront, I can tell you that PIM is a critical part of our modernization strategy.

Senator Lieberman, you mentioned upfront the value of the CPRs and how General Chiarelli brought that into fruition inside the Army. That was absolutely critical for us to take a critical look at our programs and figure out which ones are most important. One of those that rose to the top was PIM.

Since that time, about 2 years ago when we started working PIM harder than we had in the past and putting more resources against it, it was 2 years ago we brought a new strategy forward for PIM. We have kept Milestone C as June 2013, and we are highly confident that we will make that date, and we thanked Congress last year for adding money into PIM that allowed us to keep the milestone on track.

We have two critical paths between now and Milestone C to really finalize PIM and the way ahead. One is the business case analysis that needs to be done in case of determining do we proceed with a sole source, or do we go competitive? We expect that to be done probably within the next 30 days. Senator, we will come back and make sure that we brief you on that strategy.

The second would be as we drive toward the Defense Acquisition Board (DAB) review with Mr. Kendall, the Acting Defense Acquisition Executive, that we get all the testing completed prior to that milestone event so we are ready to go into low-rate initial production and soon after there into full-rate production. It is a high priority for us, sir.

Senator INHOFE. Thank you. Thank you very much.

General LENNOX. Senator, I don't know that there is much more that I could add. I want to echo your original comment that we do often get our strategies wrong. In those cases, you have to have a modern Army.

What we are trying to do is do incremental modernization to the extent possible so we are not going out on a limb, but that the things we undertake are achievable and affordable.

Senator INHOFE. When we are out on the stump and talking to people, there is an assumption that the United States, or specifically the Army, has the best of everything. When their kids go out, they have the best equipment.

But there are some areas where that is not true. I think that should be a goal for those of us who are looking into the future, to make sure that that does happen.

I appreciate that assurance. If you would, General Phillips, in the next month or so, update us. Perhaps me in my office or give me a ring so we can talk about that.

The only other area I was going to ask you about is the reset issue. We haven't experienced this before in our country, being out there in battle for 10 years, and we have all been over there. We have all seen the condition of our equipment.

We know that reset is going to have to happen. We know that the Overseas Contingency Operations funding is going to stop. How are you going to handle that?

General LENNOX. Senator, I think all Army leaders have been very consistent about needing to have some sort of reset funding for several years after the end of any conflict. We are out of Iraq, as you well know. But the equipment is not yet completely out of Kuwait.

Some is on ships coming home. Some has just shown up in our depots. It will probably take 2 to 3 years for us to clear the backlog of equipment out of Iraq and get it into the hands of our soldiers.

Afghanistan will be even more challenging, and we are going to need the support of Congress to help us make sure that we get the equipment home, get it reset, and get it into the hands of soldiers. We have been pretty consistent, as I said. I think it will take about 2 or 3 years after the last soldier is out. We will need that kind of support.

Senator INHOFE. Yes. I appreciate that very much, and thank you for your responses.

Thank you, Mr. Chairman.

Senator LIEBERMAN. Thank you, Senator Inhofe.

Senator Blumenthal.

Senator BLUMENTHAL. Thank you, Mr. Chairman.

Thank you, gentlemen, for being here today, and thank you for your extraordinary service to the country.

I want to focus first on the defense against IEDs. I know that each of you knows about and cares about this issue at least as much, certainly more than I do. But I note in your testimony, General, that in the section dealing with support to the warfighter in Afghanistan, at least so far as I can see—I may be missing it—there is nothing in reference to the protective gear or to better detection and the various series of devices and so forth that can be mounted in that regard.

I notice enhanced combat helmets is part of what you list, and I am just wondering whether there is more that you might say about that problem?

General LENNOX. I would ask the entire team to help me here because I know they have lived it and have been challenged with this from the beginning, Senator. So if I did leave it out of the opening statement and written remarks, it is a complete oversight.

It is a top priority and commitment to overcome this. There has been a series of different items that we have fielded to soldiers in Afghanistan to help deal with the threat, from the Self-Protection Adaptive Roller Kit System mine rollers to go in front of the vehicles to protective ballistic undergarments to help those that are struck with the ability to better survive those kinds of effects.

We have had a series of upgrades to our mine-resistant ambush-protected (MRAP) vehicles and MRAP all-terrain vehicles to include underbelly protection. General Phillips and I visited the facility while we were over there a month ago to watch the progress of this new and improved vehicle. A number of hand-held devices that help dismounted soldiers find the threat and get in front of the threat.

It is top priority investment, a top area, and if I neglected to mention it, it is my oversight.

Senator BLUMENTHAL. My question was not to ask whether you have done everything you can. I know that you have and you are.

I am wondering whether there is another iteration of gear, detection devices, that you are developing because from everything I know—and I am new to this committee, new to the Senate—this will be one of the threats to our Armed Forces going forward for years to come, unfortunately and tragically.

Is there anything we can do to help you, and I am wondering whether there are other program areas that you are developing?

General PHILLIPS. Senator, I would just add that we continue to look hard at this. IEDs are something that we are putting a lot of science and technology (S&T) effort into, and research and development (R&D). One of those areas that we continue to improve is body armor which also helps to protect. We have done nine improvements.

When we have gone forward to ask for funding, whether it has been Congress or working with the Office of the Secretary of Defense (OSD), no one said no when it comes to IED protection or soldier protection. We have the resources that we need, and we have to continue the investment in S&T and R&D as we go forward.

One of those that we have just recently learned about from England, as a matter of fact, are two systems. One is pelvic protection and then the Goldie Detection System that is used to detect command wire. Those are systems that we are fielding today.

Pelvic protection, this is probably first generation.

Senator BLUMENTHAL. Right.

General PHILLIPS. But we also have other generations. Sir, General Campbell has an organization called the Rapid Equipping Force (REF) that works with them, and they do some remarkable work in this area.

General CAMPBELL. Yes, sir. The REF for the last several years gets out in front, is able to provide equipment to soldiers working through the Joint IED Defeat Organization (JIEDDO) to get it out very quickly to the soldiers.

Where we are making the turn now, just this year, is we are finally getting some of that equipment back here to stateside so that soldiers are able to train on that before they go over to Afghanistan. So, in the past, our policy, our strategy, is really to get it into theater very quickly, get it into the hands of the soldiers that are in harm's way.

But a lot of times, that is the first time they have seen it. Now we are finally getting it back here. So each post, camp, and station has a set of training equipment. They are able to use that before they go. That has been with the help of Congress providing additional funds to do that.

Senator BLUMENTHAL. Right. I am hopeful that there will be iterations and development in the future that will be even more effective. Obviously, it all depends on the troops using it, which I understand they are doing so more and more.

I would be happy to follow up on this. I have been in touch with JIEDDO, but any way that I can be helpful, I would like to be.

On the Black Hawk UH–60M, the procurement is down. I think the numbers are 72 to 59. Are you satisfied that you will have enough of those helicopters not only to equip, but also to train and maintain the skill sets of your pilots?

General LENNOX. Senator, I think that the key issue for us is that we are able to continue modernizing in this constrained fiscal environment. So the key for Black Hawk is to keep improving and keep replacing things like the body and the frame of the aircraft, and the UH–60M model does that.

So we are able to keep that going and hope to have a multiyear contract completed, I think, in the next several months that will allow us to keep producing the Black Hawks. They are performing phenomenally in combat. General Campbell can give firsthand experience.

Apache also, the Apache Block III is a question of first giving you enhanced capabilities and then also finally replacing the frame on that vehicle. We have flown these things to no end over the last 10 years, and we have tried to keep them up through reset, but now it is time to replace the frame and to actually get a long-term replacement.

So we have been able to continue that in our strategy, although at a lower level.

Senator BLUMENTHAL. Did you have anything you wanted to add, General Campbell?

General CAMPBELL. Sir, General Lennox was right on point. What I would add is just the courageousness of the pilots and the crews and the performance they have both in Afghanistan and Iraq in probably the hardest conditions that you can ever fly in, whether it is the weather or the terrain. They continue to perform superbly.

We are very, very fortunate. We need to continue to modernize the Black Hawks.

Senator BLUMENTHAL. Thank you.

General PHILLIPS. We have worked hard to sustain the multiyear procurement contract. So thanks for supporting us on that.

I would also add to what General Campbell just said, that there have been 5.1 million combat flight hours for Army aviation. Today, there are 569 aircraft in theater serving in combat operations in the most austere environment that General Campbell just described. It is remarkable what our aviation forces have done in this war in both Iraq and Afghanistan.

Senator BLUMENTHAL. The helicopter has performed well under very difficult conditions, matched by the courage and expertise of our pilots.

I have one more area, but my time has expired.

Senator LIEBERMAN. Senator Blumenthal, go right ahead.

Senator BLUMENTHAL. Thank you.

Senator LIEBERMAN. It is just you and me, and I am going to be here a while. [Laughter.]

Senator BLUMENTHAL. Thank you.

I wanted to ask about the Kiowa. You mentioned it in your testimony, General. I know that a decision will have to be made either to replace it or to use the Service Life Extension Program (SLEP). I wonder what is being done, in essence, to prepare the industry to adapt to your decision, which I guess will be made sometime in fiscal year 2013?

But are your industry partners being kept informed, and will they be prepared to adapt to whatever your decision is on that?

General PHILLIPS. Sir, we are quite excited about how industry has come back to the Army and expressed interest in the Armed Aerial Scout (AAS), as well as the Kiowa program, working with Bell and the potential to upgrade that aircraft or to go through a SLEP.

Last year, at the Army Aviation Association of America, I spoke to industry, and I will do that again here in about another 10 days. It wasn't too long ago that General Lennox and I were on a stage together, and we spoke to a host of industry partners here in Washington, DC, that were interested in this program as well. So we have gotten extraordinary feedback.

We think there is probably somewhere around six or seven industry partners that are interested in the AAS program. I will just quickly describe our way ahead. It is really twofold.

We are doing the Kiowa Warrior cockpit and sensor upgrade program today. That is going well, actually, working with Bell Helicopter. It is not a SLEP, though. It is not a formal SLEP.

It is simply putting in a new cockpit and sensor, which upgrades the capacity of the Kiowa and reduces weight. So we will continue that program.

At the same time, we expect an acquisition decision memo (ADM) from OSD around April 23 that will allow us to go forward with a formal AAS flight demonstration. That will occur sometime this summer within 4 months of receipt of the ADM from OSD.

Then shortly after that, we expect to have a DAB around April of next year. So it will be fiscal year 2013, sir. We will make a decision on whether we have a good enough solution with industry and what they can provide based upon the flight demonstration, or is the Kiowa Warrior SLEP good enough for us to go forward with?

I think our dual path strategy sets us on the right course, sir. Again, we are getting great feedback from industry.

Senator BLUMENTHAL. Great. Thank you very much.

Thank you, Mr. Chairman.

Senator LIEBERMAN. Thank you, Senator Blumenthal, for those important questions.

I just want to follow up on the Black Hawk. Am I correct that the Army is still committed to the full planned multiyear procurement buy of 511 aircraft, though the acquisition is down for this year?

General LENNOX. Senator, I would have to take for the record the exact number. We are committed to continue buying the Black Hawk beyond the program. So what we have done is just slip it to the right. We aren't going to stop at the end of the program.

[The information referred to follows:]

The Army is still committed to procure 511 UH–60M aircraft in the Multiyear Procurement VIII Contract. The contract is structured to procure 318 aircraft for the Army and 193 for the Navy.

Senator LIEBERMAN. Right. I appreciate your checking to confirm that that is the still the buy.

I was going to ask about the multiyear negotiations with Sikorsky, when you thought that would conclude. But what I heard you say, I think, is that it is going to be sometime in the next period of months?

General PHILLIPS. Senator, I think we sustain the multiyear. I will go back and check on that and make sure that we get you the correct response for the record.

[The information referred to follows:]

Currently, the Army is still committed to the full planned buy of 511 aircraft (318 Army/193 Navy) during the Multiyear Procurement VIII (MYP–8) Contract. The fiscal year 2013 budget was reduced by 12 aircraft, but the other years have increased accordingly. The Army still has a requirement for a total of 2,135 H–60 L/M aircraft and will continue to procure UH–60M aircraft through the 5-Year Defense Plan and beyond to meet those modernization requirements, 1,375 UH–60M and 760 UH–60L. The currently scheduled award date for the MYP–8 Contract is June 29, 2012.

General LENNOX. The funding is there, Senator, but I think they haven't resolved it yet. So I think it is within a matter of months.

Senator LIEBERMAN. Am I right that there are going to be certain price advantages for us, for the Army, for the Government, as a result of that?

General PHILLIPS. Yes, sir. We normally look for about a 10 percent advantage for going with a multiyear, and actually, Sikorsky and the president of Sikorsky have committed to at least a 10 percent savings, sir. That is good for the Army and good for our aviators and our soldiers.

Senator LIEBERMAN. Yes. That is what I had heard. I appreciated Senator Blumenthal's questions about the Kiowa potential replacement. Major General Ben Hodges was in Connecticut the other day and visited Sikorsky. I happened to be in the State. So I spent some time with him.

But it was also a first opportunity for me with him to get a briefing on the proposed aircraft at Sikorsky, other proposals that Sikorsky will make for what they call the Raider, the S–97 variant of their X2. It is a fascinating aircraft, and it will just be something to watch how it develops because it has a combination of capabilities. It is quite remarkable.

I wanted to go back and look a little bit more broadly based on the study that was done in 2010, the Decker-Wagner study, which was, as you remember, quite critical of Army acquisition programs, saying that since 2004, the Army had spent $3.3 billion to $3.8 billion annually on weapons programs that ultimately were canceled.

There was pretty critical language there. "The Army lacks a credible quantitative model and process for determining realistic, achievable requirements for modernization and recapitalization, given reduced budgets."

I put that into the record because I viewed the work that has been done over the last year, as we referred to the work that has been done under General Chiarelli, as a response to that report and to the general concern about the cost of the programs and the amount of money that was being spent for programs that didn't materialize.

So could you analyze the fiscal year 2013 request in the context of the Decker-Wagner criticisms and perhaps what I will generally refer to as the Chiarelli reforms? In other words, what did you do differently this time based on that experience and that report?

General PHILLIPS. Sir, I will from an acquisition perspective, and then I will let General Lennox and our partners join in. But we really used something that Congress gave us in terms of the Weap-

on Systems Acquisition Reform Act and the ability to execute configuration steering boards.

We in acquisition had the authority for the first time to sit with those that had the requirements and the resources. So all of us together, through the CPR process that you defined, sir, and the Configuration Steering Boards (CSB), could really look hard at everything from requirements generation to what we are bringing forward, all the way through to the acquisition strategy.

Through some very tough discussions in and among the Army family, we were able to come to closure on what requirements were. Do we have them right? Can we refine them? Do we have cost-informed trades? Do we have the right strategy? What did we no longer need that we can divest in terms of systems that might be in a given portfolio?

But we tied that together in a way that it really allowed us to make sure that we are buying what we should be buying and, at the same time, leveraging Decker-Wagner, which was a blueprint for us to improve. Really, we looked at all 76 findings, and we have already implemented about 42, which a part of that has been the CPRs and the CSBs being tied together.

It has been very positive for us, sir, and I think you see that reflected in the fiscal year 2013 budget.

Senator LIEBERMAN. That is great to hear. Anyone want to add? General Lennox?

General LENNOX. If I could? A precursor to that, sir, is that we lost about $2 billion in buying power from fiscal year 2012 to the fiscal year 2013 budget submission. From our plan, it was even higher than that.

If we did not have the portfolio review process, we would have really been awash, I think, and it is that portfolio review process that helped us prioritize what inside each portfolio was more important than the others.

General Campbell's job then is to give an independent prioritization for the Army, and what he helped us do is determine where we had to take those cuts. We ended up killing 8 programs and delaying almost 80 others not because of performance; some of those programs were performing well. It was a function of whether or not you could afford to do it and what priorities you had to give up in order to do this.

So I think the entire process you talked about, set in stage by General Chiarelli, continued by General Lloyd Austin, in this portfolio review look, is enabling us to help prioritize.

Senator LIEBERMAN. Either of you want to add anything?

General CAMPBELL. Sir, I was just going to add to what General Lennox said at the end there that when General Austin came onboard, the first thing he did was say, "Let us look at the CPR business and really take and work that." So we will continue with that. I think the discussions that we have as a group are very open, candid, and really looking hard toward the future. What General Walker and his unit does down in the Army Capabilities Integration Center is look out at the Army of 2020 and really determining where we need to go in the future. Combining that with the CPR business, it is going to give us the best solution in the end.

Senator LIEBERMAN. Good. General Walker?

General WALKER. Sir, I talked about a few of the requirements procedures we are doing differently. But specifically, with regard to Decker-Wagner, Training and Doctrine Command was asked to look at some areas specifically with regard to staffing on ways to speed up staffing processes requirements. So we did that.

We were asked to look at key performance parameters that were mandatory versus nonmandatory and the same thing for key system attributes and provide recommendations on how to quantify those to speed the process so they didn't get out of control. We were also asked to look at the threshold and objective key system attributes on policies we could establish about just using low-risk ones so we didn't invent things that were so risky because, I used the term before, it might defy the laws of physics and engineering.

We worked those responses in the Decker-Wagner recommendations up with DOD.

Senator LIEBERMAN. I appreciate that response because I think you took that report seriously. I know it is never possible to guarantee anything, but is it fair to say that you present this budget this year, for fiscal year 2013, with a sense of confidence that we are not going to be spending a lot of money on programs that are going to be canceled? I guess I would put it that directly.

General LENNOX. Senator, I think so. We have really only two transformative programs, I think, in our entire portfolio. One is the network.

Senator LIEBERMAN. Right.

General LENNOX. We have network evaluations designed to help us learn and iterate through that process. We are relying more on commercial off-the-shelf capabilities than leap-ahead technologies.

The other one is the GCV. Because we have put in a 7-year requirement there, we are not looking at miracles in terms of armoring and armoring capability. We are looking at what industry can do for us today.

Those are really our two big leap-ahead programs. Most of the rest of the Army's modernization portfolio involves incremental improvements. I do think we come with much more confidence this year to you, that I think our proposals are well-grounded, and there has been a lot of work done.

I don't want to tell you that we haven't made a mistake, but I think we are in better shape this year than we have been.

Senator LIEBERMAN. I must say in my 24 years here, no one has ever told me they haven't made a mistake.

Let me ask some general questions about the defense industrial base. The defense strategic guidance set it as a major tenet to protect the Nation's defense industrial base, which can be problematic at a time of diminishing budgets.

Specifically, DOD funding reductions for fiscal year 2013 have reduced, as we have said, Army's modernization investment accounts and acquisition strategy. I wanted to ask you, given that and the fact that we are going to continue to operate for some period of time in this resource-constrained environment, what, in your view, are the major risks, if any, to the defense industrial base?

General PHILLIPS. Senator Lieberman, I will start off and then turn it over to my colleagues.

As we look across all the portfolios, I think the one that we have to look hard at, and we are looking hard at, is the combat vehicle portfolio. When you look at the way the Army has made some great progress in the past of upgrading Bradleys and upgrading Abrams tanks and what that means in terms of not just the prime contractors, but also the sub-tier contractors.

We are worried about all portfolios. We are looking across all of them, whether it is thermal weapons sites, soldier systems, or tactical wheeled vehicles. But the one that rises to the top for me is combat vehicle portfolios.

I would add that we are a team with OSD as we look at sector-by-sector, tier-by-tier, and sub-tier contractors to figure out where the great risks are so we can work on the single points of failure to make sure that we sustain the important sub-tier vendors not only for combat vehicle portfolios, but for other systems as well.

General LENNOX. I think General Phillips has hit on it, Senator. These are tough choices for us, and if you cover down on something you don't need, are you then exposing another industry?

Senator LIEBERMAN. Yes. I agree. You can't do it all. So the challenge, of course, is to minimize risk. You can't eliminate it here.

Let me ask you, in that regard, to talk about what the logic is behind the Army's plans for 3- to 4-year production gaps for M1 Abrams tanks and the M2 Bradley fighting vehicles.

General LENNOX. Sir, the big one is that both the Abrams fleet, about 3.5 years in average age, because we have been able to reset the fleet as it has come out of Iraq, because we have produced and have been producing new vehicles, the Abrams fleet is very young. We have a very good strategy accepted by both the Guard and the Active Force to field with a two-variant fleet, and we have reached that objective.

Buying additional tanks is something that we deemed less important than investments in aviation, and investments in some of the other areas for the future. As you mentioned, it is a question of where do you want to take your risk? Because it is all risky.

In the case of the Bradley vehicle line, York, PA, and the Bradley plant there, we have tried to mitigate that in our fiscal year 2013 budget proposal by proposing to upgrade the M88A1 Hercules to an A2 variant. We think we may need that in the future not only for recovering tanks, but for the GCV. So we have attempted to mitigate that in fiscal year 2013.

Senator LIEBERMAN. You answered the next question, which is how do you deal with the potential loss of industrial capability or capacity associated with those two production gaps? Do you want to add anything to that, General Phillips?

General PHILLIPS. Sir, I would add just a couple of comments to the Joint Services Manufacturing Center, better known as Lima.

Senator LIEBERMAN. Right.

General PHILLIPS. Some of the things that we are working with General Dynamics (GD) is to better understand the sub-tier contractors that support the production at that facility. We know that there are about 790 or so workers that are there. Working with GD, we know that about 49 of those are very critical workers that are engineers that are involved in tooling and design and other aspects of engineering tasks.

There are another 439 or so that are manufacturing workers that are involved in welding of ballistic holes, understanding how to put classified armor on the Abrams, and being authorized to execute those tasks. There is a host of those as well.

Working with our international partners and working with GD, one thing that we want to do is leverage foreign military sales (FMS) as much as possible. There are no guarantees, but it looks more promising today than it did just several months ago in terms of countries like Egypt, Saudi Arabia, and others who have shown an interest in upgrading Abrams tanks or buying new Abrams tanks.

We are working hard to make sure that we can do everything possible to sustain the critical skills.

Senator LIEBERMAN. That is a great point and, obviously, very helpful, using FMS.

Let me ask you a last series of questions about reversibility because in the full committee's hearings on the budget for next year, in posture hearings, a number of the witnesses have described the concept of reversibility as enunciated in the defense strategic guidance.

What are the Army's specific objectives with regard to reversibility? How much of the force would the Army be able to reconstitute and in what amount of time if you were called upon to do that?

General Campbell, maybe that is a good place to start? Then General Walker as well.

General CAMPBELL. Yes, sir. Great question. The reversibility issue is key for us as we take down to 490,000, not knowing what we will face in the future, how do we raise that force back or grow the Army. So what we are looking at in reversibility is having policies and procedures in effect that we can put into place things now that will enable us to move forward that way.

Then expansibility would be actually growing the Army to meet that demand. I don't think we know exactly the number that we need to grow to, to be able to work that piece. We will continue to work that hard.

I think there are ways that we can enable ourselves to be in position to do that better, whether it is through having more officers in position. So cadre-type led organizations that can bring in new recruits because it is a lot easier to bring in a new recruit, to train him, as opposed to having a senior noncommissioned officer (NCO) or an officer. It takes more time to grow that.

We will be a little bit more officer or senior NCO heavy in some organizations. We have to continue to take a look at those types of policies, put those in place, and make sure that we can look for the future.

Senator LIEBERMAN. Thank you.

General Walker.

General WALKER. Sir, what I would like to add is that reversibility goes with expansibility. The idea being should the Nation need the Army to grow again, will we have the capacity to do that? So, in that context, reversibility for us becomes everything we invest in the Army now so that should the Nation call upon us, we can do that.

A couple of points I would like to highlight in that regard. One is the type of investment we need to do, it is all about readiness and investment in our people, and that is more than just equipment modernization, which we have talked about now, particularly in this environment.

We are taking a very broad look across doctrine, organization, and training. Yes, we still look at materiel, but aspects of leader development are huge, and our personnel policies and facilities that would help us do that. Perhaps most importantly we think is the investment in our mid-grade leaders so that should we have to expand, we can do that.

When we grew the Army a few years ago, we showed the ability to recruit about 15,000 soldiers a year, should we have to do that in the future.

But of course, if there are no captains and majors and sergeants with which those new recruits can form units around, we won't be able to expand. So a real holistic approach is critical, and investment in our mid-grade leaders is critical.

Senator LIEBERMAN. That is a really important point and one I have worried about. How do we not only invest in the mid-grade leaders, but sustain their involvement in the Army, their reenlistment in the kind of context we are going into?

General WALKER. I think one of the things Army leaders have really asked themselves is with our young leaders right now, who have had a lot of freedom of action, independence in combat, how are we going to keep them interested when we get them back from combat and put them in Fort Hood or Fort Benning or what have you?

Senator LIEBERMAN. Right. That is exactly my question.

General WALKER. Maybe I have the benefit of having kids who are serving. When I talk to them about it, the blinding flash to the obvious becomes that, "Dad, we didn't join the Army for a new piece of equipment, or we didn't join the Army for some newfangled technology or software. We joined it for the opportunity to lead soldiers." Those opportunities exist here.

Now our challenge in leader development is we talk about a leader development triad of training, education, and experience. We are real high on the experience right now. We have to rebalance as part of our investment strategy to pull up the education and training piece to balance that experience so we can take the Army forward.

Senator LIEBERMAN. You obviously did a good job at raising your children.

General WALKER. Their mother did well, sir.

Senator LIEBERMAN. I think you both did, I am sure.

Notwithstanding what your children said, and of course, I admire it, I want to now turn just briefly to those gadgets and to ask General Lennox and General Phillips how the Army is going to seek to incorporate the concept of reversibility into your modernization strategy?

General LENNOX. Senator, I have been thinking while my folks here at the table have been discussing leader development. What we have tried to lay out for senior leaders in the Army is where

are the best places to take risk? Where can you best take risk? If you guess wrong, then how challenging is it to recover?

For example, we have sustained our investment in things like attack helicopters. If you stop the line, it is incredibly challenging to build a new attack helicopter from scratch. We build the best ones in the world. We don't want to do that.

We did take risk on things like our tactical wheeled vehicles. We are going to ramp down the number of medium trucks, for example, that we are buying. We are going to reset our heavy fleet rather than buying new.

The Nation does this very well, and if we guess wrong, that is an area that we can ramp back up in. So it is that kind of calculus that we tried to set out for senior leaders, and I think we have been able to accomplish in the fiscal year 2013 proposal that we have taken risk in areas that we can recover from if we guess wrong.

General PHILLIPS. Sir, I would just add that the key for us is the industrial base, which is what General Lennox is discussing. If we want to double the production of any given system, whether it is a weapon or a vehicle or a tank or whatever it might be, do we have the capacity to actually expand and to meet those requirements?

So the industrial base becomes critical for us, sir.

Senator LIEBERMAN. I appreciate the answer. I appreciate your testimony. You have been very responsive. You are really an impressive group of leaders. We are lucky to have you serving our country, serving the Army.

I thank you for your testimony and for what you have had to say today and what you have done over the years.

The record of the hearing will be held open until this Friday, March 30th at 5:00 p.m., to allow Senators to submit additional statements or questions for our witnesses.

Gentlemen, we would be grateful if you would respond to any of those that the subcommittee members might submit as soon as possible.

The date for the markup has not been set yet, but it is probably sooner than later. So the sooner you can respond, the better.

Do you want to add anything, any of you, to the record?

General LENNOX. One more shot, if we could, just to thank you, Senator, for your patience, your support of Army modernization, and your service to the Nation.

Senator LIEBERMAN. That is not why I gave you one more opportunity to speak. [Laughter.]

But nonetheless, I appreciate it very much.

With that, the hearing is adjourned.

Thank you.

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR JOSEPH I. LIEBERMAN

ARMY SCIENCE AND TECHNOLOGY AND INVESTMENTS

1. Senator LIEBERMAN. General Lennox, the Army's science and technology (S&T) budget is down by approximately $600 million relative to last year's requested levels; of particular concern is the reduction in investments in combat vehicle research. I know that the Army vehicle modernization program is critically dependent on ad-

vanced technologies in armor, energy, power, and networks and communications. In general, what are your top areas of budget risk in the Army's S&T program?

General LENNOX. The fiscal year 2013 budget request submitted to Congress provides the correct levels of investment for the Army S&T enterprise. The Army S&T program request for Budget Activity (BA) 1–3 for fiscal year 2013 is $2.2 billion—a 3.2 percent, or $73 million, decrease from the Army's fiscal year 2012 request. BA3 programs decrease by $86 million, while BA1 and BA2 programs increase by $7 million and $6 million, respectively.

In fiscal year 2013, the Army is placing increased emphasis (and investment) on ground and aviation vehicle survivability, research in focal plane arrays, and alternative fuels for ground vehicles. Due to budgetary pressures, we will accept some greater risk (reducing funding) in lethality, unmanned/autonomous ground vehicles, and military engineering. We are not accepting greater risk in technology areas critical to Army vehicle modernization. Specifically, some of the areas of Army S&T with a reduced investment in fiscal year 2013 are:

(1) Lethality, including the delay of a laser ruggedization demonstration, reduction to 6.3 mortar lethality/precision efforts and a reduction in 6.3 investments in the Small Organic Precision Munition.
(2) Unmanned/autonomous ground vehicles, including the termination of Small Unit Unmanned Aerial Vehicle radar and the delay of tactical command and control for robotic technology demonstrations.
(3) Military engineering, including geospatial products for tactical units and military technologies for installations.

2. Senator LIEBERMAN. General Phillips, do you feel that the Army is adequately investing in military construction (MILCON) and sustainment of its laboratories and research and engineering centers?

General PHILLIPS. The Army laboratories and research, development, and engineering centers do not compete well with other priorities for MILCON funding, although many have benefitted from the Base Realignment and Closure, congressional earmarks, minor MILCON authority and the authority provided in section 219 of the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009. Making improvements to our infrastructure and facilities like this at the margins is not a long-term solution. The Army does not find that this is a sustainable model, and is currently undertaking a comprehensive review of its S&T infrastructure and facilities to quantify the most serious areas of concern and develop a priority list for needed repairs and upgrades.

3. Senator LIEBERMAN. General Phillips, I understand that the Army is working to optimize materiel development as a result of the Decker-Wagner report. While I applaud efforts to save money, I am concerned that recommendations involving the S&T community have not considered the full impacts on the ability of the Assistant Secretary of the Army (ASA) for Acquisition, Technology, and Logistics staff to manage S&T, or the impacts on Army Medical Command labs, Army Corps of Engineers labs, and other non-Army Materiel Command (AMC) Army organizations involved in S&T. Please comment on this effort to optimize and the recommendations that are currently under consideration.

General PHILLIPS. The Decker-Wagner Army Acquisition Review recommended the disestablishment of the Research, Development, and Engineering Command (RDECOM) because in the study group's view, RDECOM "has not added enough value to be continued." The Army did not concur with this assessment. RDECOM provides a valuable service by integrating research and development (R&D) efforts across different RDECOM Centers. Currently, the Army is studying how to optimize materiel development and sustainment efforts, to include research, across the Army acquisition and materiel communities. This study is considering how best to leverage the R&D headquarters to efficiently apply S&T across the community to solve critical Army problems. This effort, which is primarily focused on improving processes, is ongoing.

4. Senator LIEBERMAN. General Phillips, I understand that the Army staff is in the process of developing their recommendations for MILCON projects for fiscal year 2014 to fiscal year 2018. Over the past several years, the priority has rightfully been on meeting the needs of a growing Army and the needs of the warfighter in general. As a result, our research facilities took a back seat and are in need of upgrades to ensure they can support the needs of the future. Will you ensure that the fiscal year 2014 to fiscal year 2018 MILCON Program Objective Memorandum (POM) considers the needs of our laboratories and begins to recapitalize the Army's laboratory S&T infrastructure?

General PHILLIPS. The Army is committed to recapitalization of its laboratory/S&T infrastructure along with recapitalization of other critical facility types such as barracks, training ranges, industrial production facilities and Reserve component readiness centers. Fiscal year 2013 investments in laboratory infrastructure included two Army Material Command projects: a $47 million Flight Activity Facility at Lakehurst Naval Air Engineering Center, NJ; and a $10.2 million Ballistics Evaluation Center at Picatinny Arsenal, NJ.

Commands involved in Research, Development, Testing and Evaluation, to include the Army Materiel Command, the U.S. Army Medical Command, the U.S. Army Test and Evaluation Command, and the U.S. Army Corps of Engineers, have submitted requirements for recapitalization and modernization of their respective laboratory infrastructure throughout the United States. The Army is carefully reviewing these requirements, and the Commands' project prioritization, as they compete for funding against all of the Army's other facility recapitalization needs in the fiscal year 2014–2018 POM process.

FORCE STRUCTURE CHANGES

5. Senator LIEBERMAN. General Campbell and General Walker, the Army has been reassessing its modular armored and infantry brigade structures and will soon decide to add a third maneuver battalion (infantry or armor) to each. Under the Army's current modular design, armored and infantry brigades have only two maneuver battalions. The combination of end-strength reductions and adding a third maneuver battalion will likely drive manpower realignments that result in an additional reduction in the total number of Active Duty combat brigades. These reductions will be in addition to the 8 brigades reduction announced with the new Defense Strategic Guidance, and press reports suggest the reduction could be as many as 13 total or from 45 Active Army combat brigades down to 32. What are the Army's plans to reduce the current structure of 45 Active Duty Brigade Combat Teams (BCT) and to change the current mix of Armored, Infantry, or Stryker brigades?

General CAMPBELL and General WALKER. The Army announced during the fiscal year 2013 President's budget release that a minimum of 8 BCTs and other force structure totaling 57,400 would have to be reduced over the course of the 13–17 Future Years Defense Program to achieve the Active component end state of 490,000 by the end of fiscal year 2017. Additionally, the Army continues to assess the design and mix of BCTs based upon the lessons from the last 10 years of war. This analysis could lead to a decision to reorganize BCTs within the 490,000 Active component end strength, into more capable and robust formations, requiring further BCT reductions to increase overall versatility and agility for tomorrow's security challenges. Within its currently planned reduced end strength, the Army continues to assess the best mix and quantity of BCTs (Heavy, Infantry, Stryker, Airborne) required to provide the necessary mix of combat power and capabilities for projected future obligations. An announcement on specific force structure actions is expected sometime before, or in conjunction with, submission of the fiscal year 2014 President's budget in early February 2013.

6. Senator LIEBERMAN. General Campbell and General Walker, how will Army plans and execution of the reductions account for different equipment requirements?

General CAMPBELL and General WALKER. The Army continues to assess the best mix and quantity of BCTs (Heavy, Infantry, Stryker, Airborne) required to provide the optimal blend of combat power and capabilities for projected future obligations within its currently planned reduced end strength. The Army intends for the reorganization to be cost neutral to the extent possible, and so equipment inventories have been factored into recommendations on the quantity, as well as design, of the different types of brigades. The emerging force structure plans are being closely coordinated with the Army acquisition community to ensure impacts to modernization programs are identified and accounted for in transition timelines. Equipment requirement adjustments will be dependent on the specific force structure actions expected to be announced in conjunction with submission of the fiscal year 2014 President's budget in early February 2013.

7. Senator LIEBERMAN. General Campbell and General Walker, where is the Army in its analysis and decision process with respect to adding a third maneuver battalion to the Infantry and Armor brigades?

General CAMPBELL and General WALKER. The Army continues to assess the design and mix of BCTs based upon the lessons from the last 10 years of war. This

analysis could lead to a decision to reorganize BCTs within the 490,000 Active component end strength, into more capable and robust formations, requiring further BCT reductions in order to increase overall versatility and agility for tomorrow's security challenges. An announcement on specific force structure actions is expected sometime before, or in conjunction with, submission of the fiscal year 2014 President's budget in early February 2013.

8. Senator LIEBERMAN. General Campbell and General Walker, how would such a change enhance the Army's warfighting capabilities?

General CAMPBELL and General WALKER. Reorganized BCTs with a third maneuver battalion and an engineer battalion will be more capable; this will result in a more agile and versatile Army and BCTs that are properly resourced to meet mission requirements. This major transition for the Army involves shifting from a force focused on counterinsurgency, counterterrorism, and advising and assisting to one that actively prepares to effectively conduct a fuller range of potential missions. The reorganization preserves combat power by increasing the number of combat battalions in the force over the unreorganized BCT. The Army has conducted extensive analysis and has determined that this reorganization retains a sufficient number of more capable BCTs to meet the New Defense Strategy.

9. Senator LIEBERMAN. General Campbell and General Walker, when will the Army make a decision and announcement?

General CAMPBELL and General WALKER. An announcement on specific force structure actions is expected sometime before, or in conjunction with, submission of the fiscal year 2014 President's budget in early February 2013. The Army will develop a plan that will provide detailed information regarding the drawdown and address notification of affected congressional districts and Army installations prior to the decision going into effect.

10. Senator LIEBERMAN. General Campbell and General Walker, given that requirements assessment and development processes now include cost estimates, what are the Army's estimates of the potential incremental increase in costs to implement such a decision, particularly with respect to modernization and equipment distribution?

General CAMPBELL and General WALKER. The Army intends for the reorganization to be cost neutral to the extent possible. There may be some one-time costs to move equipment, move soldiers on Permanent Change of Station (PCS) orders, and provide appropriate facilities for larger formations. These costs are entirely dependent on the final stationing outcomes. Equipment modernization and distribution for the reorganized BCTs will occur in accordance with emerging Army priorities.

11. Senator LIEBERMAN. General Campbell and General Walker, given the capability that the current brigade structure has demonstrated in combat and the potential increase in costs to implement a major reorganization, what would be the basis for justifying the additional expense?

General CAMPBELL and General WALKER. Reorganized BCTs with a third maneuver battalion and an engineer battalion will be more capable; this will result in a more agile and versatile Army and BCTs that are properly resourced to meet mission requirements. The Army intends for the reorganization to be cost neutral to the extent possible. There may be some one-time costs to move equipment, move soldiers on PCS orders, and provide appropriate facilities for larger formations. These costs are entirely dependent on the final stationing outcomes. An announcement on specific force structure actions is expected sometime before, or in conjunction with, submission of the fiscal year 2014 President's budget in early February 2013.

12. Senator LIEBERMAN. General Campbell and General Walker, what factors would drive the urgency of such a change?

General CAMPBELL and General WALKER. The Army faces a more ambiguous future, one in which it must be prepared to fight and win major combat operations while potentially facing a wide range of other foundational missions. This major transition for the Army involves shifting from a force focused on counterinsurgency, counterterrorism, and advising and assisting to one that actively prepares to effectively conduct a fuller range of potential missions. These BCTs must possess the versatility necessary to meet demands across a very wide range of foundational missions. Now in 2012, our Nation's leaders are adopting a national strategy that states "forces will no longer be sized" for the types of operations conducted in Iraq and Afghanistan.

ARMED AERIAL SCOUT

13. Senator LIEBERMAN. General Lennox and General Phillips, a recent press report portrays the Army's Armed Aerial Scout (AAS) analysis of alternatives (AOA) as finished, submitted to the Office of the Secretary of Defense (OSD), and that it recommends updating the OH–58F Kiowa Warrior and teaming them with unmanned aerial vehicles (UAV). I understand, however, that the AOA is an interim product provided to OSD to inform an acquisition decision memorandum supporting a voluntary flight demonstration of existing helicopters with the potential—if effective, suitable, and affordable—to replace the Kiowa. What is the current status and plans for the AOA and the AAS program?

General LENNOX and General PHILLIPS. As a supplement to the completed AOA, the Army is conducting market research by releasing a Request for Information (RFI), conducting discussions with industry, and giving industry an opportunity to voluntarily demonstrate potential solutions to help determine what technologies are available from industry that may contribute to a potential material solution option. The Army does not intend to compare individual results from the voluntary flight demonstration against each other, but rather assess their capability against the capability gaps identified in the initial capabilities document and utilized for the AOA. The end state is to identify an affordable, achievable, moderate risk material solution option and requirements based on the current state of technology in the market. If the results of the voluntary flight demonstration(s) determine that a material solution option that delivers greater capability is not affordable, then the Army will consider pursuing a Service Life Extension Program of the Kiowa Warrior fleet. Affordability will be a major factor in the capabilities determination decision at the end of the market research effort.

14. Senator LIEBERMAN. General Campbell and General Walker, has the Army settled on what capabilities and requirements it wants in an AAS helicopter?

General CAMPBELL and General WALKER. There are no specific requirements for the AAS as we have yet to enter into a formal acquisition process. The July 2009 AAS Joint Requirements Oversight Council validated and approved the Initial Capabilities Document, identifying the capabilities being sought in a new Scout helicopter. Those capabilities included the ability to respond across a division area, able to operate with a combat load of Hellfire missiles or rockets, and 50 caliber weapons appropriate to the threat at a baseline environment of 6,000 feet and 95 degrees Fahrenheit.

On April 25, 2012, the Army received approval to release the AAS RFI soliciting input from industry regarding cost, production schedule and performance data for their armed Scout helicopter. The RFI describes the capability shortfalls listed in the 2009 AAS ICD that continue to exist in the Kiowa Warrior fleet with respect to speed, range, endurance, performance in high/hot conditions, and lethality. These capabilities are being used as the baseline in evaluating any potential armed Scout helicopter.

15. Senator LIEBERMAN. General Campbell and General Walker, with the proven capability of unmanned systems to conduct armed reconnaissance missions and the major investment the Army is making in the Kiowa Warrior fleet and other existing systems, has the Army definitively concluded that there is still a requirement for a manned armed reconnaissance type aircraft like the AAS?

General CAMPBELL and General WALKER. The AAS AOA clearly determined that unmanned aircraft are not yet fully capable of replacing manned aircraft in an armed reconnaissance role. The practice of teaming unmanned aircraft in a reconnaissance roll with either lightly armed Kiowa Warriors or more heavily armed Longbow Apaches has proven to be very effective in combat operations in Iraq and Afghanistan. Recent Combat Training Center rotations with the first Shadow-equipped Full Spectrum Combat Aviation Brigade continues to show the synergy achieved when teaming unmanned systems with manned systems. However, unmanned systems are extremely limited in every other mission required of an AAS, to include security of mounted and dismounted ground forces as well as close combat attack missions. Additionally, our unmanned systems have operated in Iraq and Afghanistan at altitudes out of the range of threats such as small arms, RPG, and hand-held IR guided missiles; however, they are very vulnerable to any modern threat employing radar guided air defense systems.

16. Senator LIEBERMAN. General Campbell and General Walker, could the armed reconnaissance capability be met with existing legacy upgrades and an unmanned system, and, if so, would a new developmental aircraft effort be needed at this time?

General CAMPBELL and General WALKER. The airframes in the current fleet of Kiowa Warriors are 40 years old. The Cockpit and Sensor Upgrade Program will modernize communications, navigation, and weapon processors to address obsolescence and safety issues in the Kiowa Warrior. However, these upgrades do not improve the performance of the Kiowa nor extend the service life of the aircraft, which is currently 2025. The ongoing research we are conducting with the AAS RFI and Voluntary Flight Demonstration will help determine if there is an affordable replacement to the Kiowa Warrior or whether we need to invest in extending its service life and improving the performance.

UH–60M BLACK HAWK

17. Senator LIEBERMAN. General Lennox and General Phillips, the justification for a multiyear procurement (MYP) for UH–60M helicopters was based on the production of 511 aircraft for the Army over 5 years. Last year's fiscal year 2012 budget request projected the procurement of 71 aircraft in fiscal year 2013, however, the actual fiscal year 2013 budget request received in Congress reduces the planned buy from 71 to 59. Is the Army still committed to the full planned buy of 511 aircraft?

General LENNOX and General PHILLIPS. The Army is still committed to procure 511 UH–60M aircraft in the MYP VIII Contract (MYP–8). The contract is structured to procure 318 aircraft for the Army and 193 for the Navy.

18. Senator LIEBERMAN. General Lennox and General Phillips, does the reduction of 12 aircraft in fiscal year 2013 have any impact on the UH–60M MYP such as cost per helicopter or total value of the MYP?

General LENNOX and General PHILLIPS. The MYP–8 contract is structured to provide flexibility each year to procure from 100 percent to 80 percent of the President's budget 2012 annual quantity without breaking the MYP–8 contract. The reduction of 12 aircraft in fiscal year 2013 is within this 80 percent boundary and therefore does not affect the contract. Prior to the final MYP–8 negotiation settlement, 82 Foreign Military Sales (FMS) were added to the contract which supplemented the base Army quantity, thereby offsetting any increased unit cost due to base quantity reductions.

19. Senator LIEBERMAN. General Lennox and General Phillips, is there any impact or risk to achieving the 10 percent savings projected in the MYP authority justification?

General LENNOX and General PHILLIPS. Based on completed negotiations of the Multi-Service MYP–8 contract, the risk is low for achieving the projected 10 percent savings. Substantial savings will be achieved during the MYP–8 timeframe based on savings realized during negotiations and through the realization of FMS aircraft prior to negotiations, which allow an offset to increasing unit costs should the base quantity decrease due to budget reductions.

IMPROVED TURBINE ENGINE PROGRAM

20. Senator LIEBERMAN. General Lennox and General Phillips, the Army Improved Turbine Engine Program (ITEP) envisions a more fuel efficient and powerful engine for the UH–60 Black Hawk and AH–64 Apache helicopter fleet. Please describe the Army's development and acquisition strategy for the ITEP.

General LENNOX and General PHILLIPS. The ITEP will be initiated with a Materiel Development Decision planned in the fourth quarter of fiscal year 2012. Contract award is planned to two competitors for the design, development, and qualification effort. A competitive down select to a single vendor will be made following qualification and testing for Low-Rate Initial Production (LRIP). After the completion of LRIP, a sole source contract will be awarded for the Full Rate Production.

Two additional contracts will be awarded to Sikorsky, manufacturer of the Black Hawk, and Boeing, manufacturer of the Apache, for Airframe Integration and Qualification of the ITEP engine.

21. Senator LIEBERMAN. General Lennox and General Phillips, will there be competitive prototyping for this program through a technology demonstration phase and into an engineering, manufacturing, and development phase?

General LENNOX and General PHILLIPS. Yes. Currently the competition involves two contractors, General Electric-Aviation and Advance Turbine Engine Company (a joint venture between Pratt & Whitney and Honeywell), developing demonstrator engines during a S&T program through the Army Aviation and Applied Technology

Directorate, Fort Eustis, VA. The S&T program is expected to culminate with component technology being demonstrated at Technology Readiness Level, level 6. The Improved Turbine Engine Program intends to leverage results of the S&T program and continue competition through engineering, manufacturing, and development.

SMALL ARMS/CARBINE PROCUREMENT

22. Senator LIEBERMAN. General Lennox and General Phillips, over the years there have been many assertions that the Army's current basic rifle and carbine should be replaced. The Army has started a phased approach to a competition for a potential carbine replacement. Please outline the Army's current plan regarding the individual carbine (IC) competition.

General LENNOX and General PHILLIPS. The IC competition consists of a three-phase down-selection approach that will result in the selection of a single weapon. Upon completion of the IC competition, the Army will conduct a Business Case Assessment (BCA) that will determine whether the Army will procure a new IC or stay with the M4A1. The competition is currently in progress:

a. Solicitation period began in June 2011 and closed in October 2011.
b. Phase I of the IC competition, which began in October 2011, is complete.
c. Phase II is scheduled to begin in May 2012. Phase II, a down-select evaluation, will result in up to three competitors remaining in the competition and is scheduled to conclude in October 2012.
d. Phase III begins in the second quarter of fiscal year 2013 and concludes in the fourth quarter of fiscal year 2013. A BCA of the successful IC candidate occurs at the end of Phase III and the results will inform the Army leadership decision of proceeding with the IC or the M4A1 in the first quarter of fiscal year 2014. Pending the results of the BCA, a Milestone C decision will be made at the end of the first quarter of fiscal year 2014.

The decision to procure the IC or remain with the M4A1 will be followed by a decision concerning the mixed fleet of weapons and quantities which the Army will sustain.

23. Senator LIEBERMAN. General Lennox and General Phillips, how has the current M4 carbine performed in theater?

General LENNOX. The M4 Carbine has performed exceptionally well in theater with almost 95 percent of our soldiers approving of its performance. It exceeds standards for reliability and lethality by 200 percent to 300 percent. There have been over 60 modifications to the M4 since 2001 which further enhance its reliability, maintainability, and performance. The base design of the weapon and the modifications to it make the M4 an extremely lethal instrument for our soldiers.

General PHILLIPS. The M4 Carbine has performed very well in theater. It meets or exceeds standards for reliability and lethality as our soldiers' individual weapon. There are several modifications that are being applied to the M4 which enhance its reliability, maintainability, and performance. These modifications improve an individual weapon that is already considered one of the best in the world.

24. Senator LIEBERMAN. General Lennox and General Phillips, in your view, is there a clear requirement for a new IC?

General LENNOX and General PHILLIPS. The Army has an approved requirement for an IC which provides the basis for conducting the IC competition. The purpose of the competition is to identify the best carbine that industry has to offer. The single best of the competition will be compared with our current individual weapon and a business case analysis will determine if the competitive winner is significantly better and would justify the expense of replacing the Army's current carbine.

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QUESTIONS SUBMITTED BY SENATOR SCOTT P. BROWN

IMPACT OF PERSONNEL REDUCTIONS ON STRATEGY AND READINESS

25. Senator BROWN. General Campbell, the President's new defense guidance has abandoned the national security goal of having enough forces to be successful in two major regional conflicts. In a time of reduced defense budgets, it has been replaced by a plan for enough forces to conduct a combined arms campaign, including securing territory and populations and facilitating a transition to stable governance on a small scale for a limited period using standing forces and, if necessary, for an extended period with mobilized forces. The forces under the new plan are also theoretically able to simultaneously deny objectives of an opportunistic aggressor in a

second region. How will the proposed end strength reductions for the Army support this new strategy?

General CAMPBELL. The Army will implement the new defense guidance while effecting end-strength reductions. While we reduce our presence in Afghanistan and decrease force structure, we will train contingency forces for a broad range of missions. We will use a progressive force generation model to monitor and resource readiness, ensuring units are ready for unified land operations to meet conventional and hybrid threats in support of combatant commanders' needs. The Army will rely on Reserve component forces to surge for major contingencies and maintain the proper deployed/home-station balance for the Total Army. We will also ensure the Army capitalizes on the investments of the past decade—Intelligence, Surveillance, and Reconnaissance capabilities, Special Operations Forces, and leader development to support the new strategy, as we decrease the Army's end-strength. Investment in readiness and reliance on Reserve component forces will allow the Army of 2020 to quickly expand, if necessary, while remaining flexible and able to meet requirements and support long duration operations.

26. Senator BROWN. General Campbell, what planning factors did the Army use to support this assessment?

General CAMPBELL. The Army uses a combination of factors when planning the use of forces: war plans, approved Defense Planning Scenarios in conjunction with the Joint Staff, and known and projected steady-state activities. These ranges of force demands are used in conjunction with force structure and end strength analysis to help the Army and senior leaders determine the risk associated with any course of action.

27. Senator BROWN. General Campbell, will the proposed force structure allow the Army to meet its goal for a dwell period of 2 years at home for every year deployed?

General CAMPBELL. The proposed force structure will allow the Army to meet our Boots-on-the-Ground (BOG):Dwell goals. Attaining sufficient dwell time is critical to ensure the progressive readiness of a unit before it is prepared to deploy again. The Army will achieve a 1:2 BOG:Dwell for Active units and 1:4 BOG:Dwell for Reserve units in 2015. This is predicated upon a balanced requirement to reduce force structure and end strength while simultaneously returning forces from Afghanistan. Dwell time will increase, and readiness will increase for the range of potential future contingencies. Reductions beyond 490,000, however, will challenge the Army's ability to meet timelines for current, identified requirements and to maintain necessary dwell for units and soldiers, thereby imposing a significant readiness risk to the force and strategic risk to the Nation.

28. Senator BROWN. General Campbell, the current unit readiness reports for the Army still reflect the impact of 10 years of sustained deployments. How will the reduction in personnel affect the current unit readiness of the Army's combat units?

General CAMPBELL. The Army will carefully balance capability and risk as we size the force to meet national security demands when challenges arise. With the directed drawdown of Army end strength, our ability to provide future forces is heavily dependent upon how we source units in accordance with Army's prioritiesresourcing and prioritization must be synchronized. We intend to focus on addressing readiness across all of our formations while decreasing the Army's end strength, still maintaining expertise and leader competencies as well as retaining the ability to regenerate the force and expanding to meet large demands, if necessary.

29. Senator BROWN. General Campbell, what do you consider to be an acceptable level of current unit readiness in order to meet the force generation requirements of the updated strategy?

General CAMPBELL. An acceptable level of unit readiness is the level which allows Army units to respond to the needs of the Nation. Under the Army's force generation model, units progress through training events over time, meeting established aim points that ensure their readiness peaks in the year of execution. The Army uses this training model to monitor and resource readiness, ensuring every unit is ready to perform the full range of operations from humanitarian assistance to combat operations. The readiness focus of our force generation model allows the Army to prepare its forces to meet the new security strategy and any emerging threats facing our Nation.

30. Senator BROWN. General Campbell, what are your most urgent requirements in order to restore current unit readiness in the Army back to acceptable levels?

General CAMPBELL. The demand from 11 years of conflict in Iraq and Afghanistan has stressed the Army and its core competencies. Repeated deployments have significantly impacted the core readiness of the three components of unit readiness—Manning, Training, and Equipping.

1. Manning. The Army will require sustained Overseas Contingency Operations (OCO) funding through fiscal year 2017 to ensure manning levels are commensurate with our drawdown objective of approximately 490,000 soldiers by fiscal year 2017. Any premature or accelerated funding reduction below 490,000 without OCO funding will jeopardize the Army's ability to meet combatant commander operational requirements.
2. Training. Soldier dwell time and training resources are critical to allow commanders to train units to execute Unified Land Operations (ULO) and Decisive Action (DA) in order to rebuild core Army competencies. Eleven years of sustained counterinsurgency (COIN) and stability operations have eroded the Army's ability to train on the full suite of our core competencies.
3. Equipment. The Army forecasts a need for reset operations to continue for several years following the end of Operation New Dawn and Operation Enduring Freedom. The reset phase of Army Force Generation (ARFORGEN) is critical to ensure equipment is refitted, redistributed, and/or fielded as new equipment to units. This will require OCO funding for at least 2 to 3 years upon retrograde of equipment from the U.S. Central Command theater assuming no additional or unforeseen major contingency operations.

31. Senator BROWN. General Campbell, what measurements or assessments will you use to determine whether there is a trend towards a hollow force? Please provide your definition of hollow force with your answer.

General CAMPBELL. The Army will use personnel readiness metrics that measure our ability to man units based on available Army inventory. We'll also measure our ability to recruit and assess the number of quality soldiers needed each year, including metrics to measure retention rates of soldiers that decide to remain Army strong. A balanced force maintains a proportional distribution of available resources against three equally important components: manpower, modernization, and readiness. A hollow force occurs when decisions are made that take a disproportionate share of resources from one or more of those components, or that take too many resources too quickly so that reductions are forced at a pace not maintaining force readiness. One key to remaining in balance and avoiding hollowing the force is ensuring the resources to continue leader development, modernization, and readiness.

REDUCTION OF BRIGADE COMBAT TEAM

32. Senator BROWN. General Lennox, the Army's reduction of at least 13 BCTs will affect a number of military bases overseas and domestically. Which bases will be impacted and to what extent?

General LENNOX. The Army announced during the fiscal year 2013 President's budget release that initially 2 brigades in Europe would be inactivated to achieve the Active component end state of 490,000 by the end of fiscal year 2017. The Army continues to assess the design and mix of BCTs based upon the lessons from the last 10 years of war. This analysis could lead to a decision to reorganize BCTs, within the 490,000 Active component end strength, into more capable and robust formations, requiring further BCT reductions in order to increase overall versatility and agility for tomorrow's security challenges. An announcement on specific force structure actions is expected sometime before, or in conjunction with, submission of the fiscal year 2014 President's budget in early February 2013.

33. Senator BROWN. General Lennox, what analysis went into the determination of bases to be impacted?

General LENNOX. The Army considers a broad array of criteria when assessing which forces and which installations will be impacted by inactivations. Criteria will be based on strategic considerations, operational effectiveness, geographic distribution, cost and the ability to meet statutory requirements.

- Strategic considerations: aligns Army force structure to the new defense strategy and forthcoming Defense Planning Guidance with a priority on the Pacific region.
- Operational considerations: seeks to maximize training facilities, deployment infrastructure and facilities to support the well-being of soldiers and their families, and aligns appropriate oversight/leadership by senior Army headquarters for better command and control.

- Geographic distribution: seeks to distribute units in the United States to preserve a broad base of support and linkage to the American people.
- Cost: considers the impacts of military personnel, equipment, MILCON, and transportation costs.
- Statutory requirements: complies with the provisions of the National Environmental Policy Act as appropriate, including an environmental and socio-economic analysis.

34. Senator BROWN. General Lennox, will you have excess infrastructure and bases as a result of the reduction in forces?

General LENNOX. The Army considers a broad array of criteria when assessing which forces and which installations will be impacted by inactivations. This criterion includes consideration of geographic distribution of forces and availability of training facilities, deployment infrastructure, and other facilities to support the well-being of soldiers and their families.

[Whereupon, at 5:09 p.m., the subcommittee adjourned.]

# DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 2013 AND THE FUTURE YEARS DEFENSE PROGRAM

**TUESDAY, MAY 8, 2012**

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

## TACTICAL AIRCRAFT PROGRAMS

The subcommittee met, pursuant to notice, at 3:07 p.m. in room SR–232A, Russell Senate Office Building, Senator Joseph I. Lieberman (chairman of the subcommittee) presiding.

Committee members present: Senators Lieberman, Blumenthal, and Brown.

Majority staff member present: Creighton Greene, professional staff member.

Minority staff members present: Bryan D. Parker, minority investigative counsel; and Christopher J. Paul, professional staff member.

Staff assistant present: Brian F. Sebold.

Committee members' assistants present: Brian Burton, assistant to Senator Lieberman; Lenwood Landrum, assistant to Senator Sessions; Clyde Taylor IV, assistant to Senator Chambliss; and Charles Prosch, assistant to Senator Brown.

### OPENING STATEMENT OF SENATOR JOSEPH I. LIEBERMAN, CHAIRMAN

Senator LIEBERMAN. Good afternoon. The subcommittee meeting will come to order.

I want to extend a welcome and thanks to each of our witnesses for being here today.

On behalf of the subcommittee, I want to thank each of you who represent the men and women of our Armed Forces for the exceptional job as a force all of them and you are doing around the world today. I want you to know that we keep all those who are serving now in our thoughts and prayers and remember that both they and their families are serving and sacrificing every day.

In some sense, it is actually against this backdrop of wonderful service that we meet today to discuss the present status and future of tactical aviation programs. Every year, we are challenged to make decisions balancing a number of competing demands for re-

sources, including resources for current operations and investment in future modernization. But ultimately the number one standard has to be what is best for our troops, what is best for the men and women in uniform.

Central to our discussion today is the F–35 Joint Strike Fighter (JSF) program. Obviously, we all know it is an important program. It has been central to the long-term modernization plans for the Air Force, Navy, and Marine Corps for more than 15 years now. Any perturbation in the cost schedule and performance of the JSF program sends shock waves through the Department of Defense (DOD) and well beyond and, of course, raises questions about whether we can achieve the balance that I just described between the demands of maintaining readiness in the near term and those of modernizing for tomorrow.

We are going to examine a number of issues today but primarily we want to understand how DOD has defined a new baseline for the JSF program since last year, how the Services are responding to the additional delays in the JSF program, and what effects those delays may have on our Armed Forces. We look forward to hearing what DOD has found in various reviews of the JSF program after the Nunn-McCurdy certification 2 years ago, what actions DOD has taken to ameliorate the problems that it found in the program, and what levels of risk remain in the development and fielding of the program since DOD conducted a technical baseline review and announced additional delays in production since last year's budget request.

The delays in the F–35 program have led to worrisome developments for the future of tactical aviation programs, particularly in terms of having the numbers of aircraft we need to keep from hollowing out our tactical aviation forces. We have been following your progress in trying to mitigate or close those gaps, and I will have some questions about that as well.

For example, the Navy has been attempting to reduce the strike fighter shortfall to manageable levels. Four years ago, the Navy was estimating that we would be facing a shortfall in 2017 that optimistically would amount to 125 tactical fighters needed to outfit our 10 aircraft carrier wings and 3 Marine Corps air wings. Three years ago, based on further analysis, the Navy was estimating that the maximum shortfall could be nearly twice that large or roughly 250 aircraft. Since last year, the Navy's estimate of the problem has been more stable, fortunately. The Navy believes that with certain actions, such as reducing squadron size, conducting service life extension programs (SLEP) on some aircraft, and reducing the time aircraft spend in the depots, they could reduce gaps to roughly 50 to 60 aircraft, which is encouraging.

Unfortunately, there has been a similar story regarding the Air Force. Previous Air Force witnesses at our aviation hearings have also projected a potential shortfall of Air Force tactical fighters in excess of 800 aircraft by 2025. This year, the Air Force, as a part of the New Defense Strategy, has planned to reduce fighter force structure. It is not clear to me, at least, to what extent this change in demand for tactical fighters has actually ameliorated the shortfall that the Air Force has been projecting, but I hope to hear more about that this afternoon.

Last year, the Air Force was also investigating ways to extend the service lives of A–10, F–15, and F–16 aircraft to help mitigate the gap between requirements and aircraft that it foresees. This year, we see that the Air Force wants to retire roughly one-third of the A–10s and conduct a SLEP on some of the F–16 fleet. I would like to ask about that too.

We would also like to get an update on the F–22 life support and hypoxia problems, including a brief description of what the Air Force has done about these problems, what it has concluded in its own investigation of these problems, and what action that you are taking, have taken, or will take to minimize the risk to F–22 crews. That takes me back to the beginning, which is to make sure we give our fighting forces the safest, most effective military equipment systems we can.

So we have a lot to cover this afternoon, and I thank the three of you very much for being here.

I would now call on the ranking member of this subcommittee with whom I have worked very closely and productively across party lines because on this subcommittee or in the committee generally, they really do not exist. Senator Scott Brown of Massachusetts.

**STATEMENT OF SENATOR SCOTT P. BROWN**

Senator BROWN. Thank you, Mr. Chairman.

I want to thank all of our witnesses as well.

I am not going to reiterate the very relevant and valid points that you made, but I do want to focus on, obviously, the JSF program and the increases that we have seen since its inception. It is slated to receive billions of dollars per year over the next 2 to 3 decades. Quite frankly, that is unprecedented for a single tactical aviation program. So I am concerned, as many others are, about the disconnect between how many F–35 jets DOD has signed on for and the lack of the program's progress in developing and testing. Why should we keep purchasing the jets when we fail to test them? As we know all about the overruns and cost problems, I want to make sure we can touch on that a little bit.

On readiness, we learned DOD estimated that the cost of owning and operating the JSF could amount to about $1.1 trillion over its life cycle. I know DOD is trying to drive down the costs. That is obviously a good thing.

The F–22 Raptor, while capable when it does fly, costs about $1 billion each year just to operate, and that is unprecedented as well. I am hopeful that General Wolfenbarger could address that.

On the F–22, the problems you just referenced, Mr. Chairman, the unexplained physiological incidents which caused the Air Force to stop flying for nearly 6 months and pilots who have refused to fly because of questions of safety. I am hopeful that, ma'am, you can also address those very real issues.

On the strike fighter shortfall, while your testimony states that the JSF shortfall for the Navy and Air Force is manageable, the 2013 budget proposes additional cuts to the tactical air (TACAIR) forces in the Navy, Marine Corps, and Air Force. The witnesses, I would hope, would comment on these cuts and the effect they will have on the strike fighter shortfall.

Then we all know the big gorilla in the room is sequestration, and we know what the Secretary of Defense has said about it. I am hopeful that our witnesses can provide us with their assessment of how these cuts would affect our TACAIR forces and military strength.

Thank you, Mr. Chairman.

Senator LIEBERMAN. Thank you, Senator Brown.

We will begin with Vice Admiral David J. Venlet of the U.S. Navy, Program Executive Officer of the F–35 Lightning II Program. Thanks very much for being here.

**STATEMENT OF VADM DAVID J. VENLET, USN, PROGRAM EXECUTIVE OFFICER, F–35 LIGHTNING II PROGRAM**

Admiral VENLET. Thank you, sir. Chairman Lieberman, Ranking Member Brown, and distinguished members of the subcommittee, thank you for inviting me to discuss the F–35 JSF.

My observations and assessments over the past year give me reason to believe the basic aircraft and engine designs are sound and will deliver. Schedule and resource adjustments that have been made to the remaining development program underpin a realistic plan to deliver the required capability.

While there is still risk in the program, it is risk-balanced rather than low risk. I have confidence in the resilience of the plan to absorb expected further learning, discovery, and stay on track.

There has been very good engine and airframe contractor responsiveness and progress in many areas over the last year. Short takeoff and vertical landing (STOVL) flight tests exceeded plans and expectations and completed a highly successful initial sea trial aboard the USS *Wasp*. In addition to the impressive stability, control, and performance of the STOVL in slow flight and vertical landing, the F–35 has flown to its maximum speed and hardest turn limits. Carrier test pilots are highly complimentary of the carrier version handling characteristics, flying precise carrier approaches at Patuxent River, MD. It is a testimony to the very effective and impressive marriage of engine and airframe.

Software development, coupled with flight test execution, will remain the major focus of program execution in the coming year and through the completion of the development program.

I have observed performance by industry on software that gives me some concern about delivering full capability within the current schedule without improvement in performance. I will continue to closely examine progress and seek the changes needed to gain the required performance. I have a solid program baseline. It ensures the program has the resources, tools, and processes in place to make proactive, disciplined decisions regarding the development and delivery of incremental capabilities to the F–35 fleet. However, industry must understand that this new schedule, with all of the margin and realism, will not execute itself. A rededication to the characteristics of systems engineering fundamentals is crucial, and I continue to speak bluntly to industry on this issue.

Concurrency is a transient issue that the program is dealing with right now but which will lessen over time. I recognize DOD would prefer to not be in this highly concurrent program situation. It is

now my responsibility to navigate through this and deliver the most capable aircraft at the best price.

I believe the procurement strategy for low-rate initial production (LRIP) 6 and 7 will allow DOD to control production quantity based on the performance of the development program. It is important that Lockheed Martin performs dependably and sustains confidence that the F–35 is a stable and capable platform.

As in any complex development program, there are challenges, but I believe the enhanced capability of the JSF will provide the backbone of U.S. air combat superiority for years to come. The program's management over the past year has put in place the right fundamentals and realistic plans using sound systems engineering processes. I am monitoring tracking performance with detailed metrics.

Technical and cost issues certainly exist. The helmet system has three critical characteristics that need to demonstrate fixes. The carrier hook system, electronic warfare antenna quality, and buffet loads in flight are all being worked. There are leading program issues that occupy my focus for 2012, the critical and significant few that, if successfully advanced, will bring beneficial tailwind for the entire program and genuine value for DOD and our partner nations.

These leading issues are: one, software development performance and its dependable delivery of capability; two, concurrency change incorporation improvement and delivery of affordable full-life jets; three, production quality and its ultimate result on affordable price for the United States and our allies; and four, continued sustainment estimate cost reduction.

All of these have a common fundamental that will advance the external result in performance and keep reality clearly in view. Systems-based analysis and corrective action with a specific eye on impacts to early fleet training operations will be required in steady and committed execution throughout the industry team, primes, and suppliers. Rigorous management control by the Joint Program Office (JPO), supported by the service systems commands, will be applied with the development, dial-on production, and focus on affordable delivery capability, our only meaningful external result.

I look forward to your questions, sir.

[The prepared statement of Admiral Venlet follows:]

PREPARED STATEMENT BY VADM DAVID J. VENLET, USN

Chairman Lieberman, Ranking Member Brown, and distinguished members of the subcommittee. Thank you for the opportunity to address this subcommittee regarding the Joint Strike Fighter (JSF).

The JSF is the Department of Defense's (DOD) largest acquisition program, and its importance to our national security is immense. The JSF will form the backbone of U.S. air combat superiority for generations to come. It will replace the legacy tactical fighter fleets of the Air Force, Navy, and Marine Corps with a dominant, multirole, fifth-generation aircraft, capable of projecting U.S. power and deterring potential adversaries. Furthermore, the JSF will effectively perform missions across the full spectrum of combat operations. For our international partners and foreign military sales customers who are participating in the program, the JSF will become a linchpin for future coalition operations and will help to close a crucial capability gap that will enhance the strength of our security alliances.

The multirole F–35 is the centerpiece of DOD's future precision attack capability. The JSF is designed to penetrate air defenses and deliver a wide range of precision munitions. This modern, fifth-generation aircraft brings the added benefit of in-

creased allied interoperability and cost-sharing across Services and partner nations. The fiscal year 2013 budget includes $9.3 billion for continued system development, test and procurement of 29 F–35 aircraft.

It is our duty to produce the next generation fighter jet for the United States and our and allies, understanding that we live in a resource constrained world. Holding fast to the three pillars I embraced when I joined the JSF team—a commitment to fundamentals, a firm grasp on reality, and transparency in all we do—remains key to the successful completion of development, and delivery of critical capability.

PROGRAM ACCOMPLISHMENTS IN THE LAST YEAR

The F–35 program team achieved a number of accomplishments over the past year, including the delivery of 13 aircraft, 4 test aircraft to test bases and the first 9 production jets to Eglin Air Force Base. The F–35B sea trials conducted on the USS *Wasp* marked a high point in the year. The F–35B conducted 72 vertical landings and short take-offs while exhibiting aircraft handling performance that met all expected standards. The program completed F–35C static structural testing and improved the schedule and cost performance of assembled wings and forward fuselage deliveries to the production line mate station. The F–35C conducted ship suitability events at Lakehurst, conducting 65 catapult launches, including 1 on the new Navy Electromagnetic Aircraft Launch System (EMALS). The production F–35A has started local area flights at Eglin AFB.

In January 2011, Secretary Gates placed the F–35B on "probation" because of the existence of several unique short takeoff and vertical landing (STOVL) aircraft design issues. All F–35B test issues in view now are comparable to those being encountered with the other F–35 variants and there is no reason at this point to single out the F–35B. Secretary Panetta made the decision to remove STOVL from probation on January 20, 2012.

An Operational Assessment released in the fall of 2011 expressed concern about the risk associated with several design issues that had surfaced during the F–35 JSF test program. After the F–35 Operational Assessment was released in October 2011, the acting Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) commissioned a Quick Look Review (QLR) of the F–35 program. The review found that, while the overall F–35 design is sound, there is significant risk remaining in the program. Resolving key technical issues is important to address concerns about the F–35's operational capabilities and to having confidence in the design so that production rates can be increased. The Department used the result of the QLR to inform the fiscal year 2013 Future Years Defense Program, which holds U.S. production at 29 per year through 2014 to reduce concurrency and permit additional progress on the test program before increasing production. The technical issues are all being addressed in the restructured System Development and Demonstration (SDD) phase of the F–35 program.

The original MS B, approved in October 2001, was rescinded following a critical Nunn-McCurdy breach in March 2010. The Defense Acquisition Board reviewed the F–35 development, production, and sustainment technical status and cost estimates in February 2012 and on March 28, 2012, the Office of USD(AT&L) signed an Acquisition Decision Memorandum that officially recertified the program and granted MS B approval.

INTERNATIONAL PARTNERSHIP

The F–35 program continues to be DOD's largest cooperative program, with eight Partner countries participating under Memorandums of Understanding for SDD and for Production, Sustainment and Follow-on Development. The eight partner countries include the United Kingdom, Italy, The Netherlands, Turkey, Canada, Australia, Denmark, and Norway. The partners recently met and all expressed their continued commitment and support for the program.

In October 2010, Israel signed a letter of agreement to purchase 19 F–35A aircraft for $2.75 billion, with deliveries scheduled to begin in 2016. In December 2011, Japan selected F–35 using a competitive process. Japan signed a $6 million agreement to conduct F–35 studies on February 1, 2012. Japan is expected to sign an agreement to purchase the first 4 of a planned acquisition of 42 conventional takeoff and landing (CTOL) aircraft in the summer of 2012. Deliveries will begin in 2016. On January 20, 2012, the Republic of Korea released a competitive request for proposal for acquisition of its future fighter. The F–35 team is developing a proposal that will be delivered in June 2012.

DEVELOPMENT PROGRAM RESTRUCTURE

The F–35 development program has been replanned and is now resourced with realistic planning factors to complete the required Block 3 capability testing by the end of 2016. Key activities that created the replan include the development of an integrated master schedule (IMS), execution of a Schedule Risk Assessment, and completion of the Integrated Baseline Review. These efforts incorporated the 2010 Technical Baseline Review's recommendations including revised flight test rates, longer software development spans, new systems engineering processes, and reestablished technical performance measurement. This plan provides the time and resources realistically required for the development program to deliver Block 3 capabilities.

F–35 SDD flight test program exceeded overall test point and flight goals in 2011. The overall test point progress was 7 percent above the 2011 plan. The Integrated Test Force (ITF) achieved 972 test flights, a 137 percent increase from the total flights in 2010. The ITF also executed 7,823 unique test points, a 93 percent increase from that achieved in 2010.

Key 2011 achievements included the completion of F–35A and F–35B flight science testing to support the Block 1 Training envelope; the accomplishment in 2011 of 268 F–35B vertical landings, 395 short takeoffs and 156 slow landings; the completion of the first F–35B ship trials aboard USS *Wasp*; initial land based F–35C ship suitability testing, consisting of jet blast deflector testing and catapult Structural Survey and Steam Ingestion testing; the first test of the F–35C launched by the Electromagnetic Aircraft Launch System (EMALS); completion of radar cross section baseline testing on 3 aircraft and the completion of Block 1A mission systems maturity testing. The 2012 F–35 flight test plan calls for the execution of 1,001 flights and 7,873 test points and we are currently ahead of plan on all fronts. We expect to see this high level of performance continue through 2012.

Pratt & Whitney F135 engines have completed a total of 21,857 operating hours, 9,106 hours on flight-test and production engines, and a total of 2,908 hours of flying time on all three variants of F–35 aircraft."

Pratt and Whitney is currently supporting flight test on all three variants at three locations. Based on the total F–35 program restructure, the Pratt and Whitney contract is being adjusted to support the extended ground and flight testing required to complete SDD and to resource the resolution of integration issues currently in view.

In 2011, Pratt and Whitney F135 engines helped flight test exceed all goals. Various engine "firsts" were also achieved including a maximum speed demonstration (1.6 Mach).

PRODUCTION PROGRAM RESTRUCTURING

The F–35 aircraft manufacturing plan, as adjusted in September 2010, continues to exhibit dependable aircraft assembly up to the point of aircraft rollout to the flight line. Current production performance to the September 2010 baseline is about 14 days behind schedule to aircraft roll-out from the factory, and about 4 months behind for aircraft roll-out to government acceptance. In 2011, the production program finished deliveries of the remaining SDD test aircraft (one CTOL, one STOVL, and two CV). One more Navy test aircraft, CF–5, is scheduled to deliver in 2012 as part of the low rate initial production (LRIP) 4. Included in the 2011 deliveries were 9 LRIP aircraft (LRIP 1 and part of LRIP 2), for a total of 13 aircraft delivered out of 20 planned.

During the last year we have increased attention to manufacturing quality metrics, including supplier quality, assembly and test. Additionally, we have incorporated oversight into the contractor's supplier risk management process to ensure timely awareness of problems in the supply chain.

Pratt & Whitney has delivered 41 F135 Production propulsion systems. From early 2011 to the beginning of 2012, Pratt & Whitney has improved their delivery rate, increasing from one per month to now two per month consistently, staying ahead of aircraft deliveries. Spare engines have also been delivering to Eglin to support current flight and sustainment efforts.

DOD established the F–35 program in 2001 with a planned measure of concurrent development and production that attempted to balance cost, risk, and the need for tactical aircraft modernization. That plan had unfounded optimism in time and resources, driven by assumptions about design stability through the test program. The development program is taking longer and costing more to overcome technical issues that have been discovered. Concurrency generated impacts. Changes that must be made to the production aircraft due to problems found in testing are very real and affect schedule and cost in hardware, software, test and production. However, con-

currency is a transient issue in which risks progressively decline through the end of SDD and the test program. Concurrency changes have also been taking an unacceptable time, two to three production lots, to incorporate into the build baseline. These issues are being addressed with the incorporation of strong contract incentives to the prime contractor and by slowing the rate of production in 2013 and 2014. Concurrency risk will progressively recede between now and 2015, when second-life fatigue testing should complete for all variants and flight test will be through 80 percent of the loads envelope.

DEVELOPMENT RISK MITIGATION AND CONTROL

The three F–35 variants are encountering the types of development problems historically encountered on highly sophisticated state-of-the-art high performance aircraft development programs at this stage of maturity. While risk does remain in the balance of the development and flight test program, there is no known design issue that cannot be overcome by effective engineering. There is also margin in the SDD plan to account for discovery during the balance of the test program. This section summarizes the major risks and the steps that are being taken to address them.

Software development and flight test of mission systems are the primary drivers to completion of the SDD program. These program drivers were highlighted in the 2010 Technical Baseline Review and were a major focus of efforts to restructure the SDD program. Some of the solutions in the restructured program include additional planning for software rework and integration, as well as increasing lab capacity, which comes on-line in October 2012. The program plan includes three basic capability steps in this concurrent development. Block 1 is for initial training, Block 2 is for initial warfighting capability and Block 3 is the required full warfighting capability for the Services. Each year of production delivers a version of one of these software blocks at government acceptance. Technical difficulties encountered in Block 1 and initial Block 2 development resulted in schedule delays. The performance in software development is under intense scrutiny by the program, and industry performance must improve to deliver within the boundaries of time and funding in the replanned program.

The pilot's helmet for the F–35 is a major technological advance and a design challenge. Three helmet technical risks affecting the original helmet design are night vision acuity, stability of the symbology or frame "jitter", and the latency of the displayed information. The second generation of the original helmet is the desired solution for its capability to display all information on the visor, day and night, without goggles. As a result of testing, the program now understands the measured latency that is acceptable for pilot tasks and this understanding is leading to cost effective system adjustments. Improved night vision acuity will be evaluated with new camera technology and visor symbology jitter will be evaluated with small inertial measurement units embedded in the helmet itself. As risk reduction, the program has funded development of a night vision goggle-based alternative helmet solution. The goggle-based helmet development will continue until we see demonstrated improvement in the three risk areas. A system-level design review will occur in the fall of 2012 where the program will evaluate the development performance of both helmet designs.

During land-based ship suitability testing, the F–35C tailhook did not catch the arresting wire. Comprehensive system improvement is ongoing and involves damping of hook bounce and hook point shape adjustment. Testing will be conducted in 2012 to evaluate the new design.

Early fuel dump testing revealed that fuel was migrating within the wing during fuel dumping and the fuel was impinging on the underside of the wing. Improved seals within the wing will mitigate the migration issue and the program is pursuing improvements in the fuel dump system to resolve the fuel impingement issue.

The flight test program continues to address known aero performance issues like transonic roll-off (TRO); TRO is an issue every swept wing fighter has to deal with. We continue to refine our flight control laws to minimize the impact of TRO. At this point in testing, we're confident we have reduced TRO to an acceptable level for the F–35A and F–35B. The F–35C TRO testing is underway at this time.

Durability testing for the F–35B was restarted in January 2012. The test was halted to correct the bulkhead design in November 2010 and was one of the reasons cited for the F–35B "probation". This delay in the testing does not directly impact the flight test program or production schedules.

Aircraft are experiencing higher than predicted buffet during flight test and have not yet reached areas of highest predicted buffet loads. Flight testing in 2012 will assess the operational impacts to aircraft tracking and other requirements affected

by buffet at low angles of attack. Future flight test will include higher buffet loads where the program will evaluate structural and systems fatigue impacts.

COST RISK MITIGATION AND CONTROL

The December 2011 Selected Acquisition Report (SAR) reflects the new approved Acquisition Program Baseline (APB) which sets the program cost, schedule and performance baseline. SAR 2011 has been updated from base year (BY) 2002 dollars to BY 2012 dollars. SAR 2011 and the APB reflect two sub-programs: F–35 Aircraft and F–35 Engine.

There are two facets of inflation that impact the SAR. First, the F–35 baseline costs have increased approximately 22 percent as the program transitioned from SAR 2010 (BY02) to SAR 2011 (BY12). Second, inflationary assumptions have a significant impact to the operating and support (O&S) cost estimate as it is applied over the next 50+ years.

The SAR 2011 total program cost estimate in then-year (TY) dollars includes both the acquisition and the operating and support cost; these include the research, development, test and evaluation estimate—$55.2 billion, the procurement estimate—$335.7 billion, the military construction estimate—$4.8 billion and the O&S estimate—$1,113.0 billion. The total cost estimate for the program is $1,508.7 (TY$B) over the life of the program which began in 1994 (70+ years).

Control of production costs is being achieved in part by movement from cost plus to fixed price contract types. The F–35 LRIP Lot 4 aircraft and F135 engine contracts purchased 30 air systems for the United States, plus 1 for the United Kingdom and another for the Netherlands. The Lot 4 contracts were negotiated as fixed-price-incentive-fee (firm target) (FPIF) type contracts. The prime contractor, Lockheed Martin Aeronautics Company (LM Aero), is projected to overrun LRIP 4 costs by approximately 7 percent. This overrun percentage is approximately half the overrun experienced on the F–35 LRIP Lots 1 to 3 cost-reimbursement-type contracts. On the LRIP Lot 4 contracts, overrun costs on the aircraft and engines are shared equally between the government and the contractor until the overrun exceeds 20 percent of the target cost, at which point the contractor is responsible for all additional overrun costs.

*Fiscal Year 2011 Lot 5 Fixed-Price Airframe and Propulsion System Production Contracts*

The fiscal year 2011 airframe and engine contracts for Lot 5 were initiated via undefinitized contract actions (UCA) in the month of December 2011. The UCAs incorporate FPIF terms for the procurement of 30 aircraft and engines (21 F–35A, 3 F–35B, and 6 F–35C) but are being modified to procure one additional F–35A for the U.S. Air Force and one additional F–35C for the U.S. Navy, for a total fiscal year 2011 purchase of 32 air systems. This brings the total number of air systems procured on the program to 95.

In Lot 5, the government's cost risk is being mitigated by transferring some responsibility for concurrency cost risk to the prime contractor for the first time. The terms of the UCA include a "cost-sharing/no fee" contract arrangement for known concurrency changes identified at the time of UCA award. The Government and LM Aero will share equally (50/50) in these costs (estimated at $150 million) with no fee for the known concurrency changes specified in the UCA. Newly discovered concurrency changes will be added to the contract as engineering change proposals (ECPs) and will cause a renegotiation of the target cost of the aircraft, but with no profit.

The Office of the Secretary of Defense's (OSD) Director of Defense Pricing led an F–35 LRIP 5 "should cost" effort from the contractor proposal submittal in late April 2011 through early October 2011. Following an OSD Peer Review, LRIP Lot 5 negotiations commenced on December 9, 2010 and are heavily informed by the F–35 LRIP Lot 5 "should cost" conclusions which are based on actual experienced costs. Negotiations on the definitized contracts for Lot 5 are anticipated to conclude in late spring.

An effective Earned Value Management System (EVMS) is critical to monitoring performance and controlling costs. In 2007, a Defense Contract Management Agency (DCMA) review found the LM EVMS to be noncompliant with EVM guidelines. Although both parties engaged in a focused effort to bring the LM Aero EVMS into compliance, appropriate corrections were not completed and DCMA decertified the LM Aero EVMS in 2010. LM Aero has been working to complete its EVMS corrective action plan (CAP). LM CAP actions include development of new tools and processes as well as modifications to core management processes. A DCMA EVMS compliance validation review is underway and is scheduled to finish in the next few

months. DCMA continues to work with LM to bring the LM EVMS to full and sustainable compliance.

In accordance with DOD Federal Acquisition Regulations, the DCMA imposed a 2-percent withhold against F–35 LRIP 5 Progress Payments as part of last year's UCA. This 2 percent withhold is a result of the disapproved status of LM Aero's EVMS. The withhold will remain in place until LM Aero's EVMS deficiencies are corrected and the system regains approval status.

*Fiscal Year 2012 and Fiscal Year 2013 Contracts*

The JSF Program Office will obligate the majority of fiscal year 2012 and fiscal year 2013 procurement dollars to fixed-price-type contracts for F–35 aircraft and F135 engines. The JSF Program Office will ensure that future U.S. aircraft and engine procurements comply with section 143 of the National Defense Authorization Act (NDAA) for Fiscal Year 2012, which provides: " . . . [t]he Secretary of Defense shall ensure each of the following: (1) That the contract is a fixed-price contract. (2) That the contract requires the contractor to assume full responsibility for costs under the contract above the target cost specified in the contract."

The F–35 Lightning II JSF Program is implementing an event based contracting strategy for low rate initial production (LRIP) Lots 6 and 7 that buys aircraft production quantities based upon development and test progress. This strategy provides a means to have control (a "dial") on production that is informed by demonstrated development performance against the 2012 plan and concurrency cost risk reduction.

The Department will request Lockheed Martin provide a consolidated proposal for LRIP Lots 6 and 7 based on the following structure:

- Award 25 fiscal year 2012 Lot 6 aircraft (31 are authorized/appropriated)
- Provide flexibility to procure 0 to 6 remaining fiscal year 2012 funded Lot 6 aircraft concurrent with the Lot 7 contract award in 2013
- Link total aircraft quantity ultimately procured in Lot 6 to development performance and concurrency cost risk reduction

The Department will decide to award the additional aircraft based on progress expected in 2012, as planned and resourced in the development program IMS. This schedule is executable, appropriately resourced, includes sufficient margin for issues that are normal in a development program, and has been agreed to by both Lockheed Martin and the F–35 program office.

Specific decision criteria include, but are not limited to, the following:

1. Planned 2012 system engineering technical reviews for Block 3 software
2. Lockheed Martin progress improving concurrency change incorporation, both forward into production and back fit post delivery modification engineering.
3. Planned 2012 progress in F–35A, F–35B, and F–35C durability testing
4. Planned 2012 progress in flight test
5. Planned 2012 line replaceable units (LRU) qualification

These criteria will enable the Department to determine that the additional quantity of six Lot 6 aircraft can be in optimum configuration. Each successive contract will include sharing of known concurrency changes, until concurrency change generation recedes, as we have on contract now with LRIP 5.

Currently appropriated fiscal year 2012 funding is necessary to implement this contracting strategy. The variable quantity of up to six Lot 6 aircraft will be paid for with the fiscal year 2012 funds originally authorized and appropriated for their purchase; however, these funds will not be obligated on contract until fiscal year 2013.

The Department intends to award Lot 7 aircraft and the Lot 6 variable quantity aircraft through fully definitized contract actions in fiscal year 2013. The initial Lot 6 contract award for 25 aircraft will require an UCA to ensure production flow is not disrupted. However, the Department does not intend to award a UCA for the 25 aircraft in Lot 6 until essential agreement is reached for Lot 5.

The strategy outlined in this testimony continues the Department's rigorous management control of the F–35 Lightning II JSF. Ensuring sufficient discipline and progress in development will deliver aircraft that last their required service life, come with the required mission capability, and reduce the need to modify delivered aircraft.

*Operations and Sustainment Costs*

F–35 Sustainment costs are a concern across the Department. While the F–35 Joint Program Office and the Services made progress in 2011 toward reducing its estimate, there is more work to do in this area, and this is an area of increasing focus. The Services and the Department will continue to support the F–35 JPO in

its disciplined approach to analyzing and reducing sustainment costs. Over the next 12 months the JPO will complete the F–35 business case analysis (BCA). The results from the BCA will assist the PEO in refining the current F–35 support strategy by identifying the best mix of existing Service/Partner organic capabilities with that of the industry team to develop the optimum long term best value F–35 support solution.

This year, the Services and OSD, working in concert with the JPO, will analyze options outside of the PEO's span of control to reduce operating cost. These include reviewing basing options and the sequencing of those actions, unit level manpower/squadron size and discrete sustainment requirements. Through these efforts, the Department believes the PEO and the Department can converge on a more affordable F–35 sustainment strategy. The past year was largely about making progress in testing, moving toward a stable design, and controlling the cost and risk in the production program with an initial review of sustainment costs. The next year will continue those efforts, but the focus will shift more to identifying and implementing opportunities to reduce sustainment costs.

CONCLUSION

My observations and assessments over the past year give me reason to believe the basic aircraft designs are sound and will deliver. The remaining development is focused on testing and integration. Schedule and resource adjustments that have been made to the remaining development program underpin a realistic plan to deliver the required capability. While there is still risk in the program, I have confidence in the resilience of the plan to absorb expected further learning and discovery and stay on track, so long as it remains properly resourced.

Software development, coupled with flight test execution, will remain the major focus of program execution in the coming year and through the completion of SDD. I have observed past and current performance by industry on software that gives me concern about the ability to deliver full capability within the current schedule without improvement in performance. I will continue to closely examine progress and seek the changes needed to gain required performance. I have developed a solid program baseline, ensuring the program has resources, tools, and processes in place to make proactive, disciplined decisions regarding the development and delivery of incremental capabilities to the F–35 fleet. However, industry must understand that this new schedule with all of the margin and realism will not execute itself. A rededication to the characteristics of systems engineering fundamentals is crucial and I continue to speak bluntly to industry on this issue.

Concurrency is a transient issue that the program is dealing with right now, but which will lessen over time. I recognize that while DOD would prefer to not be in this concurrent program situation, it is now my responsibility to navigate through this and deliver the most capable aircraft at the best price.

I believe the plan for negotiations for LRIP 6 and 7 will allow DOD to control production quantity based on the performance of the development program. It is important that Lockheed Martin dependably perform and establish confidence that the F–35 is a stable and capable platform.

As in any complex development program there are challenges, but I believe the enhanced capability of the JSF will provide the backbone of the U.S. combat air superiority for generations to come. The technological capabilities of the aircraft are sound. The program's management over the past year has put in place the right fundamentals and realistic plans using sound systems engineering processes, and I am monitoring and tracking performance using detailed metrics. Overall, there is much work still ahead of us, but through the multiple reviews and adjustments in the past year I believe the Department has put the program on sound footing for the future.

Thank you again for this opportunity to discuss the F–35 JSF Program. I look forward to answering any questions you have.

Senator LIEBERMAN. Thank you, Admiral. It is a good beginning.

General Janet C. Wolfenbarger, Military Deputy, Office of the Assistant Secretary of the Air Force for Acquisition, thanks so much for being here. I just would be remiss if I did not say for the record that you are also about to become an historic figure, which is very exciting and well-deserved. Upon your pending promotion, as you well know, you will become the first woman Air Force officer to wear four stars. So, congratulations.

General WOLFENBARGER. Thank you very much, sir.

Senator LIEBERMAN. Please proceed.

**STATEMENT OF LT. GEN. JANET C. WOLFENBARGER, USAF, MILITARY DEPUTY, OFFICE OF THE ASSISTANT SECRETARY OF THE AIR FORCE FOR ACQUISITION**

General WOLFENBARGER. Chairman Lieberman, Ranking Member Brown, distinguished members of the subcommittee, thank you for the opportunity to provide you with an update on the Air Force's tactical aviation programs.

Today, the Air Force is fully engaged in operations across the globe, participating in joint Overseas Contingency Operations, and providing support to the combatant commanders to enable them to successfully execute their missions.

Our fiscal year 2013 budget request aligns with these standing operational requirements and with the future needs of the Air Force as we shift implementation of the new National Security Strategy.

I understand your focus today is on the Air Force investment plans to ensure that our tactical aviation capabilities are adequate for executing the National Military Strategy with an acceptable level of risk. Our rapidly aging aircraft fleet drives the urgent need to balance procurement of new inventory with sustainment of our current fleet. I look forward to discussing how the Air Force has matched our requirements with available resources in order to execute the National Military Strategy.

In light of recent media attention regarding the F–22 and its life support system, I would like to briefly address what the Air Force is doing to protect the health and safety of Air Force pilots, as well as the importance of the F–22 to our Nation's capabilities. Our pilot safety is of utmost concern and a top priority. Our Air Combat Command-led Life Support System Task Force has joined with experts from across government, academia, and the scientific community to work on root cause analysis until this issue has been completely resolved.

In the meantime, we have initiated 17 life support enhancements to the F–22 as direct risk mitigation steps. Many of these enhancements are already fielded, including a modification to the emergency oxygen activation handle and an air crew blood oxygen sensor. All these mitigation steps help reduce safety risks and permit F–22 operations that deliver unique stealth and range capabilities ideal for countering advanced integrated air defenses in known trouble spots around the world.

I would like to thank the subcommittee for the invitation to testify today and for your continued support of the Air Force.

I would like to request that my written statement be submitted for the record. I look forward to your questions.

[The prepared statement of General Wolfenbarger follows:]

PREPARED STATEMENT BY LT. GEN. JANET C. WOLFENBARGER, USAF

Chairman Lieberman, Ranking Member Brown, and distinguished members of the subcommittee. Thank you for the opportunity to address this committee regarding the Air Forces' tactical aviation programs. The Air Force remains fully engaged worldwide, supporting the combatant commanders' requirements and executing our National Strategy.

Finding the proper balance between force structure, readiness and modernization is our guiding principle. While we will be a smaller force, we will maintain the agility, flexibility and readiness required to meet our commitments to the combatant commanders as well as continue to modernize and grow more capable in the future. The Service protected our distinctive capabilities fundamental to the priorities of the new strategic guidance: control of air, space, and cyberspace; global intelligence, surveillance, and reconnaissance; rapid global mobility and global strike—all enabled by effective command and control.

CURRENT ENVIRONMENT AND OPERATIONS UPDATE

Today, the Air Force flies and fights in air, space, and cyberspace—globally and reliably—as a valued member of our Joint and coalition teams. Over 30,000 airmen are deployed across the globe, including over 23,000 in the U.S. Central Command Area of Responsibility, with another 134,000 "committed in place" to defend the homeland, command and control our nuclear forces, operate remotely piloted aircraft, and support other combatant commander requirements. The Air Force is an active partner in Defense Department planning that will shift our emphasis from today's wars, to the broader range of challenges and opportunities posed by the President's strategic guidance, particularly in the Asia-Pacific region. Be assured that soldiers, sailors, airmen, and marines who deploy in support of our global commitments will do so with an Air Force that is agile, flexible, ready, and technologically advanced. Last fiscal year alone, Air Force global precision attack aircraft flew over 24,000 sorties and 110,000 hours in support of Overseas Contingency Operations.

Since September 11, 2001, your mobility air forces have executed more than 440,000 airlift sorties, moving more than 3.6 million tons of cargo and nearly 6.9 million passengers in support of Operation Enduring Freedom, Operation Iraqi Freedom, and then New Dawn. Your combat air forces simultaneously provided top cover and weapons on target with another 162,000 sorties supporting those same operations. Aeromedical evacuation crews surged to complete nearly 180,000 patient movements, averaging 52 per day. On the homefront, Air Force fighter, air refueling, and early warning aircraft have flown almost 62,000 total sorties supporting Operation Noble Eagle. As a testament to the capability of our Total Force, the Air National Guard and Air Force Reserve have flown more than 65 percent of these sorties with the Air National Guard currently operating 17 of 18 Aerospace Control Alert sites across the United States.

As we transition to support the New Defense Strategy, we must carefully balance our force between the Active and Reserve components to maintain what will be a smaller Air Force at a higher state of readiness. One part of the solution will be to pursue Active Associations with many Air Reserve component units, combining Active Duty and Reserve component airmen on the same operational team.

The Air Force continues to work towards meeting the current strategy laid out by the President and the Secretary of Defense, while operating in a more fiscally constrained environment. The fiscal year 2013 PB retains critical core capabilities and maintains the Air Force's ability to rapidly respond to global mission demands. It requires the Air Force to balance risk, modernization and force structure reductions with a commitment to maintain readiness and take care of our people. We stand ready to support the Department's efforts to meet the demands of the U.S. National Security Strategy.

FIGHTER FORCE STRUCTURE AND MODERNIZATION

In 2011, Air Force analysis indicated a fighter force structure of 1,200 primary mission aircraft and 2,000 total aircraft were required to execute the National Military Strategy (NDS) with some risk. The new strategic guidance combined with new fiscal constraints required the Air Force to balance risk across its core functions. Current analysis estimates fighter force structure demand at approximately 1,100 primary mission aircraft and approximately 1,900 total fighter aircraft to carry out the NDS with increased risk. Additionally, the Air Force previously reported a fighter force shortfall in both the near- and mid-term. We aggressively pursued mitigating efforts to meet force structure requirements. The most significant efforts involved closely monitoring F–35 production and increasing production as capability matures, and fourth generation sustainment and modernization. The F–35 program status remains the key variable in the fighter force structure as the Air Force transitions to a fifth generation fighter force. Current Air Force mitigation options preserve decision space as we carefully monitor program status and impending decision points.

As directed, to develop the fiscal year 2013 PB the Air Force accepted risk in our Combat Air Forces by retiring or reclassifying aircraft from seven squadrons: five A–10 squadrons, one F–16 squadron, and one training/support coded F–15 Aggressor squadron. We chose to retire more A–10s as a result of guidance to size our forces for one large scale combined arms campaign with sufficient combat power to also deny a second adversary, without conducting a large scale, prolonged stability operation. The A–10 remains essential for combined arms and stability operations and we retain enough A–10s to meet the requirements of the new strategic guidance, but multi-role platforms provide more utility across the range of the potential missions for which we are directed to prepare. After reductions, we retain 54 combat-coded fighter squadrons and maintain the capabilities and capacity required to meet the requirements of new strategic guidance at increased risk while providing a bridge to the F–35.

Fifth generation fighters such as the F–22A and F–35 are key elements of our Nation's defense and deterrent capability. These aircraft are necessary to maintain a margin of superiority which permits our air, sea, and ground forces freedom of maneuver and attack. They each possess unique, complimentary, and essential capabilities that provide synergistic effects across the spectrum of conflict. Legacy fourth generation aircraft simply cannot survive to operate and achieve the effects necessary to win in an integrated, anti-access and area denial (A2/AD) environment.

F–35

During fiscal year 2012 the Air Force will continue the balanced approach across the global precision attack portfolio used in fiscal year 2011, by prioritizing investment in fifth-generation aircraft while sustaining legacy platforms as a bridge to the F–35, Joint Strike Fighter.

The multi-role F–35A is the centerpiece of the Air Force's future precision attack capability. In addition to complementing the F–22's world class air superiority capabilities, the F–35A is designed to penetrate air defenses and deliver a wide range of precision munitions. This modern, fifth-generation aircraft brings the added benefit of increased allied interoperability and cost-sharing across Services and eight partner nations. The fiscal year 2013 PB includes approximately $5 billion for continued development and procurement of 19 F–35A, conventional take-off and landing (CTOL) aircraft. In response to continued program cost growth, lagging production performance, and escalating concurrency modification costs, we reduced the program of record by 179 aircraft, 98 of those are USAF F–35A CTOL aircraft, over the Future Years Defense Program (FYDP) in the fiscal year 2013 PB. The reduction of F–35 quantities in the FYDP realigns the pace of production to balance the need for a stable industrial base with the realities of increasing concurrency modification costs and a resource-constrained fiscal environment. Finally, the fiscal year 2013 PB suspended F–35 dual capable aircraft (DCA) funding until the program is mature enough to support DCA integration.

Flight Operations at Eglin recently commenced. In close coordination with Air Force staff and the DOD Director, Operational Test and Evaluation, the Air Force Technical Airworthiness Authority (ASC/EN) signed a Military Flight Release (MFR) for F–35A aircraft on February 28, 2012, which allowed the Commander of Air Education and Training Command (AETC/CC) to approve the start of local area operations (LAO) at Eglin AFB for F–35A aircraft. LAO will build familiarity with the aircraft, exercise the logistics infrastructure, and measure the maturity of the air system. These flights will be conducted within the restrictions and limits of the MFR. AETC will continue LAO at Eglin until they judge that training operations are ready to begin.

During calendar year 2011, the F–35 program team achieved a number of significant milestones, including: delivery of six training aircraft to Eglin AFB; achieving the 1,000th CTOL flight hour; performing the first successful fuel transfer from a KC–10 tanker; reaching over 450 CTOL flights for the year; rolling-out the first partner nation (UK) short take-off and vertical landing (STOVL) aircraft from the production line in November 2011; and completion of academic and simulator requirements by the first two U.S. Air Force pilots at the Academic Training Center (ATC). They performed instructor pilot monitored engine runs in AF–9 to become the first operational, engine run qualified CTOL pilots.

F–22

The F–22 is the only fielded U.S. fighter capable of operating in anti-access and area denial (A2/AD) environments. F–22 attributes of stealth, super cruise, integrated avionics and sensors combine to deliver the Raptor's unique operational capability in A2/AD environments. F–22 modernization is required to counter threat ad-

vancement efforts that specifically target F–22 attributes in order to degrade U.S. ability to operate in A2/AD environments. Accordingly, F–22 modernization is consistent with DOD Strategic Guidance to "invest as required to ensure [the] ability to operate effectively in (A2/AD) environments".

Focused on maintaining operational superiority against the advancing threat, the fiscal year 2013 PB request for F–22 modernization investment includes $512 million RDT&E plus $333 million procurement in fiscal year 2013. Modernization increment 2.0 is fielded now on the combat-coded F–22 fleet and will be the final (very capable warfighting) configuration of the F–22 training fleet at Tyndall AFB. Increment 3.1 initial operational capability (IOC) is scheduled to occur in 2012, delivering advanced air-ground capabilities including SAR ground mapping, threat geolocation, and SDB carriage. Increments 3.2A/B, fielding in 2014/2018 respectively, will deliver advanced electronic protection and combat ID, AIM–120D and AIM–9X missiles, and significantly-improved ground threat geolocation.

F–22 production is complete—the last Raptor is scheduled to be delivered in early May 2012, completing the program of record of 187 aircraft. The final F–22 fleet will include 139 combat coded Block 30/35s, 32 training Block 20s, 12 Developmental Test/Operational Test Block 20/30/35s, and 2 pre-block test aircraft. The production line is shut down with no plan for restart at any time. Accordingly, all government-owned production tooling is being stored for F–22 sustainment purposes only.

The F–22 fleet stood down May–Sept. 2011 while safety issues associated with delivery of adequate breathing oxygen to pilots were investigated. Safety Investigation and Scientific Advisory Board (SIB/SAB) investigations were not able to determine root cause but informed development of technical and procedural mitigations which enabled a safe return to flight (RTF). Over 7000 sorties have been flown since return to flight. RTF mitigations allowed eight in-flight oxygen-related incidents to be resolved safely. The F–22 fleet transition from production to sustainment has been marked by a solid improvement in operational availability (Ao)—growing from ~59 percent Ao for calendar year 2011 to ~66 percent Ao in January 2012.

A–10

The A–10 provides our Joint Force Commanders responsive, lethal, precise, and persistent firepower for close air support and combat search and rescue. It has been a steady, stellar performer in all recent conflicts. Notably, the A–10s very high operations tempo and advanced age present substantial sustainment challenges. Reflecting this, the A–10s fiscal year 2011 aircraft availability rate was 59 percent.

The Air Force plans to retain 242 A–10s through 2030. The fiscal year 2013 PB invests approximately $205 million across the FYDP to fund A–10 modernization, sustainment, and life extension programs. Following completion of the Precision Engagement modification in fiscal year 2011, all previously designated "A" model aircraft were designated as the A–10C. The Precision Engagement upgrade gives the venerable A–10 the ability to deliver the newest and greatest complement of weapons than was ever available before, through the integration of targeting pods, digital data links and global positioning systems. Installation of the Helmet Mounted Cueing System, beginning in fiscal year 2012, will provide increased situational awareness to the pilot. Further, installation of the first of the new replacement wings began in fiscal year 2011, an essential program for the long-term structural longevity of the airplane. Other updates include a replacement portable maintenance tester and improved turbine and aircraft monitoring systems used to monitor structural fatigues and stresses. Emphasis on the continued health and upgrades will ensure the A–10 excels at close air support for the next 2 decades.

F–16

Our primary multi-role F–16 comprises 50 percent of the current fighter fleet. The fiscal year 2013 PB invests approximately $1.4 billion across the FYDP for F–16 modernization, life extension, and continued sustainment to meet critical warfighter needs to 2025 and beyond. The majority of the efforts to accomplish this across the FYDP will focus on the service life extension program (SLEP) and Combat Avionics Programmed Extension Suites (CAPES) modernization program for 300 aircraft, with the intent of reaching 350 aircraft. The requirement for the legacy SLEP is highlighted by bulkhead cracks found in approximately 73 percent of our Block 40/52 F–16 aircraft.

Legacy SLEP will extend airframe structural service life by approximately 25 percent from the current 8,000 hours to 10,000+ hours, adding 6 to 8 years. The fiscal year 2013 PB request adds $8.8 million to continue design and development of structural modification kits for the Block 40/52 fleet to be responsive to the Air

Force's total fighter requirement. Additionally, the Falcon Structural Augmentation Roadmap (STAR) program, which replaces known life-limited structural components and maintains the original design airframe life of 8,000 actual flight hours, has been rephrased to complete in fiscal year 2015.

The fiscal year 2013 PB adds $69.7 million in development, with a total of $526 million in development and procurement funding laid in across the FYDP for F–16 CAPES. This will allow for the development of capabilities for active electronically scanned array (AESA) radar, a new center cockpit display unit, data link enhancements and electronic warfare defensive suite upgrades. These avionic upgrades will keep the F–16 Block 40/52s relevant in the threat environment beyond 2025 until replaced by the F–35 Joint Strike Fighter.

Currently the F–16 aircraft availability is 64.9 percent and in fiscal year 2011 was 66.1 percent. F–16 fleet aircraft availability dropped 4.9 percent since fiscal year 2005. Drivers to the reduced availability include the Falcon STAR (all blocks) structural integrity program, engine inlet ram (all blocks), lower wing skin cracking (blocks 25/30/32), and aft cockpit corrosion for two seat aircraft. We expect these drivers to continue to impact aircraft availability through fiscal year 2015.

F–15 C/D

The fiscal year 2013 President's budget (PB) invests approximately $1.7 billion across the FYDP on modernization and sustainment programs for the F–15C/D fleet. We project the F–15C/D fleet will remain viable until 2030–2035 with potential for an airframe service life extension following full-scale fatigue testing. This test is underway and will conclude in 2014. The Air Force manages the fleet through scheduled field and depot inspections under an individual aircraft tracking program. In fiscal year 2011, the F–15C/D's aircraft availability was 55.9 percent.

We continue to modernize our F–15C/D fleet with AESA radars, and a more capable aircraft mission computer. We expect these efforts to enable 175 F–15C/D aircraft to operate safely and effectively through at least 2035 as determined by the full-scale fatigue test. We may extend the long-term status to the entire 249 aircraft inventory based on requirements of the future force structure.

F–15E

The F–15E fleet continues to provide support for ongoing operations. Aircraft availability for the F–15E in fiscal year 2011 was 64.9 percent.

The fiscal year 2013 President's budget investment across the FYDP is approximately $2.1 billion for F–15E modernization and sustainment programs. This includes integrating the latest precision weapons to hit targets accurately and reduce collateral damage, and adding a helmet mounted cueing system for all front seat cockpits that will reduce the F–15E's time to engage a target. Finally, we are adding a state-of-the-art AESA radar system that advances capabilities to identify and engage targets. The Air Force expects the F–15E to be an integral part of the Nation's force through at least 2035. A full-scale fatigue test, due to be complete in 2015, will provide data regarding the feasibility of a service life extension.

CONCLUSION

The Air Force stands ready to win today's joint fight as we adjust to the challenges of tomorrow. While the environment we are in necessitated difficult choices, we remain committed to working together to manage risks and determine a fiscally sound procurement, sustainment and retirement strategy to remain prepared for the current fight as we posture for the new strategic guidance. The dominance of air, space, and cyberspace continues to be requisite to the defense of the United States. We appreciate your continued support and look forward to working in concert to ensure our decisions enable us to strengthen our force.

Senator LIEBERMAN. Thanks, General. Without objection, your statement and the statements of the other witnesses will be included in the record in full.

Vice Admiral Walter M. Skinner, Principal Military Deputy, Office of the Assistant Secretary of the Navy for Research, Development, and Acquisition, thanks for being here. Welcome.

**STATEMENT OF VADM WALTER M. SKINNER, USN, PRINCIPAL MILITARY DEPUTY, OFFICE OF THE ASSISTANT SECRETARY OF THE NAVY FOR RESEARCH, DEVELOPMENT, AND ACQUISITION**

Admiral SKINNER. Thank you. Chairman Lieberman, Ranking Member Brown, distinguished members of the subcommittee, it is my honor to appear before you today to discuss the Navy's tactical aviation procurement programs.

The fiscal environment and the Budget Control Act (BCA) of 2011 required hard choices to be made. In response, the Navy deferred procurement of F–35s, P–8s, E–2Ds, F–18 Es and Fs, and MV–22s, and terminated the Medium Range Maritime Unmanned Aerial System program and Joint Air-to-Ground Missile investment in the President's budget request. We are facing challenges: the budget reductions necessitated by the BCA and aging aircraft inventory and significant threats. During these austere times, we must persist in modernizing and recapitalizing our naval aviation forces and increase our capability through force multipliers such as the Navy integrated fire control counter air and using should cost/will cost processes to bring more affordable systems to our warfighters.

Affordability will be our business focus over the Future Years Defense Program (FDYP) so we can continue to deliver the capabilities to meet the warfighters' needs. With your assistance, we are leveraging our buying power with the successful multiyear procurements on the F–18, B–22, and H–60, and together we are saving the taxpayers over $1.5 billion.

Last year, we commemorated our historical past as naval aviation celebrated its centennial. This year, Marine Corps aviation will do the same. New history has also been written over this past year when we conducted F–35 shipboard operations aboard the USS *Wasp* and flew the first F–35C formation flights at Patuxent River and deployed the first E/A–18 Growler expeditionary squadrons to Iraq and then redeployed the squadron on short notice to support Operation Odyssey Dawn. We commenced E–2D Advanced Hawkeye initial operational test and evaluation (OT&E), and we delivered the first P–8 Poseidon and the 500th Super Hornet Growler on cost and on schedule. The Naval Air Systems Command (NAVAIR) hired 155 wounded warriors into the acquisition workforce.

We also continue to actively manage our TACAIR inventory. The first Hornet will be inducted into our SLEP later this year, and both SLEP and future aircraft procurements must continue on schedule to mitigate the strike fighter shortfall through 2028. The Navy will transition three Navy F–18 Charlie squadrons to F–18Es, and the Marine Corps will reduce their force structure by four squadrons and delay the retirement of the AV–8B Harrier until 2030.

Thank you and we welcome your questions on the Department of the Navy's tactical aviation procurement programs.

[The prepared statement of Admiral Skinner follows:]

PREPARED STATEMENT BY VADM W. MARK SKINNER, USN

Mr. Chairman, Senator Brown, and distinguished members of the Airland Subcommittee, thank you for the opportunity to appear before you today to discuss the Department of the Navy's (DoN) Aviation programs. My testimony will provide background and rationale for the Department's fiscal year 2013 budget request for aviation programs aligning to our strategic priorities and budgetary goals.

The United States is a maritime nation with global responsibilities. For 236 years, our Navy and Marine Corps' persistent presence and multi-mission capability have been the representation of U.S. power across the global commons. Our naval tradition informs our decisions today, as the Navy and Marine Corps remain firmly in a forward posture for engagement and action, continuing to build on our ability to come from the sea to conduct our missions rapidly across the range of military operations. The Navy and Marine Corps is an agile strike and amphibious power projection force in readiness, and such agility requires that the tactical aviation arm of our naval strike and expeditionary forces remain strong.

The fiscal year 2013 DoN budget request, while less than was requested in fiscal year 2012, aligns with the new strategic guidance for the Department of Defense (DOD) and provides the Department with the best balance of naval aviation assets. Guided by the Defense Strategic Guidance, the Navy-Marine Corps team is built for war, capable of operating forward to preserve the peace, respond to crises and protect United States and allied interests. The force will be leaner, agile, flexible, ready, and technologically advanced.

The Navy and Marine Corps are committed to the Joint Strike Fighter program in both the F–35B and F–35C variants. We have reduced the quantity of the fiscal year 2013 aircraft procurement request to minimize the number of aircraft the Department will have to modify for concurrency. This action funds the costs associated with concurrency from within the JSF program as well as reduces the Department's overall investment in the JSF Program. The budget also has optimized unmanned aerial systems (UAS) investments across the DoN's portfolio and is developing a comprehensive and flexible portfolio of unmanned systems to meet a variety of maritime reconnaissance requirements. In 2012, the Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS) development program began; while the MQ–8B Fire Scout aircraft demonstrated in-theater capability and follow-on MQ–8C upgrade have superseded the need for the Medium Range Unmanned Aerial System (MRMUAS) which was terminated in the fiscal year 2013 request. The Navy and Marine Corps continues to optimize our buying power through the use of multi-year procurements (MYP) of the F/A–18E/F, EA–18G, MV–22 and H–60 programs. We are recapitalizing our aging fleet of E–2C, EA–6B and P–3 aircraft with more capable and more supportable aircraft—the E–2D, EA–18G and P–8A. We are exploring alternatives and concepts for the recapitalization of the Executive Helicopter, the C–2A and the F/A–18E/F—we will do so with lean acquisition and optimized technology at an affordable cost.

The fiscal year 2013 President's budget requests funding for 94 aircraft including 10 F–35 JSFs for both the Navy and the Marine Corps, 13 P–8As to replace the aging current anti-submarine warfare and maritime patrol squadrons, 17 MV–22 tilt-rotor aircraft, 26 F/A–18E/F fighter attack planes, 12 EA–18G to complete the replacement of the EA–6B, 5 E–2D Advanced Hawkeyes, and 11 unmanned aerial vehicles (UAV). The DoN has also requested funds for the continued development of the Broad Area Maritime Surveillance (BAMS) unmanned system and for the demonstration of the Navy Unmanned Combat Aerial System (N–UCAS). The DoN fiscal year 2013 aircraft program budget request is funded for planned program execution throughout the Future Years Defense Program (FYDP).

## TACTICAL AVIATION (TACAIR)

*TACAIR Inventory Management*

In 2010, we estimated the DoN strike fighter shortfall (SFS) to be about 100 aircraft, but the net effect of the fiscal year 2013 President's budget, which includes restructuring the F–35B/C ramp, along with the impact of reduced operational rates and force structure requirements, put the DoN's projected shortfall at a manageable level below 65 aircraft in the 2020s.

While the SFS continues to fall within the manageable levels throughout the DoN, the Marine Corps may experience elevated operational risk in the 2020s if the predicted shortfall comes to fruition. Over the past two Presidential budgets, the Marine Corps TACAIR transition completion has extended from 2023 to 2031. This 8-year slide has forced the Marine Corps to evaluate inventory availability amongst its Harrier and Hornet fleet in the later years and adjust its transition priorities and timing. The last active Marine F/A–18 squadron is currently scheduled to tran-

sition in 2027, and the current F/A–18 Reserve squadron does not receive its F–35s until 2030. The Harriers were expected to complete their transitions in 2022 in the fiscal year 2011 President's budget, and then 2026 in fiscal year 2012 President's budget. The Harriers are now planned to remain in service through 2030 due to reduced F–35 ramp rates and the fact that they have more flight hour life remaining than the Hornets.

As legacy F/A–18 squadrons are reduced, the service shortfall number must be considered in proportion to the primary mission aircraft inventory requirement. Due to a lower number of F/A–18 squadrons in the 2023 to 2026 timeframe, the shortfall number associated with the Marine Corps will have a more significant impact on their few remaining F/A–18 operational squadrons.

Additionally, the AV–8B will operate with a shortfall of 10 aircraft in fiscal year 2012, reaching 12 aircraft during fiscal year 2013, based on attrition. One AV–8B squadron will be retired at the end of fiscal year 2013 to meet USMC manpower reductions, allowing the remaining squadrons to operate without a shortfall. The Navy will transition three additional squadrons from F/A–18C to F/A–18E and then redistribute those F/A–18C aircraft amongst the DoN requirements.

The DoN continues to meticulously manage the fatigue life and flight hours of our tactical aircraft. Since 2004, we have provided fleet users guidance and actions to optimize aircraft utilization rates while maximizing training and operational opportunities. The inventory forecasting tool (IFT) projects the combined effects of transition plans, attrition, and pipeline requirements on the total strike fighter aircraft inventory. The IFT is updated in conjunction with budget submittals to provide forecasts of the strike fighter inventory compared to the requirements. The tool utilizes these critical variables to project future inventories—F/A–18E/F and F–35B/C deliveries, force structure, aircraft usage rates, structural life limits, depot turnaround time, fatigue life expenditure (FLE), arrested and field landings, and catapult launches.

*F–35B/F–35C Lightning II*

The Department of the Navy (DoN) remains firmly committed to both the F–35B short takeoff and vertical landing (STOVL) variant and the F–35C carrier variant (CV) of the Joint Strike Fighter (JSF) program, as they are essential to our immediate and long-range Navy and Marine Corps aviation strategy and the Nation's security. F–35 will supplant the DoN's aging tactical aviation (TACAIR) fleet by replacing the Navy and Marine Corps legacy F/A–18A–D Hornet and the Marine Corps AV–8B Harrier and EA–6B Prowlers. The incorporation of F–35B and F–35C aircraft into our naval force will provide the dominant, multi-role, fifth-generation capabilities that are essential across the full spectrum of combat operations to deter potential adversaries and enable future naval aviation power projection.

The F–35B STOVL variant combines the multi-role versatility and strike fighter capability of the legacy F/A–18 with the basing flexibility of the AV–8B. The Marine Corps will leverage the F–35B's sophisticated sensor suite and very low observable (VLO) fifth-generation strike fighter capabilities, particularly in the area of data collection and information dissemination, to support the Marine Air Ground Task Force (MAGTF) well beyond the abilities of today's MAGTF expeditionary attack, strike and electronic warfare assets. Having these capabilities in one aircraft will provide the joint force commander and the MAGTF commander unprecedented strategic and operational agility. Similarly, the F–35C CV complements the F/A–18E/F Block II and EA–18G in providing survivable, long-range strike capability and persistence in an access-denied environment. Together, the F–35B and F–35C will provide the expeditionary strike group and carrier strike group commanders a survivable, "day-one" strike capability in a denied access environment with the tactical agility and strategic flexibility to counter a broad spectrum of threats and win in operational scenarios that cannot be addressed by current legacy aircraft.

The overall F–35 development program has been re-planned and is now resourced with adequate margin and realistic planning factors to complete system development and demonstration (SDD). Key activities that supported the replan included the development of an integrated master schedule (IMS), execution of a schedule risk assessment (SRA), and completion of the integrated baseline review (IBR). Under these efforts, the Department of Defense revised flight test rates, established longer software development spans, included revised systems engineering processes, and established new performance measurements. This plan has strong support within the Department of the Navy as we believe it places the development program on sound footing towards delivering full Block 3 capabilities.

In January 2011, Secretary Gates placed the F–35B on probationary status because it was experiencing significant unique technical issues. F–35B testing was decoupled from the other two variants, allowing the program to increase focus on F–

35B-specific development issues while testing on the other variants progressed. All three variants improved their testing performance in 2011. In particular, the F–35B successfully completed more flights and more test points than planned, including the first F–35B shipboard suitability test and operations with BF–2 and BF–4 aboard the USS *Wasp*. The F–35B is now demonstrating development, test, and production maturity comparable to and not substantially different from the other F–35 variants. With this data, the Secretary of Defense (SECDEF) made the decision to lift STOVL from probation on January 20, 2012. As with the other variants, some additional technical issues have been identified on the F–35B since probation began. However, none of these issues rises to the level of significance of those that placed STOVL on probation, and they are consistent with the kind of discovery to be expected in any complex tactical aircraft development program. Similar F–35A and F–35C technical issues being discovered in test have been proactively addressed and are being resolved concurrent with flight test. The decision to lift probation will result in absolutely no reduction in DoN F–35B oversight or the level of attention given by the Department of Defense (DOD) to each of the JSF variants going forward.

DOD established the F–35 program with a planned measure of concurrent development and production that balanced cost, risk, and need for TACAIR modernization. Concurrency, however, is a transient issue in which risks progressively decline through the end of SDD. The F–35 program is currently experiencing changes driven by design maturity discoveries as ground test, flight test, and overall system qualification efforts proceed. As more testing is completed, concurrency risks are progressively reduced as the design is confirmed or issues identified requiring changes are incorporated. Earlier aircraft are open to a greater need for changes, and as succeeding low-rate initial production lots are built, their cumulative requirements for retrofit modifications decline.

F–35 sustainment costs remain a concern. The DoN continues to support the F–35 Joint Program Office in its disciplined approach to analyzing and reducing sustainment costs. While the JPO and the Services made progress in 2011, there is more work to do in this area and the focus remains. For example, over the next 12 months the JPO will complete the F–35 business case analysis (BCA). The results from the BCA will assist the PEO in refining the current F–35 support strategy by identifying the best mix of existing Service/Partner organic capabilities with that of the Industry team to develop the optimum long term best value F–35 support solution. The DoN, working in concert with the JPO, will analyze options outside of the PEO's span of control to reduce operating cost such as; reviewing basing options and the sequencing of those actions, unit level manpower/squadron size, and discrete sustainment requirements. Through these combined efforts, the Department believes the PEO can increase convergence on an affordable F–35 sustainment strategy that both meets the required level of Service/Partner performance and lowers the total life cycle cost of the overall program.

The initial operational capability (IOC) for F–35B and F–35C have not yet been established and will be determined by each service, based on both the program's performance and how the service defines IOC. In general terms, for example, the Marine Corps F–35B IOC is defined as a squadron of 10 aircraft able to execute the full range of TACAIR directed mission sets and to deploy and operate from F–35B compatible ships and austere expeditionary sites. The Marine Corps plans to achieve IOC with a multi-mission capable Block 2B aircraft as described in the JSF Operational Requirements Document (ORD)/Change 3. For the Navy F–35C, IOC is defined as a squadron of 10 ORD compliant Block 3F aircraft that are ready to deploy and operate from CVNs after having completed initial operational test and evaluation (IOT&E). The Marine Corps IOC for the F–35C will follow the Navy's lead to ensure capability symmetry onboard carriers.

The fiscal year 2013 President's budget requests $1.5 billion in Research, Development, Test & Evaluation, Navy (RDT&E,N) to continue the F–35 SDD program and $2.7 billion in Aircraft Procurement, Navy (APN) for 10 F–35 aircraft (6 F–35B and 4 F–35C) with associated aircraft hardware and spares. These resource requirements fully align to the SECDEF's F–35 program replan. Maintaining this rate, and an eventual optimum production ramp rate, is critical towards achieving F–35 affordability goals and preventing excessive expenditures on aircraft with limited service-life and decreasing operational relevance.

The DoN is aware of the many challenges that remain on the F–35 program. However, this aircraft is an essential future Navy/Marine Corps aviation capability and the DoN is fully committed to the F–35B and F–35C variants of this program. The DoN continues to closely monitor all F–35 development, production, and sustainment to ensure that this capability is obtained at the lowest cost, at the earliest date possible, to meet our national security obligations.

*F/A–18 Overview*

The F/A–18 Hornets have consistently met readiness and operational commitments. There are 22 Navy Super Hornet squadrons with 440 F/A–18E/Fs; deliveries and squadron transitions will continue through 2016. There are 15 Navy and 13 Marine F/A–18 A–D squadrons with 625 legacy A–D Hornets. While the F/A–18A–Ds transition to the F/A–18E/F and F–35, the current inventory of F/A–18A–Ds will comprise more than half of the DoN's strike fighter inventory well into 2013. Super Hornets and legacy Hornets have conducted more than 148,000 combat missions since September 11, 2001. While deployed ashore and aboard our aircraft carriers at sea, F/A–18s have brought significant precision ordnance and laser-guided munitions to the fight, and have employed thousands of rounds of 20-millimeter ammunition supporting forces during strafing runs. These aircraft continue to provide vital overwatch and direct support to our troops on the ground in combat overseas.

Both the legacy Hornet and the Super Hornet were procured with an objective of 20 years' time in service. The average legacy Hornet has exceeded that goal, while the Super Hornet is already at almost 30 percent of its expected 20 year life. It is reasonable to conclude, based on current trends that most aircraft will substantially exceed 20 years in service.

*F/A–18 A/B/C/D (Legacy) Hornet*

The fiscal year 2013 President's budget request is $79.6 million in APN for the continuation of SLEP, systems upgrades and obsolescence programs for the inventory of 625 legacy F/A–18 Hornets. Funds requested will procure and install center-barrel modifications and service life extension program (SLEP) kits required for extending the service life to 10,000 flight hours of select candidate F/A–18A–D aircraft. The high flight hour (HFH) inspections and SLEP modifications can extend the F/A–18A–D service life to 10,000 hours and mitigate the impacts of the SFS. Continued investment in program related engineering (PRE) and program related logistics funds within the Operations and Maintenance, Navy accounts is critical for sustaining the combat relevancy of the DoN's legacy platforms through the TACAIR transition.

The Service Life Management Program (SLMP) monitors and improves the health of the F/A–18A–D fleet through analyses of TACAIR inventories and management of usage rates at the squadron level. Seventy-four percent of the F/A–18 A–D fleet have over 6,000 flight hours while 32 aircraft have over 8,000 flight hours. To meet our operational commitments through mid 2020s, we will be required to extend the service life of at least 150 F/A–18A–D to 10,000 flight hours. The F/A–18 A–D Service Life Assessment Program (SLAP) has completed and we are identifying all of the inspections and modifications necessary to extend the airframe service life to 10,000 flight hours. Based upon those results, we are midway through a three-phased SLEP. SLEP Phase A identified the critical safety of flight locations that needed immediate inspection and identified notional repair concepts. SLEP Phase B categorized parts by criticality, and upgraded analytical tools for use by the Naval Air Systems Command (NAVAIR) and original equipment manufacturer engineers to design repairs. SLEP Phase C will finalize all remaining Phase B work and develop inspections and modifications required to extend the service life of 150 legacy F/A–18s. Efforts to extend the life of the F/A–18 A–D's major subsystems and avionics, independent of the airframe, are also underway.

The fiscal year 2013 President's budget request includes SLEP requirements for 150 airframes. The first aircraft were inducted in early fiscal year 2012. Although risk is inherent in extending the service life of an aircraft, the technical risk in developing modification kits to achieve the goal of 10,000 flight hours is low. The Fleet Readiness Centers have the capacity to execute the required number of HFH inspections and SLEP modifications. Material availability and engineering disposition turn-around times influence depot efficiencies.

In order to maintain a tactical advantage, we will continue to procure and install advanced systems such as Joint Helmet-Mounted Cueing Systems (JHMCS), Multi-Function Information Distribution System (MIDS), APG–73 radar enhancements, Advanced Targeting FLIR (ATFLIR) upgrades, and LITENING for the marines on selected F/A–18A–D aircraft.

*F/A–18 E/F Super Hornet*

The fiscal year 2013 President's budget requests $2.0 billion in APN for procurement of 26 F/A–18 E/F Block II (Lot 26–38) aircraft. The F/A–18E/F continues to transition into the fleet, improving the survivability and strike capability of the carrier air wing. The Super Hornet provides increased combat radius and endurance, and a 25 percent increase in weapons payload over the legacy Hornets. The President's budget request for fiscal year 2013 includes $276.7 million in APN to imple-

ment commonality, maintain capabilities and improve reliability and structural safety of the Super Hornet fleet. The Super Hornet uses an incremental development approach to incorporate new technologies and capabilities: the JHMCS, ATFLIR with shared real-time video, Shared Reconnaissance Pod System, MIDS data-link, multi-sensor integration, and continued advancement of the APG–79 active electronically scanned array (AESA) radar.

The program continues to deliver on-cost and on-schedule and the last year of procurement to complete the program of record (POR) of 565 aircraft is planned for 2014. Production shutdown begins in mid-2012 at the subvendor level and concludes in 2016. A MYP contract for 124 (fiscal years 2010 through 2013) F/A–18E/F Super Hornets and EA–18G Growlers was signed on September 24, 2010. In December 2010, SECDEF added 41 E/F aircraft to the fiscal year 2012 President's budget request in fiscal years 2012 through 2014. All Lot 30 (fiscal year 2006) and beyond F/A–18E/Fs and EA–18Gs have the APG–79 AESA radar system installed in production, and a retrofit program exists to modify 133 Lot 26–29 Block II aircraft with the AESA radar. More than 300 APG–79 AESA radars have been produced to date. The Navy plans to equip all 419 Block II Super Hornets with AESA radars, providing the Super Hornet a significant increase in detection range, lethality and survivability over the legacy Hornets. Successfully deploying since 2007, AESA radar equipped squadrons are highly valued by fleet commanders because of their ability to share tactical battle space management data with the non-AESA radar tactical aircraft in the carrier battle group. The F/A–18E/F and EA–18G with the APG–79 are force multipliers.

The fiscal year 2013 President's budget includes a request for $11.0 million RDT&E,N to support the F/A–18E/F SLAP study requirement. Currently, the F/A–18 E/F fleet has flown approximately 30 percent of the available 6,000 total flight hours; the remaining service life will not be adequate to meet operational commitments through 2035. In 2008, the Navy commenced a three phased F/A–18E/F SLAP to analyze actual usage versus structural test data and identify the feasibility of extending F/A–18E/F service life from 6,000 to 9,000 flight hours via a follow-on SLEP. The F/A–18E/F SLAP will define the necessary inspections and modifications required to achieve 9,000 flight hours and increase total and arrested landings, and catapults beyond currently defined life limits and is currently assessed as low risk. The SLMP philosophy has been applied to the F/A–18E/F fleet at an earlier point in its lifecycle than the F/A–18A–D, which will optimize FLE, flight hours and total landings aligning aircraft service life with fleet requirements.

*Airborne Electronic Attack (AEA)/EA–6B Prowler*

The fiscal year 2013 President's budget request includes $19.7 million in RDT&E,N for electronic warfare (EW) counter response; $187.0 million RDT&E,N for Next Generation Jammer (NGJ); $10.6 million RDT&E,N for MAGTF EW, $50.0 million in APN for common airborne electronic attack (AEA) systems; $30.1 million in APN for all EA–6B series aircraft; and $34.1 million APN for MAGTF EW.

Currently, 69 EA–6Bs in the Navy and Marine Corps support 64 operational aircraft in 13 Active squadrons and 1 Reserve squadron. This includes 37 Navy and Marine Corps Improved Capability (ICAP) II aircraft and 32 ICAP III aircraft. Following the final Navy EA–6B transitions to EA–18G in 2015, all ICAP III EA–6Bs will transfer to and be operated by the Marine Corps. The final retirement of the EA–6B from the DoN inventory will be by the end of 2019.

Marine aviation is on a path towards a distributed AEA system of systems that is a critical element in achieving the MAGTF EW vision: a composite of manned and unmanned surface, air, and space assets, on a fully collaborative network providing the MAGTF commander control of the electromagnetic spectrum when and where desired. In development are the ALQ–231 Intrepid Tiger II communications jammer, UAS EW payloads, a software reprogrammable payload and an EW Services Architecture to facilitate collaborative networked electronic warfare battle management.

The Intrepid Tiger II is intended to be carried on the AV–8B and eventually other fixed and rotary wing platforms and will provide direct AEA support to ground troops engaged in combat operations. Intrepid Tiger II development and procurement is in response to Marine Corps requirements for increased precision EW capability and capacity across the MAGTF and provides EW capability directly to tactical commanders without reliance upon the limited availability of the low-density/high-demand EA–6B Prowler.

The NGJ is new electronic warfare technology that replaces the 40-year-old ALQ–99 system and is designed to provide modified escort power in support of joint and coalition air, land, and sea tactical strike missions. NGJ is critical to the Navy's vision for the future of airborne electronic attack strike warfare. Funding is vital to

maintain schedule, allowing the program to transition to the technology development phase and ensure timely start of the EA–18G long lead integration activities.

*Airborne Electronic Attack (AEA)/EA–18G Growler*

The fiscal year 2013 President's budget request is $1.1 billion in APN for procurement of 12 EA–18G aircraft and $13 million in RDT&E,N for correction of deficiencies. The first EA–18G squadron deployed in an expeditionary role in November 2010 to Iraq and subsequently redeployed on short notice to Italy in March 2011 in support of Operation New Dawn (OND) and Operation Unified Protector (OUP). The EA–18G received accolades from both U.S. Central Command (CENTCOM) and Supreme Headquarters Allied Powers Europe for the AEA's enabling contribution to the battlespace.

In 2009 the Navy began transition from EA–6Bs to EA–18Gs. The first carrier-based EA–18G squadron deployed in May 2011. All three Active component Navy expeditionary squadrons and two of the 10 carrier based squadrons have completed transition to the EA–18G. The Navy will be divested of EA–6Bs by 2015. The program of record is for 114 EA–18G aircraft, of which 90 have been procured to date. The final procurement of EA–18Gs is planned for 2013. As directed by the Quadrennial Defense Review in 2009, SECDEF added 26 EA–18G aircraft to the program of record across the FYDP to increase joint force capacity to conduct expeditionary electronic attack. The EA–18G fleet has flown approximately 5 percent of the 7,500 total flight hours per aircraft and are meeting all operational commitments.

The Navy has completed an analysis of alternatives (AoA) to determine the best path forward for the NGJ. The NGJ system will replace the aging and limited inventory of ALQ–99 electronic warfare pods currently flown on the EA–18G and EA–6Bs and provide the DOD with the advanced comprehensive electronic attack capability required to outpace the threat.

*E–2D Advanced Hawkeye (AHE)*

The fiscal year 2013 President's budget requests $119.1 million in RDT&E,N for continuation of SDD and $1.040 million in APN for five Full Rate Production (FRP) Lot 1 aircraft and advance procurement (AP) for fiscal year 2014 FRP Lot 2 aircraft.

The E–2D Advanced Hawkeye is the Navy's carrier-based airborne early warning and battle management command and control system. The E–2D provides theater air and missile defense and is capable of synthesizing information from multiple onboard and off-board sensors, making complex tactical decisions and then disseminating actionable information to Joint Forces in a distributed, open-architecture environment.

Utilizing the newly developed AN/APY–9 mechanical electronic scan array radar and the Cooperative Engagement Capability system, the E–2D works in concert with surface combatants equipped with the Aegis combat system to detect, track and defeat air and cruise missile threats at extended range and provide battle group commanders required reaction time. This system-of-systems architecture, known as Naval Integrated Fire Control-Counter Air, provides vital force protection and allows the Navy to safely project forces into the littorals and overland to ensure access in contested areas.

The E–2D Advanced Hawkeye program is in the production and deployment phase after the Defense Acquisition Board (DAB) approved Milestone C in June 2009, at which time the program received authorization for procurement of the first two lots of LRIP aircraft (LRIP Lot 1 is two aircraft and LRIP Lot 2 is three aircraft). The SDD flight test program is 100 percent complete and all key performance parameter thresholds have been met. An operational test readiness review was successfully conducted on February 1, 2012, certifying entry into Initial IOT&E, and IOT&E will continue through August 2012. Both LRIP Lot 1 aircraft were delivered in 2011, and delivery of the three LRIP Lot 2 aircraft will be completed in 2013. A DAB for approval to procure the final two lots of LRIP aircraft, Lots 3 (five aircraft) and 4 (five aircraft), as well as AP for FRP Lot 1, was successfully held on in March 2011 and the respective contracts have been awarded. LRIP Lots 3 and 4 aircraft will be delivered in 2014 and 2015, respectively. From a cost standpoint, the estimate at complete has been stable for over 54 months and the program is on schedule for an FRP Decision in the first quarter of fiscal year 2013. All major acquisition milestones have been achieved on or ahead of schedule since program inception in 2003.

*AV–8B Harrier*

The fiscal year 2013 President's budget requests $38.7 million in APN funds to continue development of the AV–8B Readiness Management Program, Operational Flight Program and avionics weapons systems development and integration, and Engine Life Management Program. The fiscal year 2013 President's budget requests

$42.2 million in Overseas Contingency Operation (OCO) procurement funding for Marine Corps expeditionary LITENING targeting pod upgrades installation of OCO-procured ALE–47 kits (improved aircraft self protection, expendable system).

The AV–8B continues to be deployed heavily in support of operational contingencies. Each Marine Expeditionary Unit (MEU) deploys with embarked AV–8Bs. As of 2012 the AV–8B, equipped with precision weapons, LITENING targeting pods with a video downlink to ROVER ground stations, beyond visual range air-to-air radar missiles, is a proven, invaluable asset for the MAGTF and joint commander across the spectrum of operations. In 2012, the AV–8B has received the H6.0 Operational Flight Program enabling full integration of the ALE–47 suite and Digital Improved Triple Ejector Rack increasing the smart weapon carriage capability from 4 weapons to 10. The Harrier out-of-service date has been extended from 2022 to 2030, based on current F–35B transition plans. As a result, the AV–8B program must focus on sustainment efforts to mitigate significant legacy inventory shortfalls, maintain airframe sustainment and address reliability and obsolescence issues of avionics and subsystems. Additionally, this aircraft must be funded to maintain combat relevance to include tactical datalink and sensor improvements in order provide continued operation in support of operational contingencies and transition qualified aircrew to the F–35. The current digital aided close air support (CAS) technology installed on the AV–8B is obsolete.

Operation Odyssey Dawn confirmed the expeditionary advantages of STOVL capabilities by placing the Harrier as the closest fixed-wing asset to Libya. Such dynamic support slashed transit times to the battlefield by two-thirds and kept close air support aircraft on station without strategic tanking assets. Capability upgrades, obsolescence mitigation and readiness initiatives must be funded to ensure the AV–8B remains relevant, healthy and sustained through 2030.

ASSAULT SUPPORT AIRCRAFT

*MV–22*

The fiscal year 2013 President's budget requests $54.4 million in RDT&E, N for continued product improvements and $1.5 billion in APN for procurement of 17 MV–22Bs (Lot 17) and $95.9 million for continuation of follow-on block upgrades. Fiscal year 2013 is the first year of the planned follow-on V–22 MYP contract covering fiscal year 2013–2017. The funds requested in the fiscal year 2013 President's budget fully fund Lot 17 and procure long lead items for Lot 18 as well as Economic Order Quantity buys for Lots 18–21. The Marine Corps continues to field and transition aircraft on time. The APN request includes $95.9 million to support the ongoing Operations and Safety Improvement Programs (OSIP), including correction of deficiencies and readiness.

The MV–22B has been supporting the Marines continuously since October 2007, in extreme environmental conditions during thirteen deployments to Iraq, Afghanistan and aboard amphibious shipping. In February 2011, the V–22 fleet exceeded a total of 100,000 flight hours. The MV–22B squadrons in Afghanistan and the MEU are seeing mission capable rates in the 70 percent range and are performing every assigned mission. Additionally, the Osprey has the lowest Class A flight mishap rate of any USMC-fielded tactical rotorcraft over the past 10 years.

The effectiveness and survivability of this revolutionary, first-of-type MV–22B Osprey tiltrotor has been repeatedly demonstrated in combat. The rescue of a downed F–15E airman during Operation Odyssey Dawn was an example of what the Navy and Marine Corps' expeditionary force brings our Nation. As an integral part of that seaborne presence, the MV–22B was able to perform its part of this mission with unprecedented speed and agility. Twenty minutes from the time he was evading capture in hostile territory, the rescued pilot was safely back on American territory aboard USS *Kearsarge*.

Under the existing MYP, Ospreys have been delivered under cost and on time. The fifth and final buy under the multiyear occurred in fiscal year 2012; the fiscal year 2013 President's budget request includes provisions for a second MYP which builds on the successes of the first. This second MYP will procure 91 MVs over 5 years and will produce significant savings when compared to single year procurements. The stability it provides supports the Marine Corps' need to retire old aircraft and field new and better capabilities. Additionally, the stabilization of the supplier base encourages long-term cost reduction initiatives on the part of the prime contractors and their suppliers.

The introduction of this new tiltrotor capability into combat has provided valuable lessons with respect to readiness and operating costs. Improvements to both continue and are having a clear effect on increasing aircraft availability and decreasing flight hour costs. At the close of fiscal year 2011, the mission capability rate of the

MV–22 was up 19 percent over fiscal year 2010 and the cost per flight hour decreased 13 percent in the same period. Due to these cost reduction efforts, the V–22 program received the prestigious David Packard Excellence in Acquisition Award which recognizes exemplary performance and innovation acquiring and delivering products and capabilities to the warfighter.

To keep these improvements on track a readiness OSIP was introduced into the fiscal year 2012 President's budget. This OSIP provides a stable source of crucial modification funding as the Ospreys continue to improve readiness and reduce operating cost.

The MV–22B capability is being increased and fielded over time via a block upgrade acquisition strategy. The great benefit of a fly-by-wire rotorcraft was very clear recently when the Osprey increased airspeed and lift by simply modifying the flight control software. Such improvements require thorough testing; fiscal year 2013 RDT&E,N funds will be utilized to complete a fully-instrumented test aircraft which will replace the existing test aircraft. The current test aircraft is five iterations behind the V–22 being flown today and requires hundreds of maintenance man-hours per flight hour to operate and maintain.

FIXED WING AIRCRAFT

*KC–130J*

The fiscal year 2013 President's budget requests $942 million in APN across the FYDP for procurement of eight KC–130Js and continued product improvements. Targeted improvements include propeller and air-to-air refueling hose reel reliability, aircraft survivability through advanced electronic countermeasure modernization and replacing Vietnam-era flare dispensers used for battlefield illumination, greatly enhancing mission effectiveness.

The KC–130J Hercules achieved IOC in 2005 and has been fielded throughout our active force, bringing increased capability, performance and survivability with lower operating and sustainment costs to the MAGTF. Forward deployed continuously in support of Operations Iraqi and Enduring Freedom since 2005, the KC–130J continues to deliver marines, fuel and cargo wherever needed. In 2011 the KC–130J continued to be a force multiplier for the Marine Corps through its support to combat operations in Afghanistan, humanitarian and disaster relief efforts in Pakistan, Tunisia and Japan, tactical recovery of downed aircrew in Libya, and support to Marine Expeditionary Units worldwide.

In September 2010, the Marine Corps fielded the first bolt-on/bolt-off Harvest Hawk intelligence, surveillance, and reconnaissance (ISR)/weapon mission kit for the KC–130J, expanding the role of the MAGTF's tanker. With the mission kit installed, the KC–130J is capable of providing persistent close air support and multisensor imagery reconnaissance for our Marines in harm's way. Three mission kits have been fielded to date, with three more expected to field in fiscal year 2013.

The USMC has procured 47 KC–130Js, 32 aircraft short of the 79 aircraft program of record. Procurement of the program of record will allow us to fully outfit our Active and Reserve Force with this unique, multi-mission assault support and refueling platform. The Reserve component is programmed to begin transition from the legacy KC–130T aircraft to the more capable, more efficient KC–130J aircraft beginning in fiscal year 2015. This Reserve component transition will begin with the aircraft requested in the fiscal year 2013 President's budget. Delays in procurement would force the Marine Corps to sustain the KC–130T aircraft longer than planned at an increased cost.

*P–8A Poseidon*

The P–8A Poseidon recapitalizes the maritime patrol anti-submarine warfare (ASW), anti-surface warfare (ASUW) and armed ISR capability currently resident in the P–3C Orion. The P–8A combines the proven reliability of the commercial 737 airframe and avionics with an open architecture that enables integration of modern sensors and robust communications. The fiscal year 2013 President's budget requests $421 million in RDT&E, N for integrated development and associated testing and $2.837 billion for procurement of 13 FRP P–8A Poseidon aircraft which are scheduled to begin delivery in May 2015. APN funding supports AP for the subsequent FRP procurement lot. The program is on track for IOC in late 2013 when the first squadron will have completed transition and is ready to deploy. The P–8A program is meeting all cost, schedule and performance parameters in accordance with the Acquisition Program Baseline.

In August 2010 the P–8A program surpassed Milestone C, authorizing the Navy to proceed with procurement of LRIP Lots 1, 2, and 3 for 6 aircraft in fiscal year 2010, 7 aircraft in fiscal year 2011 and 11 aircraft in fiscal year 2012. The Navy

awarded the LRIP Lot 1 contract in January 2011 and LRIP Lot 2 contract in November 2011. On March 2012, the first LRIP aircraft was delivered to Patrol Squadron 30 at NAS Jacksonville, FL. The first three flight test aircraft are being flown at NAS Patuxent River, MD, in support of integrated operational test and evaluation (IOT&E). Two of three production representative aircraft have been accepted by the Navy to support IOT&E. The third of these aircraft has been supporting integrated test and training in preparation for IOT&E and will be formally accepted by the Navy prior to commencement of IOT&E.

*P–3C Orion*

The legacy P–3C fleet continues to provide ASW, ASUW, and ISR support for Joint and Naval operations worldwide. In fiscal year 2013, $148.4 million is requested for P–3C airframe and mission systems sustainment. Nearly one third ($41.4 million) is for wing modifications to support the CNO's P–3 Fleet Response Plan, as well as supporting EP–3E requirements, which are executed within the P–3 Airframe Sustainment Program. Mission systems sustainment and modernization totals $107 million to address numerous safety of flight and obsolescence issues. The P–3C is being sustained to maintain warfighting capability and capacity until completion of P–8A transition in fiscal year 2018.

The aircraft is well beyond planned fatigue life of 7,500 hours for critical components, with an average airframe usage of over 17,000 hours. Since February 2005, 14 aircraft grounding bulletins have impacted 118 P–3 aircraft. In December 2007, NAVAIR's ongoing RDT&E funded P–3 Fatigue Life Management Program determined that in addition to existing structural fatigue issues associated with the forward lower wing section (Zones 2–4), the lower aft wing surface (Zone 5) of the P–3 aircraft showed fatigue damage beyond acceptable risk resulting in the grounding of an additional 39 P–3 aircraft. As of February 2012, a total of 75 aircraft have been grounded for Zone 5 fatigue. P–3 groundings due to known material fatigue will continue for the remainder of the P–3 program, and unknown fatigue issues will continue to present persistent risk until P–8A transition is complete. A return to pre-December 2007 aircraft availability numbers was achieved in December 2010; 83 P–3C mission aircraft are available today. Preserving funding for Zone 5 and outer wing kits and installations is critical to sustaining the minimum number of P–3Cs until replaced by the P–8A. The Navy will continue to manage closely the service life of the P–3C through transition to the P–8A Poseidon.

*EP–3 Aries Replacement/Sustainment*

The EP–3E ARIES is the Navy's premier manned airborne intelligence, surveillance, reconnaissance, and targeting (AISR&T) platform. The joint airborne SIGINT common configuration includes signals intelligence (SIGINT) spiral upgrades, which, in conjunction with SECDEF and the ISR Task Force (ISR TF) surge efforts, are fielding a robust multi-intelligence (INT) capability inside the FYDP. Multi-INT sensors, robust communication, voice over IP and data links employed by the flexible and dependable P–3 air vehicle help ensure effective AISR&T support to conventional and non-conventional warfare across the current range of military operations. Operating around the globe, the EP–3E continues to satisfy critical Joint, Combatant Commander, and Service airborne ISR priorities and requirements.

In fiscal year 2013, the President's budget request is $79.4 million in APN, including $13.0 million for OCO to address EP–3E SIGINT and communications capability upgrades and obsolescence. The APN request supports the FRP installations and procurements for communications intelligence modifications necessary to keep pace with the evolving threat. The EP–3E program continues to modify aircraft with multi-intelligence capability to meet emergent classified requirements. Modifications are necessary to keep the platform viable until the EP–3 capabilities are recapitalized.

The Navy is in the process of developing the AISR&T family of systems construct to recapitalize the EP–3 AISR&T capabilities within existing of Program of Record platforms; BAMS, VTUAV, UCLASS, P–8, H–60, and E–2D. The strategy has been further refined to focus on module systems and payloads required for the Navy to conduct AISR&T on a variety of vehicles, providing the COCOM with scalable capability and capacity. An inclusive full spectrum approach of the Navy sea and shore based manned and unmanned platforms align with the CNO's priorities.

ASSAULT SUPPORT HELICOPTER

*CH–53K Heavy Lift Replacement Program*

The fiscal year 2013 President's budget requests $606 million RDT&E,N to continue SDD of the CH–53K. Since completing its critical design review in July 2010, the CH–53K program began system capability and manufacturing process dem-

onstration, and started fabrication of the first test aircraft. During fiscal year 2013, the program will continue work on manufacturing the various test articles needed to support developmental test activities to achieve the planned first flight of the CH–53K in 2014.

The new build CH–53K will replace the legacy fleet of CH–53D/E helicopters with an aircraft that provides the performance necessary to support our future warfighting requirements. The CH–53E Super Stallion provides unparalleled combat assault support to the MAGTF and is one of the Marine Corps' most-stressed aviation communities. CH–53s, providing vital lift of heavy equipment, supplies and troops, are currently deployed in Afghanistan, the Horn of Africa, and onboard ship with our MEUs. Since May 2011, CH–53D/Es have flown over 19,000 hours; carried more than 73,000 passengers and moved over thirteen million pounds of cargo in support of coalition forces in Afghanistan and the Horn of Africa while flying well above their programmed rates in austere, expeditionary conditions. The need for heavy lift support has increased substantially when compared to last year's numbers over the same reporting period. The only heavy lift helicopters deployed to Afghanistan, CH–53D/Es have performed combat external recoveries of five coalition helicopters during this period. Forward-deployed aircraft have been operating at up to three times the peacetime utilization rates.

To keep these platforms viable until the CH–53K enters service, the fiscal year 2013 President's budget requests $61.4 million for both near- and mid-term enhancements, including Integrated Mechanical Diagnostic System, T–64 Engine Reliability Improvement Program kits, directed infrared countermeasures, critical survivability upgrade, and sustainment efforts such as Kapton wiring replacement. While these aircraft are achieving unprecedented operational milestones, they are nearing the end of their service life. The CH–53E is approaching 30 years of service and the CH–53D is scheduled to retire from active service in late 2012, after operating for almost 40 years.

The new-build CH–53K will fulfill land and sea based heavy-lift requirements not resident in any of today's platforms, and contribute directly to the increased agility, lethality, and presence of joint task forces and MAGTFs. The CH–53K will transport 27,000 pounds of external cargo out to a range of 110 nautical miles, nearly tripling the CH–53E's lift capability under similar environmental conditions, while fitting into the same shipboard footprint. The CH–53K will also provide unparalleled lift capability under the high altitude, hot weather conditions similar to those found in Afghanistan, greatly expanding the commander's operational reach.

Maintainability and reliability enhancements of the CH–53K will improve aircraft availability and operational effectiveness over the current CH–53E with improved cost effectiveness. Additionally, survivability and force protection enhancements will increase protection dramatically, for both aircrew and passengers, thereby broadening the depth and breadth of heavy lift operational support to the joint task force and MAGTF commander. Expeditionary heavy-lift capabilities will continue to be critical to successful land- and sea-based operations in future anti-access, area-denial environments, enabling seabasing and the joint operating concepts of force application and focused logistics.

ATTACK AND UTILITY AIRCRAFT

*UH–1Y/AH–1Z*

The fiscal year 2013 President's budget requests $31.1 million in RDT&E,N for continued product improvements and $824.1 million in APN for 28 H–1 Upgrade aircraft: 15 UH–1Y and 13 AH–1Z (includes one OCO) aircraft. The program is a key modernization effort designed to resolve existing safety deficiencies, to enhance operational effectiveness, and to extend the service life of both aircraft. The 85 percent commonality between the UH–1Y and AH–1Z will reduce lifecycle costs and logistical footprint significantly, while increasing the maintainability and deployability of both aircraft. The program will provide the Marine Corps 349 H–1 aircraft through a combination of remanufacturing and new production.

The H–1 Upgrades Program is replacing the Marine Corps' UH–1N and AH–1W helicopters with state-of-the-art UH–1Y and AH–1Z aircraft. These legacy aircraft have proven enormously effective over decades of heavy use, and as they reach the end of their service lives, we look forward to expanding utility and attack helicopter capabilities. The new "Yankee" and "Zulu" aircraft are fielded with integrated glass cockpits, world-class sensors, and advanced helmet-mounted sight and display systems. The future growth plan includes a digitally-aided, close air support (CAS) system designed to tie these airframes, their sensors, and their weapons systems together with ground combat forces and capable DOD aircraft. Low-cost weapons such

as the Advanced Precision Kill Weapon System II (APKWS II) will increase lethality while reducing collateral damage.

The UH–1Y "Yankee" aircraft achieved Initial Operating Capability (IOC) in August 2008 and full rate production (FRP) in September 2008. The "Yankee Forward" procurement strategy prioritized UH–1Y production in order to replace the underpowered UH–1N fleet as quickly as possible. The AH–1Z completed its operational evaluation (OT–II3C) in June 2010 and received approval for FRP in November 2010. As of April 6, 2012, 81 aircraft (58 UH–1Ys and 23 AH–1Zs) have been delivered to the Fleet Marine Force; an additional 50 aircraft are on contract and in production. Lots 1–5 aircraft deliveries are complete and Lot 6 deliveries are progressing on schedule. To date, all aircraft deliveries since Lot 3 have been completed ahead of the contracted schedule date.

The AH–1Z achieved IOC in February 2011 and in November 2011, the first all-Upgrades (UH–1Y/AH–1Z) MEU departed on November 15, 2011 with the USS *Makin Island* Amphibious Ready Group. The UH–1Y completed its first overseas deployment with the 13th MEU in July 2009 and has supported sustained combat operations in Operation Enduring Freedom (OEF) since November 2009. The fourth OEF UH–1Y deployment (nine aircraft) is ongoing, and aircraft continue to meet required readiness goals. This deployment marks 2 years in OEF with the UH–1Y flying nearly 11,500 hours in support of combat operations. The aircraft continue to fly three times the normal continental United States (CONUS)-based utilization rate in OEF, and increased sortie rates are expected in support of the 11th MEU. The combined UH–1Y/AH–1Z fleet has flown over 44,000 hours since first delivery in January 2007.

In December 2011, to address existing attack helicopter shortfalls, the Marine Corps decided to pursue an all AH–1Z build new (ZBN) procurement strategy and leave AH–1W airframes in inventory rather than removing them to begin the remanufacture process. The transition to an all ZBN airframe strategy is planned to begin with Lot 10 (fiscal year 2013) as reflected in the current USMC program of record. The previous mix of 131 remanufactured AH–1Z and 58 ZBN aircraft has been revised to delivery of 37 remanufactured AH–1Z and 152 ZBN aircraft. The total aircraft procurement numbers remain the same at 160 UH–1Ys and 189 AH–1Zs for a total of 349 aircraft.

ANTISUBMARINE AND SUPPORT HELICOPTER

*MH–60R and MH–60S*

The fiscal year 2013 President's budget requests $843.1 million for 19 MH–60R aircraft including Advanced Procurement (AP) for 19 fiscal year 2014 aircraft and $6.9 million RDT&E,N for continued replacement of the Light Airborne Multi-Purpose System MK III SH–60B and carrier-based SH–60F helicopters with the MH–60R. The RDT&E,N funds will continue development of the Mode V interrogation capability for the identification friend-or-foe system. The Automatic Radar Periscope Detection and Discrimination program, a fleet-driven capability upgrade to the APS–147 Radar, is scheduled for IOC in fourth quarter, fiscal year 2013.

The MH–60R is used in both ASW with its dipping sonar, sonobuoys and torpedoes and in the surface warfare (SUW) role with its Electronics Surveillance Measures system, multimode radar with inverse synthetic aperture radar, Forward Looking Infrared (FLIR) system and Hellfire missiles. It has demonstrated significant improvement in capability in the ASW and SUW capability roles over legacy systems. The MH–60R program achieved FRP in 2006 and the fifth MH–60R operational deployment is currently underway with HSM–77 aboard the carrier USS *Abraham Lincoln* (CVN–72). There are five operational carrier air wing squadrons and two fleet replacement squadrons operating the MH–60R. Three additional air wing and two Expeditionary operational squadrons will transition to the MH–60R by the end of fiscal year 2013.

The fiscal year 2013 President's budget requests $456.9 million in APN for 18 MH–60S aircraft including AP for 18 fiscal year 2014 aircraft and $29.7 million in RDT&E,N funds for the MH–60S to continue development of the Organic Airborne Mine Countermeasures (OAMCM) (Block II) and the Armed Helicopter (Block III) missions. The MH–60S is the Navy's primary combat support helicopter designed to support carrier and expeditionary strike groups. The MH–60S has replaced three legacy Navy helicopter platforms. The basic MH–60S reached IOC and FRP in 2002. The Armed Helicopter configuration reached IOC in 2007 and OAMCM is scheduled to reach IOC with the LCS Mission Module in 2014. The fifth MH–60S operational deployment is currently underway with HSC–12 aboard USS *Abraham Lincoln* (CVN–72). MH–60S helicopters currently operate with self-defense equipment, crew-served weapons and Hellfire missiles. MH–60S configuration enhancements include

fixed forward firing weapons that will begin fielding in 2012. There are five operational carrier air wing squadrons, six Expeditionary squadrons, and two fleet replacement squadrons operating the MH–60S. One additional air wing squadron will transition to the MH–60S by the end of fiscal year 2013.

The National Defense Authorization Act for Fiscal Year 2012 and Consolidated Appropriations Act included congressional authority to enter into the joint Army UH–60M/HH–60M and Navy MH–60R/S helicopter MYP contract (MYP8) and the Navy MH–60R/S Mission Systems and Common Cockpit contract (MYP2).

EXECUTIVE SUPPORT AIRCRAFT

*VH–3D/VH–60N Executive Helicopters Series*

The VH–3D and VH–60N are safely performing the executive lift mission worldwide. As these aircraft continue to provide seamless vertical lift for the President and Vice President of the United States, the Department is working closely with HMX–1 and industry to sustain these aircraft until a Presidential Replacement platform is fielded. The fiscal year 2013 President's budget requests an investment of $58 million to continue programs that will ensure the in-service Presidential fleet remains a safe and reliable platform. Ongoing efforts include the Cockpit Upgrade Program for the VH–60N, Communications Suite Upgrade, Structural Enhancement Program and the Obsolescence Management Program. The VH–3D Cockpit Upgrade Program, a fiscal year 2012 new start program, will provide a common cockpit with the VH–60N and address obsolescence issues. Continued investments in the in-service fleet will ensure continued safe and reliable execution of the executive lift mission.

*VH–71/VXX Presidential Helicopter Replacement Aircraft*

The fiscal year 2013 President's budget includes $61.1 million for continuing efforts on VXX, the follow-on program for presidential helicopters. The fiscal year 2013 request reflects a funding adjustment that is a result of rephasing the VXX program.

The requirement for a replacement Presidential helicopter was validated by the Joint Requirements Oversight Council; the details and specifications on how the requirement will be met safely and affordably have not yet been finalized. VXX activity in 2012 will focus on completing the update to the AoA, and to continue to develop an acquisition strategy that targets affordability, cost control and reduction of risk prior to the award any major contracts. The Navy will leverage the results from the risk and cost reduction activities associated with maturing technologies to not only improve the functionality and sustainment of the in-service Presidential helicopter fleet, but to also position the replacement program for optimal execution.

UNMANNED AERIAL SYSTEMS

*MQ–4C Broad Area Maritime Surveillance (BAMS) UAS*

The fiscal year 2013 President's budget requests $657.5 million RDT&E,N to continue SDD of the BAMS UAS, $51.1 million in APN for procurement of long-lead materials for the first lot of low-rate initial production aircraft, and $70.9 million in Military Construction to construct a main operating base at NAS Jacksonville, as well as a forward operating base and a maintenance training facility to support IOC. The Milestone B decision for the BAMS UAS program was achieved on April 18, 2008. The program is on schedule and will complete first flight this year, with Milestone C planned for fiscal year 2013. The BAMS UAS program will meet the Navy requirement for a persistent ISR capability. BAMS UAS is a large Group-5 system that will greatly enhance situational awareness of the battlespace and shorten the sensor-to-shooter kill chain.

The Navy procured two Air Force (USAF) Global Hawk (Block 10) UASs in fiscal year 2004 for demonstration purposes and to perform risk reduction activities for the BAMS UAS Program. This effort is known as the BAMS–Demonstrator (BAMS–D) program. In April 2011, Navy accepted three additional Block 10 aircraft from the USAF to be utilized as spare parts assets. BAMS–D UAS has been deployed to the CENTCOM theater of operations for over 3 years.

*MQ–8B Vertical Takeoff and landing Unmanned Aerial Vehicle (VTUAV) and associated Rapid Deployment Capability (RDC) efforts*

The MQ–8 Fire Scout is an autonomous vertical takeoff and landing tactical UAV (VTUAV) designed to operate from all air-capable ships, carry modular mission payloads, and operate using the Tactical Control System and line-of-sight Tactical Common Data Link. Fire Scout has completed over 200 autonomous ship board take-offs and landings. The fiscal year 2013 President's budget requests $99.6 million

RDT&E to continue development of an endurance upgrade (MQ–8C), integrate radar and integrate weapons on the MQ–8B, and $133.8 million APN for the production of six Fire Scout MQ–8C aircraft and ship control stations. The RDT&E budget includes funding to increase endurance and integrate specialty payloads to support the Special Operation Forces (SOF) mission using the RDC process (Approved AFRICOM JUONS) and satisfy a NAVCENT Urgent Operational Needs Statement 18-month Rapid Deployment Capability for the weaponization of the MQ–8B. The MQ–8B aircraft quantity supports Littoral Combat Ship (LCS) missions, near-term SOF missions until the MQ–8C endurance upgrade is fielded and ISR TF demands in Afghanistan. Procurement of ship-based control stations is aligned with both the LCS mission and outfitting frigates (FFGs) and other ships to support the SOF missions. The ship-based control station and other ship ancillary equipment is common between MQ–8B and MQ–8C. Production of the MQ–8C was included in the APN budget starting in fiscal year 2012. Commonality of avionics, software, and payloads between the MQ–8B and MQ–8C is being maximized. The primary difference between the MQ–8B and MQ–8C is in the commercial airframe provided for each variant. The MQ–8B uses the Schweitzer 333 helicopter while the MQ–8C uses the Bell 407 helicopter. The MQ–8C will almost triple the MQ–8B endurance and greatly increase the payload capacity. At least 28 MQ–8C aircraft Endurance Upgrades are required to support the SOF mission and are included in the RDC. The MQ–8B system has performed a military utility assessment (MUA) aboard USS *Halyburton* to evolve fleet concepts for operation of the system and successfully completed a 2 month SOF proof of concept evaluation in an operational environment. Fire Scout has been integrated into and is currently deployed aboard USS *Simpson* and deployments are in work for USS *Klakring*, USS *Bradley*, and USS *Samuel B. Roberts* to support SOF and Navy operations in 2012 and 2013. Fire Scout was deployed to Afghanistan in April 2011 to support the ISR Task Force with 300 hours per month of ISR video from an expeditionary facility. As of February 2012, Fire Scout has provided over 2,100 ISR flight hours in Afghanistan. The Afghan 90 day user assessment gave Fire Scout its highest grades in all categories, and the user has requested additional Fire Scout aircraft and spares to grow the requirement to 600 hours per month. The Fire Scout program will also continue to support integration and testing in all LCS-based mission modules. Navy continues to cooperate with the Coast Guard for their ship-based UAS planning.

*Unmanned Combat Air System Carrier Demonstration*

The fiscal year 2013 President's budget requests $142.3 million RDT&E to continue the Navy Unmanned Combat Air System Carrier Demonstration (UCAS–D) efforts to research a tactical jet-sized, carrier-suitable, low-observable-relevant, unmanned aircraft system. The UCAS–D program will demonstrate UCAS carrier operations and autonomous aerial refueling (AAR), and mature required technologies to technology readiness level (TRL)-6 in support of potential follow on unmanned acquisition programs. The aviation/ship integration portion of the program is meeting all technical objectives, with surrogate aircraft flights in vicinity of aircraft carriers (CV) completed in 2009 and 2010. In July 2011, the first ever unmanned coupled approaches to CVN landing were completed and integration data was gathered during F/A–18 surrogate testing aboard USS *Dwight D. Eisenhower* (CVN–69). The UCAS–D contract was competitively awarded to Northrop Grumman in August 2007. The program was re-baselined in 2010 due to delays in the original contract schedule which was focused on early completion of UCAS–D objectives. The re-baselined schedule is executable within existing resources; completion of the carrier demonstration is planned for fiscal year 2013. The first X–47B (AV–1) completed its first flight February 4, 2011 and has flown a total of 16 envelope expansion flights at Edwards AFB, CA. AV–2 completed its first flight November 22, 2011. AV–1 completed transport to NAS Patuxent River, MD, in December 2011 to begin check-outs and testing in support of carrier suitability and operations. Shipboard X–47B deck handling operations and flight operations in the vicinity of an aircraft carrier are scheduled to begin in the fourth quarter of 2012. Actual catapult launches, arrested landings and additional flight operations in the vicinity of a CV are scheduled to be completed in 2013. The latest AAR testing period was completed in January 2012 utilizing a manned surrogate aircraft, and AAR development and testing will continue throughout 2012 and 2013. The program is constrained by USN CVN schedules and planning. Currently the program is working closely with USN and CVN leadership to reduce risk and align program and CVN operational schedules to best accommodate demonstration objectives. UCAS–D is an essential first step toward full-scale development of a carrier-suitable unmanned ISR/strike platform. Successful UCAS–D sea trials will set the stage for potential follow-on acquisition programs.

*Medium Range Maritime UAS*

The fiscal year 2013 President's budget indefinitely defers the Medium Range Maritime UAS (MRMUAS) prior to initiation of Milestone A. OSD (AT&L) approved the MRMUAS Material Solution Analysis and authorized the start of an AoA and a draft capability development document (CDD) in fiscal year 2011. The AoA and CDD drafting will be completed in fiscal year 2012. These documents will support the Navy's next generation of sea based Group 4 UAS and identify technology investments needed to improve the Navy's sea based UAS systems.

*Tactical Control Station*

The fiscal year 2013 President's budget requests $9.1 million RDT&E for the Tactical Control Station (TCS). TCS provides a standards compliant, open architecture, with scalable capabilities for command, control, of the VTUAV system. TCS completed the software transition from the Solaris operating system to the Linux operating system in 2011. The Linux operating system conversion will overcome hardware obsolescent issues with the VTUAV Solaris-based control stations and provide lower cost software updates using DOD common application software. In addition, the TCS Linux upgrade will enhance collaboration with the Navy's future UAS common control station. The TCS program is also supporting the VTUAV weaponization, radar, and MQ–8C endurance upgrade RDC efforts. The TCS program has continually met schedule and cost goals over the last 5 years while delivering quality software. In fiscal year 2013, TCS will continue the VTUAV RDC efforts, support transitioning the Linux operating system software to a technology refreshed control station, enhance the VTUAV Ocean Surveillance Initiative for ships Automatic Identification System and sensor track generation, and develop an interface to an ISR Process Exploit Dissemination (PED) system. The PED system will facilitate imagery analysis and utilization by the host ship.

*Cargo Unmanned Aerial System*

The fiscal year 2013 President's budget is not requesting funding for continued Cargo Unmanned Aerial System (CUAS) deployment in fiscal year 2013. The previous effort supported the USMC operational requirements captured in a CUAS Joint Urgent Operational Needs (JUONS). The Marine Corps is assigned the lead service. Two vendors were awarded contracts in support of Cargo UAS development. The CUAS initiative is a MUA which will inform a follow-on program of record.

Lockheed Martin/Kaman KMAX Cargo UAS completed the quick reaction assessment on time and was selected for the RDC. CUAS operations were started in November 2011 and are planned for 6 months with priced options for an additional 6 months. The CUAS is meeting the RDC goals and is also supporting the development of UAS concept of operations (CONOPS).

The purpose of the Cargo UAS capability is to develop CONOPS to "get trucks off the roads" in combat zones, minimizing the improvised explosive device threat to logistics convoys. The CUAS will provide a low risk, persistent, 24-hour capability for dispersed forces on the battlefield. This capability mitigates the requirement for manned ground vehicles to resupply forces in remote locations. The CUAS will also augment manned aviation assault support assets and airdrop methods when the weather, terrain, and enemy pose an unsuitable level of risk. Aerial delivery of cargo by the CUAS, between main logistical hubs and remote "spokes," is being executed under the control of a ground control station at a main operating base and a remote terminal at the drop-off zone.

*RQ–21A Small Tactical Unmanned Aircraft System (STUAS)*

The fiscal year 2013 President's budget requests $33.9 million in RDT&E,N ($9.73 million Navy, $24.2 million Marine Corps) and $9.6 million in APN and $27.6 million in PMC for 15 (5 USN, 10 USMC) RQ–21A Integrator STUAS that will address Marine Corps and Navy ISR capability shortfalls currently supported by service contracts. This Group 3 UAS will provide persistent, ship and land-based ISR support for tactical-level maneuver decisions and unit level force defense/force protection missions. Milestone B and contract award occurred in July 2010. Milestone C and LRIP decisions are scheduled for the first quarter of fiscal year 2013. STUAS will enter into IOT&E 3rd Qtr fiscal year 2013.

*RQ–7B Marine Corps Tactical UAS (MCTUAS)*

The fiscal year 2013 President's budget requests $0.9 million RDT&E to continue development efforts and government engineering support and $49.3 million in APN to support the continuation of congressionally mandated TCDL retrofits for RQ–7B Shadow units. USMC Shadow squadrons have seen continuous service in Iraq and Afghanistan since 2007. The USMC received its 13th RQ–7B Shadow system in first quarter fiscal year 2012, completing baseline fielding for four squadrons. The USMC

Shadow systems are identical to Army Shadow systems, bringing interoperability and commonality between Army and Marine Corps unmanned aircraft units operating side-by-side in Afghanistan. An 18-month initiative to weaponize two USMC RQ–7B systems with a laser-guided projectile was started in the first quarter of fiscal year 2012.

*Unmanned Carrier Launched Airborne Surveillance and Strike System*

The fiscal year 2013 President's budget requests $122.5 million RDT&E for the Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS) System efforts. The UCLASS system will enhance carrier capability and versatility for the Joint Forces commander through integration of a persistent and mission flexible unmanned aircraft into the carrier air wing. In April 2011, the UCLASS initial capabilities document was approved by the Joint Requirements Oversight Council. The UCLASS system will provide persistent intelligence surveillance and reconnaissance (ISR) with precision strike in a range of mission including irregular warfare and major combatant operations environments. It will be sustainable onboard an aircraft carrier, as well as ashore, and will be designed to minimize increases in the logistics footprint of the current carrier air wing. The UCLASS system will have the ability to pass command and control information along with sensor data to other aircraft, naval vessels, and ground forces. Sensor data will be transmitted, in either raw or processed forms, at appropriate classification levels, to exploitation nodes afloat and ashore. Interfaces will be provided with existing ship and land-based command and control systems, including ISR tasking, as well as processing, exploitation, and dissemination systems. The UCLASS system will achieve these capabilities through the use of a carrier-suitable, semi-autonomous, unmanned air segment, a control system and connectivity segment, and a carrier segment.

WEAPONS PROGRAMS

*Tactical Tomahawk BLK IV Cruise Missile Program*

The fiscal year 2013 President's budget requests $308.97 million of Weapons Procurement, Navy (WPN) for procurement of an additional 196 BLK IV weapons and associated support, $34.9 million of OPN for the Tactical Tomahawk Weapon Control System (TTWCS), and $8.8 million in RDT&E for capability updates of the weapon system. WPN resources will be for the continued procurement of this versatile, combat-proven, deep-strike weapon system in order to meet surface and subsurface ship-fill load-outs and combat requirements. OPN resources will address the resolution of TTWCS obsolescence and interoperability mandates. RDT&E will be used to complete engineering, test, and transition of the Joint Multi-Effect Warhead System into the program production baseline. Since the submittal of the President's budget request for 2012, Congress approved the fiscal year 2011 Omnibus reprogramming request for $310 million to replace the 221 missiles expended in Operation Odyssey Dawn. These additional missiles will be procured in fiscal year 2012. Due to constraints in the ceiling in the fiscal year 2012 contract, 56 missiles funded with fiscal year 2012 procurement funds will be added to quantities funded with fiscal year 2013 procurement funds (196) and will be ordered under the fiscal year 2013 contract.

*Tomahawk Theater Mission Planning Center*

Tomahawk Theater Mission Planning Center (TMPC) is the mission planning segment of the Tomahawk Weapon System. Under the umbrella of TMPC, Tomahawk Command and Control System (TC2S) develops and distributes strike missions for the Tomahawk Missile; provides precision strike planning, execution, coordination, missile control and reporting; and enables Maritime Component Commanders the capability to plan and/or modify conventional Tomahawk Land-Attack Missile missions. The fiscal year 2013 President's budget requests $2.5 million RDT&E and $42.9 million OPN for continued TMPC system upgrades and support. These resources will complete fielding of TC2S version 4.3, complete the upgrade and testing to TC2S versions 5.0, begin the redesign of legacy software code in the Tomahawk Planning System, a TC2S component, to increase system security, and initiate the upgrade to TC2S version 6.0. These planned upgrades will improve joint interoperability, mission planning time and system usability. These resources are critical towards supporting 125 planning sites, to include Cruise Missile Support Activities; Tomahawk strike and mission planning cells; carrier strike groups, command and control nodes and labs/training classrooms.

*Sidewinder Air-Intercept Missile (AIM–9X)*

The fiscal year 2013 President's budget requests $21.1 million of RDT&E and $80.2 million of WPN for this joint DoN and USAF program. RDT&E will be applied

toward AIM–9X/BLK II developmental/operational tests and requirements definition for Joint Staff-directed insensitive munitions requirements, as well as initial AIM–9X/Block III development activities. WPN will be for production of a combined 150 all-up-rounds and captive air training missiles and missile-related hardware. The AIM–9X Sidewinder missile is the newest in the Sidewinder family and is the only short-range infrared air-to-air missile integrated on USN/USMC/USAF strike-fighter aircraft. This fifth-generation weapon incorporates high off-boresight acquisition capability and increased seeker sensitivity through an imaging infrared focal plane array seeker with advanced guidance processing for improved target acquisition; and advanced thrust vectoring capability to achieve superior maneuverability and increase the probability of intercept of adversary aircraft.

*Advanced Medium-Range Air-to-Air Missile (AMRAAM/AIM–120)*

The fiscal year 2013 President's budget requests $2.9 million for continuing RDT&E efforts and $102.7 million for production of 67 captive air training missiles and missile-related hardware. AMRAAM is a joint Navy and Air Force missile that counters existing aircraft and cruise-missile threats. It uses advanced electronic attack capabilities at both high and low altitudes, and can engage from beyond visual range as well as within visual range. AMRAAM provides an air-to-air first look, first shot, first kill capability, while working within a networked environment in support of the Navy's theater air and missile defense mission area.

*Small Diameter Bomb II*

The fiscal year 2013 President's budget requests $31.1 million of RDT&E for the continued development of this joint DoN and USAF weapon and bomb-rack program. Small Diameter Bomb II (SDB II) provides an adverse weather, day or night standoff capability against mobile, moving, and fixed targets, and enables target prosecution while minimizing collateral damage. SDB II will be integrated into the internal carriage of both the Navy (F–35C) and Marine Corps (F–35B) variants of the Joint Strike Fighter and will be compatible with the BRU–61/A miniature-munitions carriage. The Joint Miniature Munitions Bomb Rack Unit (JMM BRU) BRU–61A/A is being developed to meet the operational and environmental integration requirements for internal bay carriage of the SDB II in the F–35B and F–35C. SDB II entered Milestone B in August 2010 and successfully completed its Critical Design Review in January 2011. JMM BRU will enter technology development in May 2013.

*Joint Standoff Weapon*

The fiscal year 2013 President's budget requests $5.5 million of RDT&E for continued Joint Standoff Weapon (JSOW)–C–1 test activity and $127.6 million of WPN for production of 280 all-up rounds. The JSOW–C–1 variant fills a critical capability gap by adding maritime moving-target capability to the highly successful baseline JSOW–C program. JSOW–C–1 targeting is achieved via a data-link and guidance software improvements.

*Advanced Anti-Radiation Guided Missile*

The fiscal year 2013 President's budget requests $7.0 million of RDT&E for the follow-on development and test program and $86.7 million of WPN for production of 100 all-up rounds and captive air training missiles. The Advanced Anti-Radiation Guided Missile (AARGM) development program transforms the legacy High-Speed Anti-Radiation Missile (HARM) into an affordable, lethal, and flexible time-sensitive strike weapon system for conducting destruction of enemy air defense missions. AARGM adds multi-spectral targeting capability and targeting geospecificity to its supersonic fly-out to destroy sophisticated enemy air defenses and expand upon the HARM anti-radiation missile target set. The program was approved for its third LRIP contract in October 2012. IOT&E restarted on August 10, 2011 and fired the last live test shots in March 2012. IOC on the F/A–18C/D aircraft is planned for the third quarter of fiscal year 2012. A full rate production decision is planned for the second half of fiscal year 2012.

*Hellfire Weapon System*

The fiscal year 2013 President's budget requests $91.5 million, including $17.0 million of OCO funding, for 1,210 Hellfire all-up-round weapons. Hellfire procurements are a mix of thermobaric, blast/fragmentation, and anti-armor warheads, to provide maximum operational flexibility to our warfighters. This procurement quantity will bring the inventory total to approximately 60-percent of the munitions requirement and will increase our training assets. The DoN continues to support legacy Hellfire weapons as well as procure and support technology enhancements that will provide the warfighter the flexibility to prosecute new and emerging threats.

The Hellfire missile continues to be a priority weapon for current military operations as it enables our warfighters to attack targets in the caves of Afghanistan, as well as to prosecute military operations in urban environments.

*Advanced Precision Kill Weapon System II*

The fiscal year 2013 President's budget requests $42.1 million of PAN&MC, including $17.9 million of OCO funding, for procurement of 2,358 Advanced Precision Kill Weapon System II (APKWS II) Precision Guidance Kits. After the DoN assumed program authority from the Army on September 30, 2008, Congress appropriated funding and approved a DoN above-threshold reprogramming (ATR) request in fiscal year 2008 to complete APKWS II development. Milestone C was achieved in April 2010 and LRIP contract award in July 2010. IOT&E was successfully completed in January 2012. IOC was achieved in March 2012. The program is on track for a full rate production decision the third quarter of fiscal year 2012. APKWS II will provide an unprecedented precision guidance capability upgrading our current unguided rockets, improving accuracy and minimizing collateral damage. The program is on schedule to meet the needs of our warfighters in today's theaters of operations.

*Direct Attack Moving Target Capability*

The fiscal year 2013 President's budget requests $15.4 million for the second FRP order of 1,069 weapons. Direct Attack Moving Target Capability (DAMTC) was initiated as a fiscal year 2007 RDC in response to an urgent requirement identified by the combatant commander overseeing operations in Iraq and Afghanistan. The RDC has now transitioned to a formal program of record, designated Joint Integration, entering the Department's formal acquisition system at Milestone C. DAMTC provides a flexible, dual-mode weapon capable of precision guidance and attack on stationary targets through the weather, as well as reactive targeting and attack of moving and maneuvering targets in clear weather. The material solution for the DAMTC program is the Laser Joint Direct Attack Munition. The Laser JDAM leverages proven baseline JDAM technology and the existing JDAM logistics infrastructure mitigating life-cycle support costs.

*Joint Air-to-Ground Missile*

The fiscal year 2013 President's budget provides no funding for the Joint Air-to-Ground (JAGM) Program. The JAGM system is currently a Joint Department of the Army/Department of the Navy pre-Major Defense Acquisition Program with the Army designated as the lead service. The Government utilized full and open competition to initiate the technology development (TD) phase of the JAGM program. In the TD Phase, the two contractors completed a preliminary design review, wind tunnel and ground testing, and flight testing in support of initial Navy platform integration activities. The originally planned 27-month TD phase is complete and OSD AT&L recently provided approval to extend the JAGM TD Phase. The Services recognize that Hellfire capability and inventory issues need to be addressed and that the requirement for JAGM remains valid. The extended TD Phase is addressing affordability concerns with the JAGM missile, and discussions continue between the DoN, the Army and OSD on the path forward.

Senator LIEBERMAN. Thanks very much, Admiral.

We will have 7-minute rounds for each of the Senator's questions, and I would ask that we would be notified when we hit that 7 minutes.

General Wolfenbarger, let me just ask a few follow-up questions on the F–22 problems in part for the record but, obviously, because I am interested. Describe what some of the problems have been from the pilots' point of view with the life support systems and hypoxia.

General WOLFENBARGER. Sir, we have had about 14 incidents of hypoxia-like symptoms prior to standing down the fleet, and that lasted about 4 months. We then began to fly again, and we have had 11 incidents since. Each individual is different in terms of their own unique symptoms, but there is generally disorientation, perhaps some dizziness, a feeling of nausea in some cases.

Senator LIEBERMAN. Obviously, there are symptoms experienced in air in the plane.

General WOLFENBARGER. Yes, sir.

Senator LIEBERMAN. Have the pilots been left with symptoms after they leave the aircraft?

General WOLFENBARGER. At times, yes, sir, and when they land, they are highly encouraged on the first onset of a sense that something does not feel right, that if there is any doubt in their mind at all, they have been counseled to return to base and to immediately report the incident, at which point they are screened, various samples are taken and sent to the medical experts so that we can collect the data associated with these incidents when they do occur.

Senator LIEBERMAN. Have any of the pilots been left with lasting disabilities as a result of these problems?

General WOLFENBARGER. No, sir, not to my knowledge.

Senator LIEBERMAN. Proceed then with the additional information you were going to offer.

General WOLFENBARGER. Sir, over the last few years in operation of the F–22, as we started to realize we were having these incidents, we have had a number of safety investigations that we have undertaken. Most recently, we had asked our scientific advisory board to do a very in-depth study. Through all of that work, we have yet to determine what the root cause is of that hypoxia-like reaction.

We have, however, in each one of those investigations collected a body of recommendations and risk mitigation types of activities that we could undertake. As we went through the process of standing down the fleet and did as much data collection as we could do on the ground to facilitate that analysis, and as we began to contemplate the need to return to fly, this is our only fifth generation aircraft in our inventory.

Senator LIEBERMAN. Yes. That is what is so critical.

General WOLFENBARGER. Our combatant commanders are requesting it be deployed, if for nothing else, the deterrence value of that asset. As we stood down, we realized that our pilots were beginning to be impacted in terms of their proficiency not being in the cockpit and being in the air.

We went through five rigorous steps in determining we were ready to return to fly.

We started off by doing a full fleet inspection. We did a comprehensive first one-time inspection and then we have continued to inspect since to determine if there were any indicators that there are issues with the life support system.

We trained the crews, so we educated them on everything that we knew up to that point. We also shared with them the concept of operations that we ask them to operate to, which is, again if you have any doubt, any sense that there is something not right with you or with your airplane, there is no penalty for returning to base and informing the leadership that there has been an incident.

We then took several steps to protect the crews. I mentioned that there are 17 things that we have either fielded or have underway or have ahead of us. As I mentioned, the existing system in the airplane is an emergency oxygen system. We had some feedback from the pilots that reaching for the handle was difficult to do with some of the cold weather gear, particularly up in the Alaska arena. So

we took steps. In fact, that mitigation has already been fielded, as well as asking each one of our pilots to wear pulse oximeters on their finger as they fly so that they can monitor their own oxygen levels and when it reaches a point at which they would be concerned, then that is an indication that they need to return to base. There are several others. There are 17 in total.

Then we began to collect the data as we returned to flying, and we have been analyzing the data ever since.

We are determined to get to the root cause. We have all of the best minds on this that we can find, and that is across DOD. Certainly we have had Navy participation in this effort. We have had National Aeronautics and Space Administration participation. We have had academia and industry experts as well trying to core to what the root cause is. We started with hundreds of potential root causes as we went through the failure tree analysis. We have cored to two primary limbs in that tree. Either it is an issue with a contaminant getting into the system or it is an issue with not having enough oxygen coming to our pilots. There are a number of different things that we are reviewing for each of those different categories of root causes.

We have some recent data that we are starting to believe that we are coming to closure on that root cause. We are realizing that we operate this aircraft differently than we operate any of our other fighter aircraft. We fly at a higher altitude. We execute maneuvers that are high G at high altitude, and we are on that oxygen system at those high altitudes for periods of time.

Senator LIEBERMAN. So that may be part of the problem.

General WOLFENBARGER. That is what we are coring to, sir. I am not ready to say yet that we are ready to declare a root cause. But we do feel that we, through all of those mitigation activities and through the training of the air crews, believe that we are safe to fly with the stipulation that when an air crew member feels as though there is an issue, they know exactly what to do.

Senator LIEBERMAN. I just want to clarify. You said that since the fleet went up in the air again, we have had 11 more cases. I presume that is a very small percentage of the missions flown.

General WOLFENBARGER. That's .1 percent, yes, sir.

Senator LIEBERMAN. Did you say less than 1 percent?

General WOLFENBARGER. Yes, sir, .1 percent.

Senator LIEBERMAN. Point 1 percent.

General WOLFENBARGER. Yes, sir.

Senator LIEBERMAN. But still, I presume that our goal is zero.

General WOLFENBARGER. Yes, sir, absolutely.

Senator LIEBERMAN. I appreciate the effort that you put into this.

Are the manufacturers of the life support systems involved in all this work?

General WOLFENBARGER. Yes, sir, absolutely.

Senator LIEBERMAN. I presume it is critical to fly at the altitudes that the plane is being flown at. So if that is the problem, what might the solution be?

General WOLFENBARGER. I think we have to finish that root cause analysis, sir, and get to what those mitigations would be to completely eliminate the problem.

I would tell you that we have found in the work that we have done that these hypoxia-like incidents with an on-board oxygen generation type of a system are not unique to the F–22. There are other fleets that we have experienced hypoxia-like incidents in as well. We are incorporating feedback from all of those other communities and we are getting to what the root cause might be and certainly sharing what we discover.

Senator LIEBERMAN. Yes. I presume that there are no common physical characteristics in the pilots that have experienced this. I know they are all in good shape, but have you checked for that as well?

General WOLFENBARGER. Yes, sir. That is part of that data collection that is ongoing, although I will tell you that our Air Combat Command is running this task force that is doing all of that data collection and analysis. So I would need to, if you are interested, come over and sponsor a full-blown briefing on that.

Senator LIEBERMAN. Yes, I would be interested in having that happen.

My time is up, but for now, I want to thank you. Obviously, it is an unfortunate situation. That is the last thing that you want and the Air Force wants. I appreciate the very thorough response. Obviously, I hope and I am confident that you will stay on it until you figure out what is wrong so we make sure that no other pilots experience this. Thanks very much.

Senator Brown.

Senator BROWN. Thank you, Mr. Chairman. Good questions.

Ma'am, first of all, congratulations as well. I know we met privately and I know you are going to be overseeing the bases that are in Massachusetts. So I look forward to having a long and productive relationship with you.

I want to commend you for taking the necessary steps to find the cause of this very serious problem. I guess I am left with the question: Is the F–22 safe to fly?

General WOLFENBARGER. Yes, sir, we feel it is. Through having taken all of those risk mitigation activities and through that, education and training of the air crews, the Air Force's position is that it is safe to fly. That does not mean that we are done with all of the activity to get to that root cause and to fix it.

Senator BROWN. I know the F–22 pilots who raise safety concerns and decline to fly on that basis. Will you ensure that retaliation against them is not going to be part of what is happening in the future?

General WOLFENBARGER. Absolutely, sir. There is clearly the whistleblower protection, the statute that protects those folks.

Senator BROWN. Do you consider them whistleblowers?

General WOLFENBARGER. Yes, sir, we do. They are fully protected, and our Chief and our Secretary have made that understood in our Air Force.

Senator BROWN. Do you know if the Air Force or the Virginia Air National Guard are considering taking any administrative or disciplinary actions against the pilots that came forward in the 60 Minutes piece? Are they also protected?

General WOLFENBARGER. It is, sir, a little out of my lane, but I would tell you that my understanding is that the Chief and the

Secretary and the Air Force have issued direction that these individuals are protected and that no negative action be taken.

Senator BROWN. How about you, Admiral? Do you think the program is still stable in your view, the F–35?

Admiral VENLET. Yes, sir, Senator. I believe that in response to your opening remarks, the description of what has gone on in the last 2 years in the briefings we have presented and the questions that have been asked, there have been a lot of changes and adjustments to the program, but I would cast the last 2 years as a very detailed 2-year adjustment to the program.

There was one change to the test program that began in the spring of 2010 when the breach to the Nunn-McCurdy thresholds was declared, and it was concluded when the Under Secretary of Defense approved our new baseline which took us 2 years to get. I believe it was a necessary amount of time. We added money. We added time to the schedule. So there has been one adjustment to the test program, and I believe we have a schedule and a budget that says we should deliver the full capability.

Senator BROWN. As required in last year's defense bill language, will the 12 and 13 jets be procured under a fixed-price contract?

Admiral VENLET. Yes, sir, absolutely they will.

Senator BROWN. So the contractor would be responsible for all costs that go above the target costs specified in the contract?

Admiral VENLET. Yes, sir, beginning with our lot 6 in 2012, absolutely.

Senator BROWN. We still have no idea when the operational jets will be delivered to any of the Services. Is that a fair statement?

Admiral VENLET. Sir, at Eglin Air Force Base, which is the initial training base, there are six Air Force conventional takeoff and landing (CTOL) variant and they commenced flight ops there in April.

Senator BROWN. They commenced? They are flying?

Admiral VENLET. Yes, sir, they are.

Senator BROWN. So how is that going?

Admiral VENLET. They have over 30 flights. It is a growing time of maturity for the airplane, and we are collecting good information. They are very pleased.

Senator BROWN. What type of information do you think you will need to establish the initial operation capability (IOC) dates for the Navy's carrier variant and the Marine Corps' STOVL?

Admiral VENLET. Yes, sir. After we completed the baseline for the test program, what is going on now is the detailed planning for the operational test. The Air Force has described the completion of the initial operational test is desired for them to declare IOC. I will present a test and evaluation master plan to the Under Secretary this fall with that detailed planning in it.

All three Services understand when Block 3 capability will be delivered. We have three blocks: initial training; initial warfighting; and Block 3 is the full capability. That will finish development testing in 2016 and be released to the fleet in 2017. So the Services see our confidence in that schedule. They are very pleased with the performance of the program last year in 2011, but they would say, "Dave, we would like you to be more than a 1-year wonder." Let us string a couple years of good performance together, get that

operational testing plan done, and then we will declare IOC after that.

Senator BROWN. Admiral Skinner, can you provide an update on the arresting hook challenge that has delayed the delivery of the Navy variant and how much rework will it require and how much will it cost? Is the contractor or the taxpayer left footing the bill on that?

Admiral SKINNER. Senator, it is true that when we did the initial field carrier arrestment testing, that we did not engage the hook with the cross deck pendant. It has happened to other aircraft besides the F–35.

The engineering team in the JPO supported by NAVAIR experts in the area have gone through the initial fault trees for that occurrence. They are still in the analysis phase for that. They are supposed to bring those findings forward at a preliminary design review at the end of next month, at which time we will be able to ascertain the follow-on, the scope of the fix, and how much the fix will cost, and if there will be a schedule penalty associated with implementation of that fix.

Senator BROWN. That will include who is responsible and how much it will cost and who is paying for it?

Admiral SKINNER. Yes, sir.

Senator BROWN. Okay.

Ma'am, once again back to you. On the adaptive engine technology development, why is this important for the Air Force to continue with the program? I understand it has the potential to reduce our energy dependence. I am wondering if that is an accurate statement. Do you believe it is important to maintain our industry's competitive edge in the aircraft industry?

General WOLFENBARGER. Yes, sir, absolutely. That is why we wanted to press on with that program. It is a follow-on program to the Adaptive Versatile Engine Technology (ADVENT) program which is looking at the next generation of turbine engine technology. It is intended to be a competitive acquisition. We are opening up the opportunity to all of our industry partners to participate in that source selection. The intention is to certainly protect the industrial base in this vital area for this Nation, but to also reduce specific fuel consumption, as you noted. A 25 percent reduction is what the goal is with this new technology.

It is purely technology maturation. It is not the start of an engineering, manufacturing, and development program. The intent is to mature the technology so that we are ready should there be an engine program in the future that requires that technology.

Senator BROWN. Thank you.

Admiral Skinner, I just have one final question. I know the Navy has been forced to extend the lives of the F–18s. It still faces, however, a tactical aircraft shortfall with respect to the need. Has the SLEP kept the tactical aircraft shortfall within manageable numbers for you?

Admiral SKINNER. Senator, we manage our tactical aircraft shortfall, or strike fighter shortfall, within the Navy via an inventory forecasting tool. One component of it, which is a SLEP, which is an additional demand, a supply side. So we are looking at a couple of things in order to ensure the strike fighter shortfall stays below

manageable levels. One is the procurement of additional 50 Super Hornets that we had last year in last year's budget. The addition of 150 SLEP'ed aircraft will also contribute to that, and then there is a myriad of other things that will contribute to keeping the strike fighter shortfall manageable.

Senator BROWN. So you are adjusting and adapting and you feel you are okay?

Admiral SKINNER. Yes, sir.

Senator BROWN. That is really all I wanted to know. Thank you.

Senator LIEBERMAN. Thank you, Senator Brown.

Senator Blumenthal, thanks for being here and I call on you now.

Senator BLUMENTHAL. Thank you very much, Mr. Chairman.

Thanks to each of you for being here today and for your service to the country. Congratulations, General Wolfenbarger.

I am very encouraged, Admiral Venlet, by your testimony that the JSF is on track and that the design is sound and will deliver, which is very good news to the Nation. Maybe I should not say news, but it certainly is a very solid endorsement of the program which I believe is vitally important to the future of our country. You very persuasively attest to the technological marvel that it will be once it is achieved. Like any such highly technologically advanced system, there are bound to be issues along the way, hiccups, and bumps in the road, and I gather your feeling is that we are overcoming those kinds of software issues and other kinds of problems that are bound to arise in any such highly complex and advancing system.

Admiral VENLET. Yes, sir. Every issue that we have in view today is very much in the category of normal development for a fighter tactical aircraft. Good old-fashioned engineering is going to take care of every one of those, and we will work on each of them hard enough and long enough until they are deemed good enough by the fleet, sir.

Senator BLUMENTHAL. One point that I think is often lost on the public and maybe on some in this body is that the JSF is replacing a litany of legacy aircraft across the Services. The cost of maintaining those aircraft and training separately for each of them in, I think, the view of many of us would exceed the eventual cost of the JSF. I wonder whether there is any way to depict those costs for the American people so that they understand that the JSF in a sense is not really or cannot be viewed on its own. It has to be viewed comparatively to what the costs would be of maintaining other aircraft.

Admiral VENLET. Yes, sir. We are looking very hard at the sustainment costs and the cost to own this aircraft because it is a large fleet that we aspire to own, as well as for our partner countries around the world, which are very important to contributing to the body of F–35s in the world that will be supported. There is great opportunity to leverage that. We are looking at the categories of cost that industry can affect, the category of costs that the Services affect by the requirements that we have, and then the category of costs that are affected by the strategies of the acquisition program by DOD. Each one of these is getting great scrutiny.

The F–35 is coming with tremendous capabilities. It is coming with a tremendous software system that will help its maintenance, its operation. It is integral to the air system. It cannot operate effectively without it. It is something that maintainers and squadron operators have aspired to for a long time. It is very complex, and it has some difficulties early in development. But again, those deviations are relatively small in the big picture of the program, and by attacking them now, we will be able to keep them on track.

Senator BLUMENTHAL. Is there an estimate on what it would cost to maintain and continue the existing aircraft or the combination of aircraft without the F–35?

Admiral VENLET. Sir, I cannot speak with authority on the existing fleet, but what I can say is when those cost comparisons are made, the challenge predominantly arises that you are comparing a decade mature fleet in any Service that has lived with the realities of the constrained resources of each budget that it gets. In the F–35, since we have not got a body of experience in the fleet, we are estimating the full requirement for the future without the constraints of short budgets that will eventually be assigned to it. So it makes those comparisons difficult. It will cost more to operate and sustain than our existing fleet, no doubt. But it comes in the balance of the value that it brings for the country.

Senator BLUMENTHAL. You make the point in your testimony that you think that the remaining problems can be solved if the program is properly resourced. Are you satisfied that the President's budget provides those resources in a sufficient amount?

Admiral VENLET. Yes, sir, absolutely I am.

Senator BLUMENTHAL. On the concurrency risk, is there anything that could have been done to lessen those costs and risks of concurrency looking back, and also looking forward, can you explain perhaps in somewhat greater detail why you think those risks will lessen as we go forward?

Admiral VENLET. Yes, sir. Let me start with the last part.

What generates changes to the aircraft are the discoveries that we have, again, normal discoveries in flight test, and it is the overlap of aircraft that have already been built after those discoveries are manifested, that those jets then have to be changed and modified after we deliver them. The extension of the test program was not paced by a change in the beginning of the production program. So that overlap of test and production is greater than what was originally intended.

The characteristic that will lessen the discovery of changes will come about in early 2015. We test the durability or the fatigue life of the structures, all three of them, and we test out to two and three lifetimes so that you have margins to operate safely for the one lifetime that is required. You discover most of those changes in the first two lifetimes of ground testing. That will complete for all three variants in early 2015.

The flight test contribution is principally the loads that are experienced in flight. So all three variants will get to about 80 percent of their loads envelope tested in early 2015. Our experience shows in fighter aircraft development that you learn most of your discovery about the structure and the life of the jet from 80 percent loads in flight, two lifetimes of fatigue, and after that, we expect

that is also an important use for partners where most of their procurement is beyond that window, and it is predominantly a burden that we will bear. I am funded in these near-years for the critical ones that have to be put in.

Senator BLUMENTHAL. I gather the engines are doing well.

Admiral VENLET. The engines are doing very well, sir. We are very pleased. The performance of the STOVL was a marvel to watch aboard the USS *Wasp*. I was privileged to go with the Secretary of the Navy and the Commandant one weekend while that testing was going on and to see two STOVLs wildly exceed the expectations of that flight test in that period. I have done initial sea trials in aircraft, and you generally get portions of the expected test done. That completed everything expected. It was wonderful, and the propulsion system was a pleasant site to behold.

Senator BLUMENTHAL. You have just answered my last question. I thank you very much.

Thank you, Mr. Chairman.

Senator LIEBERMAN. Thank you, Senator Blumenthal.

Admiral, to put this in context for those who are in the room or watching, the F–35 JSF is a really important program to our military. It is a big program. It is expensive, but it is critical. So the delays and cost increases that have occurred are troubling, but I appreciate the seriousness with which you have responded. The Nunn-McCurdy breach, to state it in simplistic terms, was a critical breach. That meant that the program was heading to a point where it was 50 percent more costly than the original baseline.

So you have now done a technical baseline review of the program and you are implementing changes which you described today.

Let me ask you a tough question but it is one that is on our minds. Are you confident that with the changes you have implemented, it is unlikely that there will be additional delays in development or production of the JSF?

Admiral VENLET. Sir, thank you. That is a very appropriate question and one that I think about nearly constantly with the team and the program.

I speak frequently about software and the complexity of the software. That will be the leading risk in successfully delivering a Block 3 capability.

My basis for the confidence in my opening statement lies here. When we did the technical baseline review, sir, in 2010 after the Nunn-McCurdy breach, we recognized that the program had advanced to a point where those first two iterations of its capability, Block 1 and Block 2, initial training and initial warfighting, were already far enough along the line. Unfortunately, they did not get off on a sound requirements baseline and a stable foundation. So, we predominantly added margin for those to complete successfully. There were resources in money and there were resources in time for those.

The Block 3 capability, sir, which is really what the fleet needs to have, is going to begin on a very rigorous and sound design review basis so that it will have the best possibility to succeed. We have time and money to do that. I have lived in the acquisition domain long enough to know how disappointing it is to my fleet shipmates and Air Force and Marine Corps to come up short or late

with a capability. I think it was very determinedly done to set this program on a foundation with money that it needs and the time it needs to succeed, sir, like you are asking me if it will.

We have a plan that is resourced with time and money. It has been scrutinized independently by the systems commands' experts in scheduling and schedule risk assessments and master schedule building. They have looked me in the eye and confirmed for me they believe we have what it takes in time and money to absorb the further learning. We have the remainder of 2012, 2013, 2014, 2015, and 2016 for flight tests. There will undoubtedly be learning and discovery. If it all stays within the family of normal fighter development, we have the ability to absorb that learning, make changes, and stay on schedule and cost.

Senator LIEBERMAN. Okay. So, bottom line, you are confident, encouraged at this moment, based on the changes that you are implementing after the technical baseline review, that there will not be additional delays in the development or production of the JSF.

Admiral VENLET. Yes, sir.

Senator LIEBERMAN. I appreciate that.

Let me ask another one of those bottom line questions, which is whether the cost of concurrency for each successive lot of aircraft is coming down or rising or remaining essentially the same?

Admiral VENLET. Sir, the cost of the concurrency impact on each year's production steadily declines. It is higher in these earlier years. We can speak about it in the cost per jet. That is one view of it. But the other view is each year you are buying more aircraft, and so that total bill gets bigger. The cost per aircraft goes down each year. But, the first year we bought two. Then we bought 12, 17, and 30. So we are buying more. So the magnitude of the total bill goes up.

We are working very hard to analyze every one of those changes, categorize them into must-do because they affect short service life or those that could be deferred and done with modification budgets later in the life or possibly handled by inspection. So we are applying that rigor to it to maintain and manage those costs.

Senator LIEBERMAN. One of the steps that you have taken that was strong and I appreciate was that you told the contractor that you are withholding award of six of the fiscal year 2012 aircraft with the intent to award these six with the 2013 contract, and that will be based on performance from the contracting team. That is a tough move but one that is justified by both the facts of what has happened and the demand for the program.

Can you describe for the subcommittee the measurable criteria against which the contractor will be judged when you decide whether to award these six 2012 aircraft with the 2013 contract?

Admiral VENLET. Yes, Senator. Let me begin saying I feel my duty to the Secretary is to manage the program so that we succeed and we do buy those jets. So we are withholding them, but I am definitely looking for success in this. My viewpoint from here, a third of the way into the year, is that of the categories that I have described to the committee, several of them are on track and doing fine. The others are not off track, but they have more to be revealed before we can say. Those issues are, number one, the software, and principally the design review activity of Block 3 software

must occur successfully this year. I have promising signs in view right now of that intent and behavior by industry.

The management of the concurrency change is very important. The time from initial discovery to when the engineering is available to cut it into production, it reduces the modification after delivery. So we want that span time to go down. We will be tracking that specifically. It is a time from discovery to cut-in of a change.

The qualification of the components, the actuators and the other boxes in the airplane when they go through their reliability qualifications, through the environmental testing, that is on a path that very much determines the reliability of the aircraft and its cost of ownership. That is tracking very well at this point.

Flight test overall is another one which is on track. These are discussed frequently with industry, and we will provide an enhanced description of those as the year progresses, sir.

Senator LIEBERMAN. We would appreciate hearing about that.

Just a final quick question. Are you considering some award option other than all or nothing of the six aircraft that we have discussed?

Admiral VENLET. Sir, yes. Something between zero and six is certainly within the consideration.

Senator LIEBERMAN. Okay. Thank you very much.

Senator Brown.

Senator BROWN. Thank you.

Admiral Skinner, just to follow up where I left off, if the F–35 is delayed again, say, by 2 years due to developmental issues, how would this affect your ability to continue extending the service lives of the F–18s?

Admiral SKINNER. Senator, if the F–35 is delayed 2 years, we will have the ability to extend the service life of 150 of our aircraft. That is the current program of record for the SLEP. The population of jets that are available for SLEP exceeds those 150. So in the future, we would have the opportunity, if the need arose, to SLEP additional jets if we had to.

Senator BROWN. Thank you.

Admiral Venlet, with regard to the software, let me just make sure I do not misstate. In the most recent version of the selected acquisition report (SAR) for the JSF, it says that the software risk is the top developmental issue for the program, and you are aware of the challenges. What concerns do you have about the pace of the progress and development of software for the program?

Admiral VENLET. Yes, sir. The deviations in the software are relatively small in the big picture of the program, and that is why we are fortunately going to work very hard to keep those from growing. Specifically in the Block 2A release to flight test, just to help you understand the time I am talking about, there is about a 3-month pressure of delivery in a particular release of Block 2 in the flight test. That is going to have an impact on training but not a large impact and is, in the big picture of the program, not going to pressurize Block 3.

In the full air system, the ground system software, we call it the Autonomic Logistic Information System (ALIS). The particular version with Block 1 has about a year impact to it. That was in view when we did the technical baseline review. That is not a new

revelation, but we will have about 80 percent of the capability of the eventual Block 3. So by absorbing that year on ALIS, the ground system, we will have a sound foundation to get the last 20 percent out by Block 3.

Senator BROWN. Then just to shift gears just a little bit, could you describe how the developmental dial strategy will work and describe the specific decision criteria that were used to award the manufacture of more F–35 jets if they reduce concurrency and build jets on cost and on schedule with good quality without requiring in- or post-assembly line changes?

Admiral VENLET. Yes, sir. Those are the criteria of software performance this year in the Block 3 design reviews: the improvement of concurrency change management; the progress in the flight test program in total; the line replaceable units; and the qualification test of the components. There is one more that just flew out of my head that I can find here in a letter, sir. But essentially it was the same description I gave to Senator Lieberman a moment ago.

Senator BROWN. I just wanted to make sure I did not miss anything. Thank you.

Admiral VENLET. Yes, sir.

Senator BROWN. Ma'am, just one final question. Under the current structure retrofit program, over the next few years the Air Force will need more than $100 million to retrofit the F–22 fleet just to ensure that they can meet the required 8,000 hours of service life. Over the last 2 years, the Air Force sole-sourced to the F–22 prime contractor, Lockheed Martin, two contracts totaling almost $1.4 billion for sustainment of the F–22 fleet for just those 2 years. The Air Force recently completed a sustainment strategy for the F–22 and concluded that a joint contractor-government approach could save over $1 billion in sustainment costs of the aircraft.

How far along is the Air Force in adopting this study's recommendations and transitioning to joint sustainment with the contractor, and to what extent is the Air Force actively exploring opportunities to bring some competition to the sustainment work in the future, if at all?

General WOLFENBARGER. Senator Brown, we are executing that strategy. It was approved in the middle of last year. I believe it was May 2011. We have currently transitioned, I believe it is, 19 hardware types of workload. We have several others in the dozens ahead of us. That is on the hardware side.

We also are in the process of working on the software transition as well. One of the integration laboratories that had been part of the prime contractor's development activity has been now relocated up to Hill Air Force Base, and it is going through its checkout now to be used to execute the organic activity associated with the software portion of that study.

You are absolutely right. It is more than $1 billion of anticipated savings. We are into the execution of that plan. It is going to take us through fiscal year 2019 to get to all of those different steps in that plan, and we will continue to put a spotlight on where we can compete.

Senator BROWN. Despite the Raptor is in sustainment, subject to modernization, will the Air Force continue to include the program in its SAR to afford Congress sufficient visibility into the program?

General WOLFENBARGER. Yes, sir. One of the recommendations that came out of a recent Government Accountability Office study was that we should break out the next major modification effort and characterize that as its own acquisition category program. We have agreed to do that. So what we will see in the future is actually two different SAR reports, one for the baseline program and one for that next increment of added capability.

Senator BROWN. Thank you, ma'am.

General WOLFENBARGER. Yes, sir.

Senator LIEBERMAN. Thank you, Senator Brown.

Senator Blumenthal.

Senator BLUMENTHAL. Going back to the JSF and going through some of the issues that I think remain outstanding, you are fairly confident that the software problems are on their way to solution and will be solved.

Admiral VENLET. Sir, I would say you can never take your eye off the software, and there will be that diligence by the Aeronautical Systems Center and the NAVAIR engineers working with industry. It will take that concerted, combined effort to succeed. I believe, if that is applied appropriately, it will. What we are fortunate in is that the involvement of those independent systems commands with that expertise to guide this is very much involved in the program, more so than it was before. That is my basis for believing that, sir.

Senator BLUMENTHAL. The weight management issue you are confident is solved or on its way to being solved?

Admiral VENLET. Yes, sir. Weight has been very well controlled in these last couple years in the program.

Senator BLUMENTHAL. The thermal concerns, are those still an issue?

Admiral VENLET. There are several thermal concerns. I am not exactly sure what you have in mind, but I will speak to a couple of them.

There was the temperature at the roll post for the STOVL where the actuators needed some extra protection. That has been added. There has been temperature control of the fuel in the aircraft that would impact it. That has been improved by a dual-vane boost pump. Those are the two initial thermal issues that come to mind.

Senator BLUMENTHAL. The logistics information system?

Admiral VENLET. Yes, sir. ALIS is what I was speaking about. It is a very powerful, good thing for the program that the fleet will get tremendous benefit out of. It is a very software-intensive system that is as challenging to develop and adjust as the mission system on the aircraft, the radar, and the other sensors. It is being managed just as rigorously as the mission system software.

Senator BLUMENTHAL. To what extent would those issues or others that have already been encountered be subject to the requirement that we wrote into the last defense authorization act that anything above the fixed cost be held accountable to the contractor?

Admiral VENLET. Yes, sir. That provision will be complied with in the production contracting. When we negotiate the lot 6 and the

subsequent contracts, we will negotiate a target cost, and the terms and conditions of the contract will require that any costs incurred above that target will be fully borne by industry, and that will be both in the aircraft and the engine contracts.

Senator BLUMENTHAL. How about the costs to date?

Admiral VENLET. The costs in the previous programs—we have the first 3 years of production—were cost-plus contracts, and we are paying those costs and there is a share line of those overruns. In lot 4, the 2010, and lot 5, those were our first two fixed price incentive contracts, and so there is a target cost, and those overruns are shared, but they have a ceiling that bounds the Government's exposure.

Industry's performance on those has improved steadily year by year. There was 11 to 15 percent on those early ones. Lot 4 is about 7 percent. So I am very pleased with that. That 7 percent is shared 50/50 with industry. In lot 5, we began sharing these concurrency costs, to the benefit of the Government. That will continue as well, sir.

Senator BLUMENTHAL. Looking forward to the economies of scale that will be achieved over the 5-year defense procurement program, over that 5-year period, a lot of those economies of scale will be achieved as a result of foreign partners or foreign military sales by the contractor. If economically those countries are unable or unwilling to make those purchases that are projected, will that significantly impact the costs of the program for us?

Admiral VENLET. Yes, sir. Every country that buys an F–35 contributes to the benefit of quantity for cost control or cost reduction. Right now, every one of the original partners is solidly in the program. Certainly Italy did reduce by 41 jets. Australia is talking about an adjustment to the right. But those countries are still in, and so, I think, the success news is that they have stayed in the partnership. They have reacted to macro-economic conditions in their own country, and their recent adjustments will be because of that less than it is their confidence in the program.

We are in somewhat of a plateau here in these near years in the 2029 to 2030 range. My view is that the attainment of affordability in this plateau range does not need to be postponed. We can still work and expect and seek industry to achieve affordability even when this plateau is flat by paying attention to quality and getting the costs of quality down. We are tracking those metrics. The engine quality numbers are in single digits. The aircraft are above that at this point. We are discussing that with them. Processes throughout the supplier base can still show improvement. I am not saying there are any glaring problems. But we will work hard to improve affordability even while we are on this plateau.

Senator BLUMENTHAL. My reason for asking was not a concern that they do not want to be a part of the program, but that they will feel that their economic challenges may preclude, just as the United States has those challenges. Obviously, European countries even more so. My worry, and it may be shared by others, is that they may just decide they cannot afford it, that their militaries cannot pay for it, not that they do not want it. That was my reason for asking this question.

Thank you, Mr. Chairman.

Senator LIEBERMAN. Thank you, Senator Blumenthal.

Let me just follow up on that line of questioning by my colleague from Connecticut.

The JSF program from the beginning was envisioned to be an international program. Just for the record, remind us, if you would, Admiral, how many other countries are participating in the JSF program?

Admiral VENLET. Yes, sir. There are the United States plus 10. The original eight—Turkey, Italy, The Netherlands, Denmark, United Kingdom, Norway, Canada, and Australia—are all solidly in, as they have been. In 2010, Israel signed a letter of offer and acceptance for their initial 19 to 20 aircraft. We were very pleased with that and they are a very committed partner of the program. Japan has chosen in a competition, and next month we expect a formal signature on their letter of offer and acceptance. We are in the midst of preparing a proposal to deliver in response to South Korea's fighter competition.

Senator LIEBERMAN. Good. First, let me say I am impressed that you remembered all 10 by name.

Their participation, to say the obvious, is not minimal. Their participation is important to the fiscal viability of the program. Right?

Admiral VENLET. Absolutely, yes, it is.

Senator LIEBERMAN. I just want to draw out a little because I appreciated what you said in response to Senator Blumenthal's question. First, what is the process by which you keep our international partners informed of ongoing developments of the program? Has there been no time, as we have had the discussions quite publicly here in Congress and elsewhere, the media about the increase in cost and delay in production, have there been any concerns expressed to you by the international partners?

Admiral VENLET. Absolutely, sir. They watch the reactions of the program and they do express those concerns. Let me speak to the interaction and how they stay involved and informed.

Senator LIEBERMAN. Yes.

Admiral VENLET. Embedded right in my program office team right here in Washington are senior level officers from each of those countries, and several of those countries have people actually embedded into our teams and are contributing to engineering. The thing I forgot a minute ago on the criteria for deciding was durability and fatigue testing. That connects to this statement. There is an Australian Air Force officer who is the deepest expert on service life issues, and so when I am asking questions and I see him stand up in response, it is really comforting because there is a long history between the United States and Australia on the F–18 program. So those officers are embedded in the program.

Twice a year we have a joint executive steering board where we meet with the partners at the one- and two-star military and civilian level. In fact, we head to Hartford tomorrow for a day and a half with our partner countries at the National Armament Director, which is equivalent to our Under Secretary of Defense for Acquisition, Technology, and Logistics, and industry Chief Executive Officers. Those are formal interactions. We have requirements working groups. We have sustainment working groups that the partners all attend with U.S. Services.

Every time we have an adjustment we see coming in the program, as soon as our budgets are delivered to Capitol Hill, we immediately take the impact of that budget and push it to the countries as well so they have an impact. They are not being affected by changes in the development program costs anymore. It is about the procurement changes and the flyways.

Senator LIEBERMAN. Bottom line, except for the case you mentioned about Italy, which may have more to do with their budget problems, all 10 are on board.

Admiral VENLET. Yes, sir. Each country has different situations going on with a level of parliamentary support, but they are all solidly on board.

Senator LIEBERMAN. Yes. They all want to buy.

Am I correct that they were aware of or perhaps even involved with you in the judgment you made about holding back the six 2012 aircraft?

Admiral VENLET. We did not involve them in the creation of that strategy, sir. We do not intend that strategy to affect any of their aircraft.

Senator LIEBERMAN. Right.

Admiral VENLET. This is really just in the lots 6–7 timeframe. That will be analyzed year after year whether we will continue with that, and it does not affect any of their aircraft.

Senator LIEBERMAN. But obviously they are aware of it now.

Admiral VENLET. Yes, sir, they are.

Senator LIEBERMAN. Are they generally supportive?

Admiral VENLET. In the sense that we find the support here for the protection of the capability. The real fundamental about that strategy, sir, is to assure that the jets we buy have the maximized capability and service life, and so we observe the 2012 test program and get that confidence. They are appreciative of that.

Senator LIEBERMAN. I am glad to hear that, and that is what I would assume. You have done a lot after your technical baseline review to bring this program onto schedule and within reasonable costs. But I think holding back those aircraft was really important and I am glad that the international partners agreed.

General Wolfenbarger, I wanted to ask you a different kind of question, which you actually referred to a bit earlier. This is the decision by the Air Force Research Lab to award a contract for a program called ADVENT. You will forgive a little bit of what may seem like paranoia, but I forgot the exact Satchel Paige line here. But you know, if you are not looking back, somebody actually might be following you. It is a combination of two lines. You get what I am pointing to.

We just have gone through a multiyear battle here in Congress about whether we would build one or two engines for the JSF. Maybe you have already heard it. Probably you have. But there is concern that this ADVENT program is actually the beginning or an end run on the decision of Congress to have one engine program for the JSF. I wanted to ask you flat out. Is the Adaptive Engine Technology Development program actually an alternative engine, a second engine, for the F–35?

General WOLFENBARGER. No, sir, it is not. It is a technology maturation program that takes the advances that we have seen under

the ADVENT program and takes them to the next maturity level. This engine could be used in a whole host of platforms should it ever reach the point of being a development program. Right now, it is just a question of ensuring that we are ready to go should we as an Air Force decide that we want to embrace this opportunity to really reduce the fuel consumption in future generations of either strike aircraft, bomber aircraft, or tactical aircraft. This technology is usable across all of those platforms in the future should we transition to a development program. This is, as I said, purely technology maturation.

Senator LIEBERMAN. So the main purpose for this program is in terms of fuel consumption. Is that right?

General WOLFENBARGER. Yes, sir, and to keep our industrial base active in this turbine engine business so that we keep that intellectual capital that is so important to this country.

Senator LIEBERMAN. One of the questions that I have heard posed about it is, and I understand you said it is also, in part, about the industrial base. But if the goal is to improve fuel consumption and fuel efficiency, then why not invest in improving some of the existing engine programs for aircraft? In other words, are we heading down a road here with a new program, at a time when all of DOD is under tremendous fiscal pressure, that we cannot afford? In other words, is there a better use for this money by putting it into improving existing engine programs to improve fuel efficiency?

General WOLFENBARGER. Sir, we would not be able to reach those levels by just improving the existing engines. This effort really does leverage off of some fairly exciting technological advances under ADVENT and allows, as I think I might have mentioned, the opportunity for all of industry to participate. We had down-selected under ADVENT to two industrial partners. This allows us to kick off yet another technology maturation effort and open up that door to all of industry that may want to participate.

Senator LIEBERMAN. Okay. We will keep hopefully not totally motivated by paranoia, but we will keep an eye on this and ask you to continue to report to us about how it is doing.

I think one of the important points to make, and Admiral Skinner, I will ask you to talk about this. General Wolfenbarger, maybe you want to get involved. You have used this term SLEP during the hearing. It is too close actually to the word from a different language which is "schlep." That is something entirely different than the SLEP program.

Basically the SLEP program is an attempt to keep existing aircraft flying longer than they might have been intended to fly, and this is why I bring it up here. Is it true that some of the delays anticipated in the JSF program force us to take steps to extend the life of existing aircraft? I will start with you, General Wolfenbarger.

General WOLFENBARGER. Yes, sir, that is true. For the F–16 program, we are looking at a bridge capability that is made up of two activities. One is SLEP, which does allow us to ensure that our service life for a portion of the F–16 fleet can be extended from the 8,000 hours that it is today up to 10,000 hours. We have a sliding scale opportunity relative to the numbers. Right now in the Presi-

dent's budget, we have funding for 300 F–16 to extend that service life.

Senator LIEBERMAN. It is a serious number.

How do you evaluate risk, which goes back again to the question of safety. How do we minimize risk in aircraft that we are attempting to keep going longer than they were originally intended to?

General WOLFENBARGER. Sir, we actually go through a very rigorous testing process, a full-scale structural testing activity, which we have undertaken on the F–16 fleet now, to inform us what needs to be done to ensure that structurally we can keep these aircraft sound.

Senator LIEBERMAN. Admiral, do you want to get into this? I must say that some of the numbers given at some of the posture hearings before the full committee on the average age of some of our aircraft were unsettling because they have risen dramatically. Have they not?

Admiral SKINNER. Yes, sir, they have. We have been flying our aircraft quite a bit over the course of the last decade. There is inherent risk in extending the service life of any aircraft. We have folks who know how to do that.

But for the Navy, in our program to SLEP 150 legacy Hornets in the fuselage area, we are at the very beginning of that program, and so it is a matter of what we do not know as opposed to what we know. Now, we have done a Service Life Analysis Program (SLAP) so that we think that we have areas identified that we can develop and produce at low risk kits to fix those particular areas that the analysis shows, but until we really get into the fleet and open up those aircraft and look inside of them, that is when we will really know if that analysis is accurate. So we start our first two aircraft later on this fiscal year and follow on with additional aircraft next year, and so we will know about where we are with that SLEP program probably next year.

We have done some risk mitigation factors. We have done the SLAP. We have looked inside the aircraft for our high flight Arrow program that gets us up to 8,600 hours. We have a service life management program that we manage the fatigue life as we fly them, and we have a greater population of supplemental aircraft than what we have to do in the program of record. So if we open up an aircraft and it looks like it is beyond economic feasibility to repair, then we can button it up and get another one.

But there is inherent risk in extending the service life of tactical aircraft because we fly them and operate them very rigorously, as you are well aware, sir.

Senator LIEBERMAN. Yes. That is the point I appreciate you are making and why there is such pressure, as you well know, Admiral Venlet, on bringing the JSF in on schedule.

Give me some sense of what judgments you are making about availability of the JSF and the number of aircraft that you have decided to SLEP. In other words, is it based on the current prediction of availability of the JSF? General?

General WOLFENBARGER. Yes, sir, it is. It is based on the fiscal year 2013 President's budget profile.

Senator LIEBERMAN. Right.

The same, Admiral?

Admiral SKINNER. Yes, sir.

Senator LIEBERMAN. Obviously, any further delays would have an impact on that, and in that sense, although I know you will do everything you can to minimize risk, would both force more investment in extending the service life of existing aircraft and involve a risk that we can, I am confident, minimize with the JSF.

Admiral, do you want to comment on that?

Admiral VENLET. Yes, sir. The F–35 program needs to deliver our production jets to relieve the burden. So the most powerful thing is for, first of all, the President's budget to be supported and funded and then for those jets to deliver with full life and full capability, and that is what my job is to tend to.

Senator LIEBERMAN. Okay. I thank the three of you very much.

At the risk of being redundant, I just cannot say how important this JSF program is. You know that. You work on it every day. I think I am typical of most Members of Congress which is that we strongly support this program because we know how necessary it is, but we also are going to continue to push to get it back on schedule and bring down the cost per unit.

I personally think you have taken some very strong steps in the last couple of years, and I hope that our authorization bill and the budget will reflect that in terms of our response to the President's budget request. So anyway, keep it up because there is a lot on the line.

The subcommittee and the full committee will mark up our defense authorization bill for the coming fiscal year 2013 in the final week of this work period which would be the week of May 21. So your testimony today has been very timely and helpful to the committee as we prepare that markup.

I thank you very much.

We will keep the record of the hearing open for another 5 days for any additional statements or questions that anyone has.

With that, thank you, the three of you, for your extraordinary service to our country.

General Wolfenbarger, somebody once said to me when a barrier is broken by one person, it opens the doors of opportunity wider for every other American. You are about to break a barrier. Good luck. Congratulations. Thank you.

The hearing is adjourned.

[Questions for the record with answers supplied follow:]

## QUESTIONS SUBMITTED BY SENATOR CLAIRE MCCASKILL

### AIRBORNE ELECTRONIC ATTACK

1. Senator MCCASKILL. Admiral Skinner, as you are well aware, the ability to control the electronic spectrum has become a critical capability for today's warfighters. The Department of Defense (DOD) has a growing demand for electronic attack platforms, and specifically, airborne electronic attack (AEA) systems. However, the Government Accountability Office (GAO) recently found that the Services are pursuing the development of unique systems to satisfy their AEA requirements, but some of these systems have overlapping capabilities. This raises a real concern regarding a duplication of effort and a waste of taxpayers' dollars.

GAO recommended that DOD, among other things, "determine the extent to which the most pressing AEA capability gaps can best be met—using the assets that are likely to be available—and take steps to fill any potential gaps." DOD concurred with this recommendation, noting that plans were in place to have U.S. Strategic

Command perform an annual assessment of DOD electronic warfare capabilities. However, this assessment has not yet been completed.

GAO, in its most recent report, noted that the "Navy has fielded EA–18G aircraft with limited cost and schedule growth to date." With the near-term retirement of the last remaining EA–6B Prowler squadrons, and the electronic warfare capabilities of the F–35 B and C variants not projected to be fully available until well into the next decade, there appears to be a pending shortfall in critical AEA capability. With the success of the Navy's EA–18G Growlers in Afghanistan and Operation Odyssey Dawn, and GAO's assessment, serious consideration should be given to filling needed joint AEA capability with the EA–18G aircraft. Given the fact that DOD has not yet completed its planned assessment of electronic attack capabilities, does the Navy's budget request for EA–18G Growlers take into account joint AEA requirements?

Admiral SKINNER. Yes. The budget reflects the Navy's plan to recapitalize the Navy AEA force structure of 10 carrier air wings, 3 Active component expeditionary squadrons, and 1 Reserve squadron with the EA–18G. The three Navy Active component expeditionary squadrons have completed their transition to the Growler along with three of the carrier-based squadrons. The Navy will be completely divested of all its EA–6Bs by the end of fiscal year 2015 and complete its transition in fiscal year 2016. The Marine Corps plans to replace its EA–6Bs with the Marine Air Ground Task Force Electronic Warfare (MAGTFEW) system of systems capability that will directly support the MAGTF commander. This combination of Navy and Marine Corps systems is a holistic service approach that addresses the full spectrum of electronic warfare requirements. The joint AEA requirement is under review by DOD to determine if the force structure meets total combatant commander capacity requirements.

2. Senator MCCASKILL. Admiral Skinner, has the Navy engaged in planning or preparation for additional procurement of Growlers if required to maintain joint AEA capacity?

Admiral SKINNER. No, the Navy has not made preparations for additional procurement of Growlers to maintain the current joint AEA capacity. As always, the Navy keeps its options open on how to man, train, and equip its forces to meet joint requirements. The Navy believes the capability in the fiscal year 2013 President's budget supports the joint AEA requirements with 10 carrier based EA–18G squadrons, 3 Active component expeditionary EA–18G squadrons, and 1 Reserve component EA–18G squadron. As Marine Corps Prowlers retire, the MAGTFEW will provide the joint forces with a scalable, flexible, and cost effective approach to irregular warfare and MAGTF-type missions. DOD is examining this force structure to determine if adequate AEA capacity will be achieved for the combatant commanders.

[Whereupon, at 4:31 p.m., the subcommittee adjourned.]

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