S. HRG. 113–465, PT. 4

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 2015 AND THE FUTURE YEARS DEFENSE PROGRAM

HEARINGS

BEFORE THE

COMMITTEE ON ARMED SERVICES
UNITED STATES SENATE

ONE HUNDRED THIRTEENTH CONGRESS

SECOND SESSION

ON

S. 2410

TO AUTHORIZE APPROPRIATIONS FOR FISCAL YEAR 2015 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

APRIL 8 AND 9, 2014

Printed for the use of the Committee on Armed Services

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DEPARTMENT OF DEFENSE AUTHORIZATION OF APPROPRIATIONS FOR FISCAL YEAR 2015 AND THE FUTURE YEARS DEFENSE PROGRAM

TUESDAY, APRIL 8, 2014

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

TACTICAL AIRCRAFT PROGRAMS

The subcommittee met, pursuant to notice, at 3:36 p.m. in room SR–232A, Russell Senate Office Building, Senator Richard Blumenthal (chairman of the subcommittee) presiding.

Committee members present: Senators Blumenthal, Donnelly, McCain, Sessions, and Wicker.

OPENING STATEMENT OF SENATOR RICHARD BLUMENTHAL, CHAIRMAN

Senator BLUMENTHAL. The subcommittee will come to order.

As you can tell, this is my first subcommittee meeting. I am very pleased to be joined by my colleague, Senator McCain, who is pinch hitting temporarily for Senator Wicker.

I want to extend a welcome to each of our witnesses. Thank you very much for your service. Thank you for being here today.

We are joined by Lieutenant General Christopher C. Bogdan of the U.S. Air Force, Lieutenant General Charles R. Davis of the U.S. Air Force, Vice Admiral Paul A. Grosklags of the U.S. Navy, and Lieutenant General Robert E. Schmidle, Jr., of the U.S. Marine Corps.

I want to thank each of you again for representing the men and women of our Armed Forces so ably and for the great job they do around the globe, in the continuing war in Afghanistan, and elsewhere. We keep them in our thoughts and prayers, as I know you do.

Our witnesses this afternoon face really huge challenges as they strive to balance the need to support ongoing operations and sustain readiness with the need to modernize and keep the technological edge that is so critical to our military success. These challenges, as you well know, have been made particularly difficult by the spending caps imposed by the Budget Control Act (BCA). Those caps which bedevil us all were modestly relieved for fiscal year 2015 in the Bipartisan Budget Act (BBA) that we enacted earlier

this year, but they are scheduled to resume in full blast in 2016 and beyond. These caps seriously challenge our ability to meet our national security needs and they have already forced military departments to make painful tradeoffs. Unless they are modified after fiscal year 2015, they will threaten our long-term national security interests, and no one knows those facts better than the military leaders who are with us today.

Every year we are challenged to make decisions balancing a number of competing demands for resources, including resources for current operations, and investment in future modernization. In this case, we will be assessing plans and programs regarding the current status and future prospects for tactical aviation programs.

We meet today to talk about the F–35 Joint Strike Fighter (JSF) and the other aviation programs. We all know that the JSF program is important since it has been central to the long-term modernization plans for all the relevant Services—Air Force, Navy, Marine Corps—for more than 15 years now. Given that fact, any change in the cost, schedule, performance of that JSF program sends shock waves literally through the Departmentof Defense (DOD) and raises many questions of achieving that balance between the demands of maintaining readiness in the near future and those of modernizing for tomorrow. For instance, the Government Accountability Office (GAO) has estimated that extending the service lives of existing F–16 and F–18 aircraft would cost about $5 billion.

So today we are going to seek a better understanding of implementation of the corrective actions DOD identified in the JSF program after Nunn-McCurdy certification 4 years ago and what levels of risk remain in the development and fielding program.

I know that a number of you have seen problems in testing since last year, and while we are always concerned anytime we hear about problems during research and development, I understand that you have identified the problems and have mapped a way ahead, a path to deal with these problems to minimize the effect of the problems on testing and development programs. I hope you will discuss these problems very specifically and fully during your testimony. There have also been some other problems. I hope you will discuss those as well. I know you will be very frank and forthcoming with the subcommittee, as you have been customarily.

The subcommittee has been following the Department of the Navy's attempts to reduce the JSF shortfall to manageable levels. Five years ago, the Department of the Navy was estimating that we would be facing a shortfall in 2017 that optimistically would amount of 125 tactical fighters needed to outfit our 10 aircraft carrier air wings and 3 Marine Corps air wings. Then 3 years ago, based on further analysis, the Navy was estimating the maximum shortfall could be nearly twice that large, or roughly 250 aircraft. But in the past several years, the Navy and the Marine Corps have taken action, such as reducing the squadron size, conducting service life extensions on some aircraft, and reducing the time aircraft spend in depots. That could reduce the gap to as small as 35 aircraft, I understand. That level is an increase from the level of 18 aircraft last year. It was only marginally, as I understand, from delaying F–35 purchases for the Navy.

Unfortunately, there has been a similar story in 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 about 2025. If any of these numbers are wrong or if I am misstating them, I hope you will correct me.

Two years ago, the Air Force, as part of the new defense strategy, reduced the fighter force structure. This year the Air Force is proposing further reductions, including eliminating the entire A–10 aircraft fleet to generate savings of about $3.7 billion. I am not clear as to what extent this change in demand for tactical fighters has ameliorated the shortfall that the Air Force projected, but we hope to hear more about that issue as well this afternoon.

There are a lot of other issues, or at least a number, that I hope you will discuss. I know my colleagues will have questions on those other issues.

Again, I just want to thank our witnesses for being here today. I yield to Senator Wicker.

STATEMENT OF SENATOR ROGER F. WICKER

Senator WICKER. Thank you, Senator Blumenthal, and congratulations on your first hearing as chair of this distinguished subcommittee. Thank you for holding the hearing and I thank the witnesses for their attendance today.

Also, on behalf of the Southeastern Conference, I want to congratulate the State of Connecticut and Senator Blumenthal on winning the NCAA basketball championship.

Senator DONNELLY. Senator, there will be no congratulations to them tonight, I will tell you that, as the Notre Dame women take on the Connecticut women.

Senator BLUMENTHAL. In the interest of avoiding an altercation at this august subcommittee meeting, I am going to refrain from reacting. [Laughter.]

But I do thank Senator Wicker for his congratulations.

Senator WICKER. I would say both women's programs are to be commended for getting to the finals undefeated.

But back to the business at hand. We have immense responsibilities on this subcommittee. They include programmatic and budget oversight of most Army and Air Force programs, as well as an oversight of our Navy and Marine Corps tactical aviation activities.

I look forward to working with you, Mr. Chairman, to ensure that our Armed Forces remain the best-trained, best-equipped, and most professional fighting force in the world.

I would like to begin by saying that I continue to be concerned about the Air Force total force plan. I remain convinced that some elements of the total force plan, such as its proposal to relocate C–130J aircraft from Kiesler Air Force Base to Little Rock, are shortsighted and may adversely impact our intra-theater airlift capability at a time when our Services are evolving toward a more rotational deployment model.

Similar to our subcommittee's bipartisan efforts last year, Mr. Chairman, I look forward to working with you on initiatives to help ensure the Air Force makes force structure decisions based on long-term global force requirements, as well as concrete and defensible

data. These decisions should not be based solely on self-imposed constraints.

Mr. Chairman, our military has fought four major regional conflicts over the last 23 years: Kuwait, the former Yugoslavia, Afghanistan, and Iraq. America's security challenges continue to persist across the globe. I would note that just last month on multiple occasions, Russian nuclear-capable bombers circled our Pacific Island of Guam and were intercepted by our F–15s based at Kadina Air Base on Okinawa. Air power will no doubt continue to play a central role in our national security.

Since 1953, no U.S. ground personnel have been killed in an attack by enemy aircraft. America's superiority and dominance in the air protects our Homeland, deters potential adversaries, and ensures that our joint and coalition forces never have to question if the aircraft flying above them is friend or foe.

However, our air dominance is being challenged. Both Russia and China are currently fielding fifth generation fighters. Like our ground forces, America's combat air assets are worn out and spread thin after 2 decades of deferred modernization programs and curtailed purchases of key platforms. The service lives of many of these aircraft now extend beyond 30 years. These extensions come at a price. Extending the lives of legacy aircraft means increased operation and maintenance cost, as well as decreased technical superiority.

America must continue to be able to deter and defeat any threat, be it an asymmetric threat from a terrorist organization or a conventional challenge from a near peer competitor. To do so, we must be able to modernize and sustain our military, including our tactical aircraft. We cannot continue to kick the modernization can down the road. Successfully modernizing means we must be cognizant of the negative impact of the overly expensive and slow acquisition process we currently have in place. We must find ways to deliver new, innovative systems on time and on budget. Changing the system will require the combined efforts of Congress, DOD, and industry.

Specifically, DOD must first get its acquisition process in order by defining program risks upfront, setting realistic requirements, adequately prioritizing research and development, and leveraging the power of competition.

Second, DOD's industry partners must submit realistic contract proposals and be held accountable to their contractual obligations.

Third, Congress must uphold its responsibility to provide timely and adequate funding for key acquisition programs to help ensure predictability and long-term affordability for DOD and our foreign government partners.

I conclude by observing that national defense is solely a Federal responsibility, but it requires assistance from all levels of government and civilian industry. We need our States to maintain business-friendly policies that will encourage the industrial base to grow and add high-tech manufacturing jobs. We need defense companies to meet their contractual obligations to the taxpayers by delivering products on time and on budget. Finally, we need better cooperation and transparency between the executive branch, DOD, and Congress in order to ensure all parties fully understand our

national security challenges and the means our military leaders require to meet them.

So, again, thank you to the witnesses and to the members who are here, and thank you, Mr. Chairman.

Senator BLUMENTHAL. Thank you very much, Senator Wicker. I look forward to working with you on this very important assignment.

We will now hear from our witnesses. First, General Bogdan.

STATEMENT OF LT. GEN. CHRISTOPHER C. BOGDAN, USAF, PROGRAM EXECUTIVE OFFICER, F–35 LIGHTNING II JOINT PROGRAM OFFICE

General BOGDAN. Thank you, sir. Chairman Blumenthal, Ranking Member Wicker, and distinguished members of the subcommittee, thank you for the opportunity to address this subcommittee and discuss the F–35 Lightning II program.

Over the past few years, we have focused on creating and maintaining a realistic program baseline for DOD's largest acquisition program, and despite a turbulent past, the program is making slow but steady progress on all fronts, to include technical improvements and driving costs out of the program.

I believe the F–35 is headed in the right direction. I am confident in our ability to meet the U.S. Marine Corps' initial operating capability (IOC) and the Air Force's IOC in the summer of 2015 and the summer of 2016, respectively, with all the capabilities our warfighters need. We are now seeing the benefits of the disciplined systems engineering process that we instituted a few years ago in response to technical issues, including improvements in our helmet, the C-model hook, fuel dump capability, weapons capability, lightning restrictions, and night all-weather flying. We are closely managing the F–35 onboard and offboard software, and software remains the number one technical risk on the program. We have also fundamentally changed the way we are developing the Autonomic Logistics Information System (ALIS). We are also fully committed to making the F–35 more affordable in both the cost of buying the aircraft and the cost of operating and sustaining the aircraft.

Finally, I want to thank Congress and DOD for their support during the past 2 years of budget instability. The program has weathered this storm relatively intact with no changes to the development program and our aircraft quantities were preserved in fiscal year 2013 and fiscal year 2014, though DOD has reduced those quantities in fiscal year 2015.

I would like to close by saying that my team is focused and committed to doing the very best we can for the warfighters, taxpayers, and our partners to ensure that the F–35 meets the needs of all our Nation's defenses. To that end, my team is rising to the challenge of managing this very large, complex program with integrity, transparency, accountability, and discipline. I ask that you hold me and my team accountable in the coming years to ensure that we develop and deliver the warfighting capability this country needs and expects.

I look forward to answering your questions.

[The prepared statement of General Bogdan follows:]

PREPARED STATEMENT BY LT. GEN. CHRISTOPHER C. BOGDAN, USAF

Chairman Blumenthal, Ranking Member Wicker, and distinguished members of the subcommittee. Thank you for the opportunity to address this subcommittee regarding the F–35 Lightning II.

The F–35 Lightning II is the Department of Defense's (DOD) largest acquisition program, and its importance to our national security is immense. The F–35 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. For our international partners and Foreign Military Sales (FMS) customers who are participating in the program, the F–35 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 fiscal year 2015 budget includes $8.3 billion for continued system development, test and procurement of 34 F–35 aircraft.

It is our duty to produce the next generation fighter jet for the United States and our allies, understanding that we live in a resource constrained world. The current F–35 program is focused on completing system design and development (SDD) within the time and funding planned, producing aircraft that are affordable and achieve mission needs, and sustaining fielded aircraft in an effective and economical fashion. This plan, which has been in place since 2012, is already resulting in steady progress; however, I am pressing for faster and stronger performance in the upcoming year. There are 59 F–35s now deployed in operational and training squadrons at five locations and the program has started a slow shift of focus to production and long-term sustainment without losing the momentum we see in the development and flight test programs. Affordability remains my number one priority. We must use all of our energy finishing development within the time and money we have, we must continue to drive the cost of producing F–35s down, and we must start today to attack the long-term life cycle costs of the F–35 weapon system.

PROGRAM ACCOMPLISHMENTS IN THE LAST YEAR

The F–35 program team achieved a number of accomplishments in 2013, including delivery of 35 aircraft; rolling-out of the 100th jet from the production facility in Fort Worth; completion of the Block 3 critical design review; announcing the decision to cease development of an alternate Helmet Mounted Display System (HMDS); and resolving lingering technical design shortfalls to include the F–35C arresting hook, night/instrument (IMC), fuel dump, and lightning protection.

F–35s flew 3,917 sorties (including SDD and low rate initial production (LRIP)) for a total of 6,255 hours last year, bringing the total hours flown by F–35s to 11,873. The program completed the second F–35B ship-trial period operations aboard the USS *Wasp* completing 95 vertical landings and 94 short takeoffs, with 19 night takeoffs. The program stood up new F–35 squadrons at Edwards Air Force Base, Nellis Air Force Base, and Eglin Air Force Base, made Marine Corps Air Station Beaufort ready for F–35 operations, started up aircraft modification lines at Fleet Readiness Center East and at the Ogden Air Logistics Center, opened the first overseas F–35 final assembly and checkout (FACO) facility in Italy, and qualified 65 pilots and trained 414 maintainers. From a business perspective, the F–35 program successfully closed negotiations and awarded the Lockheed Martin LRIP lots 6 and 7 contracts and modified the SDD contracts. Additionally, the program definitized the Pratt & Whitney LRIP lot 5 contract, and awarded LRIP lot 6, and modified the SDD contract during 2013.

Although sequestration, as well as congressionally directed reductions to the SDD program in fiscal year 2013, had the potential to either stretch the development program out or reduce the capabilities we can deliver to the warfighter, we were able to mitigate the impacts to the development program and remain on our program plan. The Bipartisan Budget Act of 2013 also allowed us to preserve the number of jets we intend to procure in fiscal year 2014.

INTERNATIONAL PARTNERSHIP

The F–35 program continues to be the Department of Defense's (DOD) 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' senior acquisition leaders met in September 2013 and are meeting again the first week of April 2014; all expressed their continued commitment and support for the program;

however, they are all watching closely how DOD deals with our budget cuts and the impact this has on the cost of the program. Conversely, we are also watching our partners as nearly 45 percent of the next 5 years of production buys are from our partners and FMS customers.

In October 2010, Israel signed a letter of offer and acceptance to purchase 19 F–35A aircraft for $2.75 billion, with deliveries scheduled to begin in 2016. In June 2012, Japan signed an agreement to purchase the first 4 of a planned acquisition of 42 F–35A aircraft for $741 million with deliveries scheduled to begin in 2016. The F–35 team developed a proposal to support the Republic of Korea's competitive request for proposal for acquisition of its future fighter. Selection is expected by the end of this year and we continue to provide program information to the Republic of Singapore.

There were many "firsts" during the year including the delivery and acceptance of two Netherlands F–35A aircraft, the first Australian and Italian aircraft under contract (LRIP 6), the first Norwegian aircraft under contract (LRIP 7) and the first Netherlands pilot in training.

DEVELOPMENT PROGRAM PERFORMANCE

The F–35 development program continues to execute to the baseline approved at the March 2012 Milestone B recertification Defense Acquisition Board. My biggest technical concern in development is still software. Over the past 2 years, the program has implemented significant changes in how system software is developed, lab tested, flight tested, measured, and controlled. These changes are showing positive effects and I am moderately confident that the program will successfully release the Block 2B and 3I capability as planned in 2015 and 2016, respectively. However, I see more risk to the delivery of Block 3F, our full warfighting, capability by 2017. Block 3F is dependent upon the timely release of Block 2B and 3I, and at present, 3F is tracking approximately 4 to 6 months late without taking steps to mitigate that delay.

The F–35 Joint Program Office continues to exercise oversight and management of software development, which has resulted in reduced times to develop and integrate software, reduced errors in the software code developed, and a marked increase in the cooperation and understanding between the prime contractor and the program office. I have directed a capability block plan that is an integrated roadmap that defines the incorporation of capabilities for the F–35 program. Additionally, I have instituted a Block Review Board which places the government in charge of all configuration, capability, and schedule changes to software development. We have also implemented robust systems engineering/technical review process for all development work to provide greater knowledge and defined decision gates to determine if the system configuration under consideration is mature enough to proceed to the next phase. This, coupled with improved automated tools and processes, has resulted in an almost tenfold reduction in software release build time, and we have seen corresponding improvements in configuration management, test automation, and error detection and resolution. However, we still have challenges and the prime contractor and its subs still need to improve both the speed and quality of software development to be able to catch up from previous software delays.

In addition to software challenges, the three F–35 variants are encountering the types of development problems typically experienced on advanced state-of-the-art, high performance aircraft development programs at this stage of maturity, such as reliability and maintainability shortfalls, and beyond first life durability issues. While we still have technical risks on the program, I have confidence that the known technical issues we have will be solved and properly integrated into the F–35 and we will be capable of dealing with any future technical issues.

Over the past year, the program office successfully characterized the expected performance of the Gen II HMDS to support U.S. Marine Corps initial operational capability (IOC) and defined the technical solutions to be incorporated into the follow-on Gen III HMDS to achieve a fully compliant capability for the warfighter. The improved night vision camera was evaluated in a series of risk reduction flight tests showing significant improvements over the older camera, and we are confident it will be able to meet the warfighter's requirements when integrated into the Gen III helmet. Based upon a thorough technical evaluation, of the Gen II helmet, successful incorporation of technical improvements and a better business deal, the Department elected to end development of the second, alternative helmet. With respect to the better business deal, the program secured a cost guarantee made by the Lockheed Martin/Rockwell Collins/Elbit team resulting in a reduction of 12 percent from the previous cost for the helmet system. Additionally, deciding to down select to the Gen II and III helmet will avoid future cost of $45 million required to completely

mature the alternate helmet. The Gen III HMDS is expected to enter formal F–35 flight test in third quarter 2014.

The program also saw improvements with the redesigned F–35C arresting hook system on our CF–3 aircraft. In January 2014, the F–35 team accomplished 36 for 36 successful roll-in arrestment tests at Lakehurst, NJ. The aircraft is now at Patuxent River where it is continuing its ship suitability testing. Thus far CF–3 accomplished 8 for 8 fly in arrestments while at Patuxent River; however, testing has been delayed for approximately 60 days as we discovered a minor nose gear issue. These tests are expected to lead to a certification of the F–35C for shipboard flight trials, which are planned to commence fourth quarter 2014.

The program has also made progress on the redesigned fuel dumping seal and port. The F–35 employs a unique fuel dumping port on the underside of the wings in order to maintain its stealthy signature. Early fuel dump testing revealed that fuel was collecting within the wing flaperon cove, which led to significant external fuel wetting and pooling of fuel at the wing/fuselage root. We redesigned the fuel dump port to more efficiently move fuel away from the wing surface and designed a new and improved flaperon seal to minimize fuel collecting in the cove. Fuel dump testing with the redesigned seal and port has been successful and we are incorporating the new design in all three variants.

We have also seen significant progress in our ability to fly at night and instrument meteorological conditions (IMC). The Navy granted clearance and conducted the first night flights on the F–35B (VMFA–121) in December 2013. Subsequently, in January 2014, the Navy granted night/IMC clearance for the F–35C. The Air Force also granted night/IMC clearance for the F–35A in January 2014, although initially weather restricted to a ceiling greater than 600 feet and visibility greater than two nautical miles. In March 2014, the Air Force lifted the restrictions following additional simulator evaluations, allowing the F–35 aircraft to fly to weather minimums posted by the airfields.

All LRIP lot 6 and later aircraft will be delivered with night/IMC capability. LRIP lot 5 aircraft require an improved landing/taxi light prior to operating in night/IMC. LRIP lot 4 aircraft require a planned aircraft software update as well as improved wingtip and landing/taxi lights. All possible software updates have been accomplished, and the lighting upgrades are in progress. LRIP lot 3 and earlier aircraft require the Block 2B upgrade planned to begin in late 2014 to gain night/IMC capability.

We currently have 11 F–35As, 6 F–35Bs, and 1 F–35C fleet aircraft configured and certified for night/IMC. The remaining LRIP lots 4 and 5 fleet aircraft are either in process or awaiting the wingtip and landing/taxi light modifications for night/IMC. The program has also made progress on lightning protection. In 2009, fuel system simulator testing revealed deficiencies in the on board inert gas generation system's (OBIGGS) ability to maintain the necessary tank inerting to protect the aircraft from lightning strikes. The program completely redesigned the OBIGGS and performed a F–35B ground test that verified inerting distribution in the tanks. Ground and flight tests are planned for second quarter 2014 where we expect to evaluate fuel system performance and prevention of nuisance alerts. A unique opportunity occurred with the availability of the Netherlands F–35A aircraft; our team took advantage of the aircraft to test for lightning electrical transient stress to aircraft subsystems in the fall of 2013. The aircraft was subjected to 865 simulated low level "lightning strikes," and we are happy to report that the aircraft received no damage, all subsystems worked appropriately, and the aircraft's reaction to the lightning strikes closely matched engineering models. Aircraft that have OBIGGS inerting and subsystems that can function with lightning electrical transients are expected to allow the removal of the lightning flight restrictions by the beginning of 2015.

In September 2013, during F–35B full-scale durability testing we experienced a significant bulkhead crack at 9,056 equivalent flight hours (EFH), which is 1,056 beyond its first lifetime. In August 2013, just after completing 9,000 EFH, a planned inspection of the F–35B full scale durability test article verified the existence of two small cracks along the fuselage section (FS) 496 bulkhead. The decision was made to move forward with the testing and to inspect the bulkhead at shorter intervals in order to observe if and how the crack would propagate. In September 2013, strain gauge data prompted an early inspection of the bulkhead which uncovered that the cracks had propagated and severed the bulkhead at the lower arch. The durability testing was stopped and a root cause investigation was conducted. The goal of durability testing is to apply cyclic loads to the airframe to simulate fleet usage. Durability testing is conducted early in the development of any new aircraft to avoid costly sustainment issues later in the life of the aircraft. We require 8,000 EFH of aircraft service verified by testing of two lifetimes (16,000 EFH). However, to aid in

life extension assessment, we plan to test each variant up to 3 times its expected operational life (24,000 EFH). Our engineering teams executed a joint root cause investigation to define the required modifications to the bulkhead for incorporation into production and retrofit of the fleet. This effort is part of the normal program concurrency process to ensure full life capability and we budgeted for these types of durability test findings in production via concurrency modeling. The full-life design solution for the bulkhead has been defined and is scheduled for production line induction not later than LRIP lot 9 aircraft deliveries in 2017. We are also working with Lockheed Martin to incorporate a speedier retrofit solution to be incorporated into 10 LRIP lot 8 B–Model aircraft that are currently on the production line.

There was no immediate airworthiness concern for fielded and test aircraft because of the high hours accrued on this test article at the time of discovery. It will not impact the U.S. Marine Corps ability to meet IOC in 2015. Additionally, due to the differences between the bulkhead forging materials of the F–35B (aluminum) and the F–35A/C (titanium), we have yet to see the same cracking with the A and C models at the equivalent flight hours.

Reliability and maintainability (R&M) remains an area for needed improvement. The fleet has not performed to the R&M levels we expect at this point in the program as fielded aircraft are well below our projected growth curves. To address these issues I am executing a multi-phase R&M improvement process. First, I have stood up a fully funded rigorous R&M program that will establish R&M performance goals, take specific actions to achieve these goals, and hold the enterprise accountable for meeting them. We have a good amount of fleet data at this point to include parts systems and procedures that drive up costs, maintenance, as well as reduce readiness and aircraft availability. We are analyzing this data to make actionable decisions, such as redesigning parts, improving repair times, and streamlining and improving maintenance procedures. Finally, I am accelerating aircraft retrofits and modifications to more rapidly improve readiness and to measure these R&M improvements.

I have also stood up a Cost War Room whose mission is to champion affordability initiatives to reduce the operation and sustainment costs of the fleet. This Cost War Room is comprised of representatives from prime contractors and their suppliers, under the direction of Program Office personnel, and is systematically looking at all the cost drivers that make up the F–35 operations and sustainment costs with the intent of taking specific actions that will reduce long-term costs. We are also nearing completion of a second business case analysis and a level of repair analysis to assist the leadership in making future sustainment decisions as we begin to create the global sustainment posture.

The Autonomic Logistics Information System (ALIS) provides maintenance, operations planning, reliability, logistics, and training information to support sustainment of F–35 aircraft. We have fundamentally changed the manner in which we are developing and fielding ALIS. Before, we treated ALIS as a piece of support equipment. The enterprise now deals with ALIS as if it is a "weapons system" and a critical part of the F–35 program. We have added a new systems engineering process that includes periodic design reviews, a new leadership structure, improved lab infrastructure and testing to include warfighter involvement, and a more structured software delivery plan to include metrics. We have seen some solid improvements since these changes last year as the program has delivered better and faster incremental fixes, including our recent software update that was fielded in February. I have also put into place a plan for a complete end-to-end test that includes information assurance testing to ensure the aircraft and ALIS can operate together seamlessly with a great level of "cyber security."

We have also started the design of a deployable version of ALIS to support the warfighters. The requirements were finalized and a Critical Design Review was held in February 2014. The first phase of deployable ALIS will be delivered in April 2015 to support the U.S. Marine Corps IOC, while a second version, which will include additional Air Force requirements, is scheduled by be delivered by fourth quarter 2016.

From January 2011 to August 2012, the DOD Inspector General (IG) conducted an audit of the F–35 ALIS. The DOD IG provided the program with a set of recommendations, which we either concurred or partially concurred with, and are in various stages of implementation. For example, in the information systems security area, the employment of U.S. Air Force systems and processes to track the certification and accreditation posture, in addition our early engagement strategy with Services certifying officials, continues to improve the overall certification and accreditation process. Furthermore, the tracking of foreign developed software, independent software test actions, and the supplement to the System Threat Assessment Report, expected by June 2014, will help us inform ALIS specific threat actions and

decisions. Although we have not implemented the recommendation to separate ALIS as a major automated information system program, as I previously mentioned, the enterprise now deals with ALIS as if it is a "weapons system" and a critical part of the F–35 program. I believe separating ALIS from the air system, 3 years before the end of development activities, will introduce significant integration, implementation, and management risks with undesirable effects to the program budget, schedule, and Air System performance.

In 2013, the F–35 SDD flight test program exceeded the number of planned flights, but fell slightly behind in overall test point accomplishments. The Integrated Test Force (ITF) achieved 1,168 test flights of 1,153 planned, slightly exceeding the total flights in 2012. The ITF also executed 9,032 test points, which was roughly 3.5 percent shy of what was planned. Fiscal year 2014 is a very critical and challenging year for flight test and we must improve test aircraft availability and reduce the amount of refly, regression and "growth" test points if we are to stay on track.

Pratt & Whitney SDD F135 engines have completed a total of 29,986 operating hours, 15,963 hours on flight-test engines, and a total of 5,565 hours of flying time on all three variants of F–35 aircraft. Pratt & Whitney is currently supporting flight test on all three variants at three locations. During fiscal year 2013, the engine successfully demonstrated stall-free high angle of attack operations and successfully completed all engine air start testing.

The F135 engine did experience a significant test failure on 23 December 2013. An F–35B ground test engine suffered a failure of its first stage fan integrally bladed rotor (IBR, also known as a "blisk") while doing ground accelerated mission durability testing. This failure occurred on the highest time test engine in the F135 fleet with 2,192 operating hours; roughly 75 percent of the engine's required life. (By comparison, the high time SDD flight test engine has 622 flight hours and the high time operational engine has less than 250 flight hours). While the root cause of this failure is still under investigation, safety assessments have determined that the fleet can be safely operated by inspecting the first fan stage rotor at regular intervals until a new rotor is installed. A cost reduction redesign of this first stage rotor was already in progress before the test failures; consequently, lessons learned from the root cause analysis will be incorporated into the new redesign. We expect the production break in of the redesign in the late 2016 timeframe, with a retrofit of engines beginning in 2017. While the fan module that contains this IBR can be removed and replaced in the field, replacement of the IBR itself within the module is a depot level task.

The F–35 fleet experienced two fleet-wide groundings in January and February 2013 due to issues with the F135 engines. The first incident occurred in January 2013. An F–35B was forced to abort a takeoff for what would later be understood to be an improperly crimped fueldraulic hose in the F135 engine. The F–35B fleet was grounded for 19 days, but was returned to flight after confirming the integrity of all similar hoses in the engines. The program office put in place activities to better monitor and improve the quality of the hoses being provided for the engine, and continues to track this closely. The second incident grounded all variants of the F–35 for approximately 7 days and resulted from a crack discovered in the third stage engine turbine blade. The engine in question had been flying at the highest heat and most significant stresses of any of the jets in the test and operational fleets, which contributed to this crack. After confirming the source of the crack, the fleet was inspected and returned to flight. Engineering work continues to assess the long-term implications of this turbine blade crack on the life of the F–35 engine, and the incident continues to be successfully managed in the fleet by monitoring the life usage of the turbine. Through incorporation of new quality inspection criteria during production all new engines are now being delivered with full life third stage turbine blades.

To ensure Lockheed Martin and their suppliers keep focus on improving key areas of risk, the Defense Acquisition Executive has approved a plan that links improvement in the areas of software, ALIS, and R&M to the delivery of aircraft and the future ramp up of production. In particular, additional progress must be demonstrated before awarding a contract for higher production rates: (1) Software builds for block 2B, 3I, and 3F, which is essential to achieving the desired combat capability of the F–35; (2) Reliability, which is not growing at an acceptable rate; (3) ALIS, which requires focused attention to meet schedule of performance metrics; and (4) Closure of previously identified design issues through testing. Further, I have worked with the Navy and Air Force Acquisition Executives to ensure that the acquisition planning for LRIP lot 9 includes strong, event-based performance criteria while incentivizing Lockheed Martin and Pratt & Whitney to achieve the priorities I have just listed.

With regards to the dual capable aircraft (DCA), we are continuing to execute a risk reduction strategy to prepare for DCA integration during Block 4 Follow-on Development. Our risk reduction efforts include developing a detailed planning schedule for B61 integration on the aircraft, maturing the nuclear architecture design, refining the cost estimate, nuclear certification requirements planning, and the initial concept of operations documentation. All F–35 DCA Risk Reduction benchmarks will be complete by Summer 2015. DCA integration begins as part of follow-on development, comprised of Block 4A (2016–2022) and Block 4B (2018–2024). All software development, flight test, and nuclear certification activities will be conducted across Block 4A/4B development, resulting in an F–35 design certification in 2024. The Air Force will lead an operational certification process following design certification that is expected to be completed no earlier than 2025.

PRODUCTION PROGRAM PERFORMANCE

Costs for production aircraft continue to come down for each successive lot put on contract. The average aircraft unit cost for an LRIP lot 6 aircraft is 3.8 percent lower than LRIP lot 5 aircraft. An LRIP lot 7 aircraft has an average unit cost approximately 4.2 percent lower than LRIP lot 6 aircraft. I expect these trends to continue for many future production lots. Production efficiencies as well as economies of scale are both critical in the overall affordability of the F–35 program. In 2013, efforts were taken to improve affordability, with more cost sharing between the Government and contractors with respect to cost reduction initiatives. This along with other cost reduction initiatives and economies of scale should result in the price of an F–35A, including an engine and profit, between $80 million and $85 million in 2019 in 2019 dollars. The other F–35 models have proportionally similar cost reduction goals.

In 2013, Lockheed Martin delivered 35 aircraft compared to 30 deliveries in 2012. This was despite the challenges posed by F–35B flight operations being shut down for a month due to an issue with the fuel-draulics hose as well as not being able to conduct any acceptance flight operations in the month of August due to the Fort Worth Joint Reserve Base runway being repaved. Deliveries included the last LRIP lot 4 aircraft and 10 of 32 LRIP lot 5 aircraft.

Production has been fairly stable and predictable. As of 2 March 2014, the overall production factory performance was tracking closely to the post Lockheed Martin stake plan with factory assembly performance 6 days behind plan. Production flight line performance improved from 57 days behind plan to 39 days behind plan. Efforts are continuing to further improve production flight line performance to ensure stable delivery of F–35s as we ramp up production. The Program continues to see improvements in design stability, parts availability, workforce stability, and shop floor discipline. The Joint Program Office, in partnership with the Defense Contract Management Agency (DCMA), continues to closely monitor progress and challenge the contractor and supply chain for greater quality improvements.

In 2013, Lockheed Martin, DCMA and the Joint Program Office jointly developed a corrective action plan in response to Lockheed Martin disclosures on specialty metals non-compliance. The supplier compliance assessment was completed in August 2013 and Lockheed Martin initiated ongoing surveillance activities to ensure future compliance.

Significant international supplier milestones were also achieved in 2013. Final assembly and check-out (FACO) operations commenced in Cameri, Italy at Alenia Aermacchi's co-production site in July. The first Italian FACO produced F–35 is now in the final assembly phase. In December 2013, Turkish Aerospace Industries, Inc. delivered its first co-production F–35 center fuselage, which was successfully mated with a forward fuselage component in February 2014 at the prime contractor's Forth Worth facility.

Pratt & Whitney has delivered 134 engines and 46 lift fans to date. For 2013, Pratt & Whitney's delivery rate was stable, increasing from 4 engines per month in 2012 to 4.3 in 2013. LRIP lot 6 engines are currently slightly ahead of contract delivery dates. However, far too often engine deliveries are interrupted by technical issues and manufacturing quality escapes resulting in product holds and material deficiencies that increase overall risk to meeting future production goals. My production and quality teams continue to work closely with Pratt & Whitney to resolve the systemic issues which result in these product holds.

With another year of demonstrated improvements in production, I have confidence in the program's ability to produce high quality F–35s and our ability to eventually ramp up production.

CONCURRENCY

The DOD established the F–35 program in 2001 with a planned amount of concurrency that attempted to balance cost, risk, and the need for tactical aircraft modernization. That strategy introduced the risk that aircraft built in early production lots would require post-delivery modifications due to discoveries made during qualification, flight, and ground tests, or as a result of engineering analysis. These concurrency modifications must also "cut in" to the production line which can have substantial cost and schedule effects. As we complete more and more testing, the risks and impact of concurrency should progressively decline. By the end of 2015, mission and vehicle qualification testing will be near completion, second-life fatigue testing will be complete for all variants, and flight test will have completed 80 percent of the design loads envelope. At this future point in the development program many of the technical risks that drive concurrency changes and costs should be discovered.

Over the past year, the F–35 concurrency cost estimate has remained stable at approximately 3 to 5 percent of recurring flyaway costs. The F–35 program will continue to work with Lockheed Martin to refine their estimates based on the known technical issues and potential technical issues that are forecasted for the remainder of SDD. We will also review and update the government concurrency estimate on a periodic basis as the program progresses through the remainder of SDD.

The F–35 Joint Program Office has worked collaboratively with Lockheed Martin to implement a joint concurrency management and execution system. This system has successfully reduced the length of time required to implement a change into the production line (19 months to approximately 13 months), thereby reducing the number of aircraft needing future modification and corresponding costs. Contract strategies are also in place to reduce concurrency costs to the Government. The LRIP lots 5, 6, and 7 contracts have a 50/50 cost sharing mechanism with no fee for concurrency changes known prior to the production contract award that will not be incorporated until after aircraft delivery. The F–35 Joint Program Office intends to include this same mechanism in the LRIP lot 8 contract currently being negotiated. This cost sharing approach is intended to continue to motivate Lockheed Martin to incorporate concurrency changes as quickly as possible on the aircraft production line and minimize the need for conducting retrofit activities. Eventually, the government will move to a contracting strategy that places all risks and liability for concurrency changes to the contractors.

OPERATIONS AND SUSTAINMENT PERFORMANCE

The program continues to address the various issues arising from operating an aircraft still in development and providing the operators improved technical data and solutions to emerging issues. Overall, the reliability of the weapon system is still well below our predictions but is slowly improving and the prime contractors, Lockheed Martin and Pratt & Whitney are gradually resolving issues with spares and repair cycle times.

In 2013, the F–35 program continued pilot and maintenance training for F–35A and F–35B aircraft and started pilot and maintainer training for the F–35C with the Navy, Air Force and Marine Corps each having their own training squadron. As of today, we have completed transition training for 92 pilots and 1,059 maintainers. In addition, we initiated pilot and maintainer training for another one of our international partners, The Netherlands. In cooperation with the Joint Operational Test Team and Air Force Air Education and Training Command, the program successfully completed the ready for training operational utility evaluation which found that the training system is "sufficient to meet the relatively low student training sortie demand of the syllabus" for the training of experienced pilots.

In 2014, the program will complete the "stand up" of Luke Air Force Base and Marine Corps Air Station Beaufort to expand pilot training capacity and prepare for U.S.-based pilot training for our international partners and FMS customers. Additionally, aircraft will transfer to Edwards Air force Base to begin preparations for Block 2B Operational Test.

Concurrently we will focus on completing the design, procurement, and installation of modifications to allow the U.S. Marine Corps to achieve IOC by July 2015. We will also do this for the modifications needed for operational testing that starts spin up in January 2015. It is these modifications which are now on the critical path to U.S. Marine Corps IOC and operational test (OT); any delay in these aircraft modification programs will directly delay the start of these two important milestones. To accelerate these modifications, the program has activated modification lines at Marine Corps Air Stations Cherry Point and Yuma as well as Ogden Air Logistics Complex, and has developed a comprehensive aircraft modification program that is performing a value stream analysis and lean process to ensure the F–

35 modifications are in place for IOCs and OT testing. Additionally, we were successful in standing up depot component repair activities at Ogden and Warner-Robins Air Logistics Complexes over the past year.

Reducing F–35 Sustainment costs and beginning the transition to a future global support and posture will be a key focus of 2014. We will begin to put in place the strategy to stand up our regional sustainment capabilities in Europe and the Pacific and continue building our CONUS sustainment capabilities. Our phase 2 business case analysis, which is nearly completed, will be used to inform us on what the most effective and efficient regional sustainment construct should look like. Part of this global posture will be the transition to performance based contracts to achieve Service, partner, and FMS Customer readiness requirements. These early contracts will also allow me to assess the performance of the current interim product support integrators (Lockheed Martin and Pratt & Whitney) to assume this role on a more permanent basis.

The long-term sustainment costs of the program continue to be a key focus. My team and I are committed to providing the best-value support solution for all participants. We are undertaking a number of integrated efforts to drive down the cost of operating and sustaining the F–35 weapons system. In October 2013, the F–35 Joint Program Office stood up a Cost War Room whose mission it is to improve affordability in all aspects of the F–35 operations and sustainment costs. They are currently working on 48 opportunities to drive down or remove costs from the program. Linked to this Cost War Room effort is a strategy to define the most cost effective repair enterprise for the Services and partners. This effort is underway with a level of repair analysis on key components to determine what the optimum repair structure should look like.

The program has also instituted a robust R&M program that is systematically identifying cost and time drivers while continuing to contractually institute tighter repair turnaround times for suppliers to drive down repair times. As an integrated element of the R&M program, we have also stood up a readiness cell that is focusing on analyzing program metrics to improve aircraft availability. The readiness cell's mission is to identify opportunities to enable F–35 availability to greater than 60 percent by 2015 across all three variants. Some of the initiatives that the readiness cell is pursuing include: improving contracting practices to avoid gaps in line-replaceable component repair and spares replenishment, and optimizing maintainer processes and procedures to reduce the amount of aircraft downtime between sorties.

The combination of our R&M program, our O&S Cost War Room, our readiness cell, our level of repair analysis, and our business case analysis is to produce a mutually beneficial sustainment enterprise that operates, manages and supports the global system with relevant metrics and incentives, while meeting warfighter-defined readiness and cost objectives. We still have much work to do to achieve this vision and it is one of my highest priorities.

AIRFRAME AND PROPULSION CONTRACT ACTIONS

The program achieved a major milestone with the concurrent definitization/award of the LRIP lot 6 and 7 airframe contracts in September 2013. These contracts marked significant improvement in negotiation span time when compared to previous LRIP contracts. We need this trend to continue to ensure that our budgets, expenditures, contracting actions, and program actions are all synchronized. The fixed price incentive fee (FPIF) contract with Lockheed Martin for LRIP lot 6 is valued at $4.4 billion and procures 36 aircraft (18 F–35A, 6 F–35B, and 7 F–35C for the U.S. Services plus 5 F–35A for participant nations) and ancillary equipment. The FPIF contract with Lockheed Martin for LRIP lot 7 is valued at $3.9 billion and procures 35 aircraft (19 F–35A, 6 F–35B, and 4 F–35C for the U.S. Services plus 5 F–35A and 1 F–35B for participant nations) and ancillary equipment. The parties reached a fair, well-reasoned settlement that caps the government's liability. The negotiated price of the contract and all cost overruns are the responsibility of Lockheed Martin. In addition, we continue to share concurrency risk with Lockheed Martin. The terms of the contract include a "cost-sharing/no fee" arrangement whereby the Government and Lockheed Martin share equally (50/50) in these concurrency costs with no fee for the known concurrency change retrofits.

The program definitized the LRIP lot 5 FPIF engine contract in April 2013 at a value of $1 billion for 32 engines and spares, as well as associated sustainment support/products. The final negotiated modification to the LRIP lot 6 FPIF engine contract was awarded in October 2013 bringing the total value to $1.1 billion for 36 engines and spares. Both contracts reflect a 0/100 overrun shareline with the con-

tractor assuming all cost overrun risk and capping the government's liability at the negotiated value of the contract, another first for the engine program.

Proposal evaluation is underway for the lot 8 (fiscal year 2014) airframe and lot 7 (fiscal year 2013) and lot 8 (fiscal year 2014) engine procurements. We believe we can have a final contract award for all of these procurements by the end of second quarter of calendar year 2014. By negotiating the lots 7 and 8 engine procurements together, the program is striving to get out of the business of undefinitized contract actions and attempting to align contracting actions with our budget and the actual production of aircraft and engines. Today we effectively have fixed price contracts in terms of cost overruns because the government has zero liability for cost overruns above the negotiated price of the aircraft and engines.

In the future, the program intends on moving towards fixed-price, multi-year contracts for both the aircraft and the engines. The F–35 Program will ensure that these future U.S. aircraft and engine procurements comply with section 143 of the National Defense Authorization Act 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." We will also ensure that the requirements to enter multi-year procurements are met. In the meantime, we are encouraging Lockheed Martin and Pratt & Whitney to seek long-term agreements with their suppliers to stabilize the supply base and reduce overall procurement costs.

An effective earned value management system (EVMS) is critical to monitoring performance and controlling costs. In 2007, a DCMA review found the Lockheed Martin Aeronautics (LM Aero) EVMS to be noncompliant with EVM guidelines. Although both DCMA and LM Aero 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 created its EVMS corrective action plan during 2012 and DCMA re-certified the LM Aero EVMS in November 2013. In accordance with DOD Federal Acquisition Regulations, the DCMA had imposed a 5 percent withhold against progress payments for new F–35 contracts, starting with LRIP lot 5 as a result of the disapproved status of LM Aero's EVMS. Following recertification of LM Aero's EVMS, DCMA released the withhold, which amounted to $160 million, and authorized LM Aero to bill for the previously withheld amounts.

In October 2013, DCMA disapproved of Pratt & Whitney's EVMS used for F135 engines after finding deficiencies in their EVMS system. This action was expected based on Pratt & Whitney's incomplete response to Corrective Action Requests submitted by DCMA to Pratt & Whitney earlier in 2013 on contracts for F135 engines used in F–35 aircraft. DCMA found 16 significant deficiencies that affect four EVMS guidelines. In accordance with the DOD Federal Acquisition Regulations, 5 percent of each request for payment is withheld until all significant deficiencies are corrected. As of the end of February the withhold amount totaled $25.7 million. The F–35 Joint Program Office is working closely with DCMA to ensure Pratt & Whitney is in compliance with corrective actions.

2013 DOT&E REPORT

As you are most likely well aware, the Director, Operational Test and Evaluation (DOT&E) performed an independent assessment of the F–35 Program. This was conducted with the F–35 Program Office's full cooperation and unfettered access to information on the F–35 Program. Although the report is factually accurate, I do not believe it tells the full story as not enough credit is given for progress that has been made in reducing risk on this program. There were no surprise findings in the report, in fact, we agree and are taking action on eight of the nine recommendations in the report. The one recommendation that the F–35 enterprise has chosen not to pursue has to do with the fuel-draulic shut off system. An extensive cost/benefit analysis showed that the addition of the polyalphaolefin shut-off valve increases the F–35 survivability by less than 1 percent while adding additional development, production, reliability, and operating costs. The combination of stealth, data fusion, advanced sensors, advanced countermeasures, and electronic attack greatly reduce the chances of the aircraft being hit by enemy fire. Additionally, the F–35 Joint Program Office does not agree with DOT&E's assessment that mission systems software delays and Block 2B flight test growth will result in a 13-month delay in the 2B fleet release date. Block 2B software is currently undergoing flight test and security and verification testing with little to no schedule delays. The program has established a process to track and manage software capability increments and to track

execution of software builds to plan, including development, integration, flight test, and rework.

CONCLUSION

I believe the F–35 is headed in the right direction. The previous PEO developed a solid program baseline and it is now my team's job to successfully execute that plan. I believe the basic aircraft design is sound and we can deliver on our commitments to you, the taxpayers and warfighters. While there is still risk in the program, I have confidence in that we now have in place a robust management and leadership enterprise that can handle any future setbacks or discoveries and stay on track, so long as the program remains properly resourced.

Software development still remains our number one technical risk and a key focus area. We also must concentrate on standing up the global support posture, improve R&M, and drive costs out of the program. The changes implemented by the combined government/contractor team have improved this outlook, but more work still needs to be done. We will need excellent performance and continued support by all elements of the enterprise, including industry, Congress, the Services, our partners, and my program office.

As in any complex development program there are challenges, but I believe the enhanced capability of the F–35 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 leadership team is rising to the challenges of managing this complex system with integrity, discipline, transparency and accountability. Our progress continues at a slow but steady pace. I intend on completing this program within the budget, schedule, and resources I have been given. I ask that you hold me, my team, our stakeholders, and contractors accountable over the coming years to ensure that we develop and deliver the warfighting capability this country and our partners need and expect.

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

Senator BLUMENTHAL. Thanks, General.

General Davis?

STATEMENT OF LT. GEN. CHARLES R. DAVIS, USAF, MILITARY DEPUTY TO THE ASSISTANT SECRETARY OF THE AIR FORCE FOR ACQUISITION

General DAVIS. Chairman Blumenthal, Ranking Member Wicker, and distinguished members, thank you for this opportunity.

I will try to keep this brief. I know there are questions, as you have already mentioned, we would like to get to.

Let me just mention the fact that I think our Chief and our Secretary have been very clear that there are some enduring capabilities your U.S. Air Force provides, and these are missions they are expected to perform at any time on any given day. That translates to what I think that the Nation's citizens expect of the Air Force, and that means basically, in simple terms, your Air Force has to strike anywhere in the world, at any time, and on any target that the President directs.

We must also be able to observe critical portions of the world any time, day or night, around the year, and sustain the capability to do so. That also means providing the assured launch capabilities to get those assets in orbit to be able to do that.

It also means that the Air Force must transport or return critical cargo, personnel, and other things anywhere around the world at any time and sustain that capability over long periods to be able to do any missions the Joint Force requires. We must defend the Homeland.

We can do these missions today. We can do them tomorrow. We can probably do them for the near future. But clearly, as we look

out into the extended future, there is serious modernization the Air Force requires to be able to do that based on a threat that is evolving more rapidly than at any point I have seen in my 35-year career. What we are seeing is it takes very little for a threat to be able to evolve quite effectively if all it has to do is defend a coast land or defend a fairly unique part of the geographic terrain around a certain country. It becomes much more cost effective to defend and to be able to project that power I just described with the Air Force.

So that threat and its ability to change and morph quite rapidly is what presents us the problem that melds with the budget that you have referenced here in all of the opening comments. The more we focus on individual systems within the budget, the more we risk the potential of neglecting the capabilities we are going to need for that long-term future that I think is so vital to what the Nation expects of the Air Force.

So while we debate the 2015 budget, I will tell you there is some comfort—and Senator Wicker, you mentioned it in terms of predictability, the BBA was agreed to. Our program managers got some relief in that they had a certainty to plan to in the fiscal year 2015 budget.

But I will tell you those same program managers now worry what happens next because if you look at the budget that was submitted—and we are going to debate the items here today—as you move into 2016, the Air Force budget shows a projection of growth of about $8 billion and then another $2 billion in 2017. I do not think any of us really expect that will quite happen that way. But as our program managers try to plan how they modernize all these forces you just mentioned, that creates a level of unpredictability that we will certainly have to work very closely with you in great partnership to try to figure out how we survive that planning process.

If you consider the fact that certain parts of our budget, in addition to the things that we will talk about today, have largely been fenced or directed in certain ways to be spent because of bills we have to pay, and as you meld that with the fact that I mentioned the threats evolving rapidly, then we have a very challenging situation as we go forward.

There are no easy choices and we will debate many of those today. There are some choices that are better than others that will provide the enduring capabilities I think the United States expects the Air Force to provide. We are going to talk about those today. We will have to continue to work with you in partnership to be able to deliver the best way to get those capabilities.

So with that, I look forward to your questions.

[The prepared statement of General Davis follows:]

PREPARED STATEMENT BY LT. GEN. CHARLES R. DAVIS, USAF

I. INTRODUCTION

Chairman Manchin, Ranking Member Wicker and distinguished members of the subcommittee, thank you for the opportunity to provide you with an update on Air Force tactical aviation programs. Today our Air Force is engaged globally, supporting the combatant commanders (CCDR) requirements and executing our National Military Strategy (NMS).

It takes the combined efforts of all of our military Services and the whole of government to deny, deter, and defeat an enemy, and over the last decade this integration has tightened. Just as we depend on our joint partners, every other Service depends on the Air Force to do its job. Whether it is Global Positioning System (C) information to navigate waterways, airlift to get troops to and from the fight, manning intercontinental ballistic missile (ICBM) silos to deter aggression, or reconnaissance and satellite communication to tell forces where enemy combatants gather or hide, the Air Force provides these capabilities, as well as many others. Here at home, our airmen patrol the skies, ready to protect the homeland, and they are integral to the movement of people and lifesaving supplies when disasters, like Hurricane Sandy or the California wildfires, strike.

Over the past 35 years, the Air Force has been called upon more than 150 times to conduct combat or humanitarian operations in more than 50 countries around the world. As our world becomes more interconnected, Air Force capabilities that allow America to see, reach, and affect a situation anywhere on the globe within a matter of hours, will become even more critical. This capability to see what is happening and project power anywhere in the world at any time is what Global Vigilance, Global Reach, and Global Power are all about.

II. CURRENT ENVIRONMENT

The magnitude of the cuts generated in fiscal year 2013 by the Budget Control Act (BCA), or 'sequestration', was difficult to absorb in the short term. We stood down 31 Active component squadrons, to include 3 combat-coded squadrons for more than 3 months. We initiated civilian furloughs, putting extreme stress on the workload and personal finances of our civilian workforce. We cut maintenance of our facilities, in many cases by 50 percent, and delayed major maintenance actions, including depot aircraft overhauls.

With support from Congress, the Air Force was able to realign $1.7 billion into operations accounts. This allowed us to cover our overseas contingency operations requirements and enabled us to resume flying operations, but these budget adjustments came at a sacrifice to future weapon system modernization. Of the units affected by the fiscal year 2013 sequestration, only about 50 percent have returned to their pre-sequestration combat ready proficiency levels, which was already much less than required, and it will take years to recover from the weapon system sustainment backlog.

Though the Balanced Budget Amendment (BBA) and the fiscal year 2014 Appropriations Act provided partial sequestration relief in fiscal year 2014, and some help for fiscal year 2015, they do not solve all of our problems. The additional funds help us reverse our immediate near-term readiness shortfalls and enable the Air Force to build a plan that mostly shields our highest priorities, which includes: flying hours; weapon system sustainment; top three investment programs; and key readiness requirements such as radars, ranges, and airfields. However, the tightening fiscal caps combined with the abrupt and arbitrary nature of sequestration clearly drove the Air Force into a "more ready force today" versus a "more capable force tomorrow" dilemma, forcing us to sacrifice future modernization for current readiness.

During the development of the fiscal year 2015 budget submission, the Air Force took a bold but realistic approach to support the Air Force 2023 framework and the 2012 Defense Strategic Guidance (DSG), as updated during deliberations on the 2014 Quadrennial Defense Review (QDR). To do this within fiscal guidance, including the Strategic Choices and Management Review, we had to make difficult trades among force structure (capacity), readiness, and modernization (capability). As a result, the Air Force established four guiding principles to steer our strategy and budget process.

(1) We must remain ready for the full-spectrum of military operations;
(2) When forced to cut capabilities (tooth), we must also cut the associated support structure and overhead (tail);
(3) We will maximize the contribution of the Total Force; and
(4) Our approach will focus on the unique capabilities the Air Force provides the joint force, especially against a full-spectrum, high-end threat.

Moving forward, we seek to maintain a force ready for the full range of military operations while building an Air Force capable of executing our five core missions:

(1) air and space superiority;
(2) intelligence, surveillance, and reconnaissance (ISR);
(3) rapid global mobility;
(4) global strike; and

(5) command and control, all against a well-armed and well-trained adversary in 2023 and beyond.

The fiscal year 2015 budget request attempts to develop and retain the most critical force structure and capabilities to maintain the Air Force's ability to rapidly respond to global demands in most missions. We will become smaller, which will require new approaches to reducing the rotational or current commitments in order to sustain it. This force structure reduction is budget-driven and not a logical consequence of transitioning out of nearly 13 years of war. In fact, the Air Force has progressively reduced its size since September 11, 2001; for example, we had 75 combat fighter squadrons in 2001, and today we have 55, with further cuts to 48 projected by the end of the future years defense program (FYDP) (fiscal year 2019). In addition, history since the 1991 Gulf War suggests the Air Force will not experience a significant reduction in operations tempo even when Operation Enduring Freedom combat operations end. Fighter, bomber, command and control (C2), ISR, personnel recovery, and Special Operation Forces (SOF) assets are likely to remain in high demand. To compound matters, the Air Force still has not recovered the readiness lost due to the BCA in fiscal year 2013, and readiness was unacceptably low even before sequestration. Despite these present challenges, we cannot afford to mortgage the future of our Air Force and the defense of our Nation. Recapitalization is not optional—it is required to execute our core missions against a high-end threat for decades to come.

If we continue to be funded at the fiscal year 2015 budget top line level, we can continue a gradual path of recovery to combat readiness levels that enable us to meet the full range of operational missions, begin to close the gap in munitions inventories, and protect investments such as the new training aircraft system and the next generation of space-based systems. Additionally, the President has proposed an additional Opportunity, Growth, and Security Initiative (OGSI) to accompany the fiscal year 2015 budget request. For the Air Force, this $7 billion additional investment would enhance our readiness posture, enable us to fund critical modernization programs, accelerate our recapitalization efforts, and improve our installations and bases.

A BCA-level budget would result in a very different Air Force. To pay the sequestration-level bill, we will have to decrease F–35 quantities and sacrifice current tanker and additional ISR capacity by divesting KC–10 and RQ–4 Block 40 fleets.All of our major investment programs will be at risk, and our readiness recovery will be significantly slowed due to required cuts in weapon system sustainment and ranges, as well as reduced levels of investments in preferred munitions. A return to BCA-level funding would result in a less ready, less capable, less viable Air Force that is unable to fully execute the defense strategy.

The fiscal year 2015 budget request does not enable full recovery of warfighting capability, capacity and readiness, but we have made the risk-informed decision to re-strike the balance, ultimately trading some current capacity and modernization for future readiness and recapitalization. When building the budget, there were no easy choices. We divested fleets and cut manpower that we would have preferred to retain. We focused on global, long-range, and multi-role capabilities, especially those that can operate in contested environments, which meant keeping key recapitalization programs on track.

III. 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. Approximately 218,000 Total Force airmen are "committed in place" supporting daily combatant command operations to defend the Homeland, provide command and control of our nuclear forces, operate remotely piloted aircraft, provide rapid global mobility, and many other requirements. Over 28,000 airmen are deployed across the globe, including more than 20,000 in the U.S. Central Command Area of Responsibility. The Air Force is an active partner in Department of Defense planning that will shift our emphasis from today's wars to a broader range of challenges and opportunities. The Department of Defense is currently reassessing the strategic guidance issued last year, but we anticipate continued emphasis on and planning for a rebalance to the Asia Pacific region. Our challenge is to provide those who deploy in support of our global commitments an Air Force that is capable, agile, flexible, ready, and technologically advanced.

During 2013, Air Force global precision attack aircraft flew over 21,000 sorties and logged 40,000 hours in support of Overseas Contingency Operations. On the home front, Air Force fighter, air refueling, and early warning aircraft have flown over 64,000 total sorties supporting Operation Noble Eagle since September 11,

2001. 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.

However, aviation is not without risk. In fiscal year 2013, there were 19 Class A aviation flight mishaps, including 14 destroyed aircraft and 11 fatalities. This was a decrease in one Class A aviation flight mishap from fiscal year 2012, and an increase in destroyed aircraft and fatalities from the fiscal year 2012 numbers of 10 aircraft destroyed, and 9 fatalities respectively. Analysis of these events found trends similar to previous years, with the top two mishap factors being compliance and decisionmaking errors.

There were 33 Class B aviation flight mishaps in fiscal year 2013, significantly higher than the 23 in fiscal year 2012. Class C aviation flight mishaps stayed relatively consistent with 262 in fiscal year 2013, slightly below the 269 total in fiscal year 2012. Additionally, fiscal year 2013 unmanned aerial system mishaps decreased across the board in Class A, B, and C mishaps from fiscal year 2012. Class A mishaps dropped from 13 to 12, Class B mishaps from 4 to 1, and Class C from 16 to 13.

IV. FORCE STRUCTURE AND MODERNIZATION

Fighters

Air Force fighter force structure is dependent on both fighter aircraft and rated manning. Three years ago, the Air Force determined through extensive analysis that a force structure of 1,200 primary mission aircraft and 2,000 total aircraft was required to execute the NMS with increased operational risk. Two years ago, based on the 2012 DSG and fiscal constraints, the Air Force rebalanced our force structure across core functions. Analysis showed the Air Force could decrease fighter force structure by approximately 100 aircraft with higher risk, resulting in the current fighter requirement of 1,100 primary mission aircraft and 1,900 total aircraft. The 2014 QDR Report also advances an updated national defense strategy that embodies and builds on the DSG priorities. The Chairman's assessment of the QDR strategy states we will continue to need capabilities that can operate effectively in contested environments. During the build of the fiscal year 2015 budget, fiscal constraints drove force structure divestments of 334 fighters, leaving a fighter force structure significantly below the 1,900 total aircraft requirement. Fiscal pressures drove these tough choices—balancing today's needs against tomorrow's—and accepting near-term risk today to be ready and viable tomorrow.

The Air Force's fighter fleet is approaching 30 years old on average—the oldest in our history. Without service life extensions and capability upgrades, it will not be possible to manage risk. The Air Force is pursuing programs that will modernize and extend the service life of our remaining fleet. The F–35 is a key component in preserving future force structure and mitigating risk. Any further delay in the F–35 program will create a serious shortfall (mid- and far-term) in fighter capabilities and force structure. The Air Force is very concerned with recent budget reductions and continues to monitor how these cuts will affect risk. Air Force modernization of legacy systems was traded to pay for readiness and continue to fund our top three investments. It is absolutely critical that selected fourth generation sustainment and modernization efforts continue, the F–22 continues to modernize, and the F–35 matures and begins full rate production (FRP) to avoid further increases in risk.

Manning our current force is a challenge we continually work. Air Force mission success depends on efficient management of our rated force, the most challenging of which is fighter force structure manning. The Air Force is currently 240 fighter pilots short of the total manning requirement and our projections indicate this deficit growing to approximately 500 by 2022. The shortfall evolved from force structure reductions that cut active duty fighter squadrons and fighter training squadrons to a number that cannot sustain billet requirements. As a result, the Air Force is currently unable to produce and experience the required number of fighter pilots across the total force. The Air Force is prioritizing overall available rated manpower to fill our operational cockpits, at significant risk to institutional requirements. Projected impacts include reductions in air-operations expertise during the development of war plans and a gradual erosion of fighter pilot experience in test and training. Recent programming and policy actions raised production and absorption capacities, but current fiscal constraints place the implementation of these actions at risk. However, even with these changes, the Air Force is only able to slow the decline in fighter pilot inventory and will be incapable of meeting our overall requirement for fighter pilot expertise for the foreseeable future.

A–10

Beginning in fiscal year 2015, the Air Force will retire the entire A–10 fleet of 283 aircraft, resulting in a savings of $3.7 billion ($4.2 billion including cost avoidance). The A–10 provides our Joint Force Commanders with responsive, lethal, precise, and persistent firepower for close air support (CAS) and combat search and rescue, and has been a steady, stellar performer in all recent conflicts. It was a tough decision to retire the fleet, but fiscal pressure drove us to divest this platform, which cannot survive or operate effectively in a highly contested environment where there are more advanced aircraft or air defenses. As ably shown in Iraq and Afghanistan, we will rely on other platforms to provide effective CAS, from multi-role fighters to B–1 bombers to remotely piloted aircraft; however, these decisions do not come without risk or impacts to the mission. One of the impacts to using other platforms for CAS is that use of these platforms for CAS must be balanced with their other missions, putting stress on the force in certain scenarios. Divesting the entire fleet allowed us to harvest savings we could then apply to efforts that allow us to be ready and viable tomorrow.

The fiscal year 2015 budget does not fund future modernization efforts for A–10 aircraft; however, we will continue to sustain the aircraft and keep it operationally viable until 2019.

F–16

Our primary multi-role fighter aircraft, the F–16 comprises 50 percent of our fighter fleet. The fiscal year 2015 budget request invests $1.04 billion across the FYDP for F–16 modernization and service life extension to meet critical warfighter needs to 2025 and beyond. The majority of efforts in the FYDP focus on Legacy service life extension program (SLEP), operational flight program (OFP) enhancement, and a new start program for upgrades to the modular mission computer (MMC) and programmable display generator (PDG).

Legacy SLEP will extend the airframe structural service life for 300 aircraft by approximately 25 percent from the current 8,000 hours to 10,000+ hours, adding about 8 to 10 years. The fiscal year 2015 budget request continues design and development of structural modification kits for the Block 40–52 fleet to be responsive to the Air Force's total fighter requirement. The fiscal year 2015 budget request for OFP enhancement will continue the integration of new weapons, avionics and improved targeting pods. The fiscal year 2015 new start for the MMC and PDG upgrade will resolve processor, memory, and bandwidth issues that will allow capability growth through future OFP development.

The Combat Avionics Programmed Extension Suite (CAPES) program contains four distinct pieces that provide critical new capabilities to the F–16, including an active electronically scanned array (AESA) radar, a center display unit, an ALQ–213 integrated electronic warfare management system, and an integrated broadcast service (IBS) that integrates off board threat data and blue force tracking via SATCOM. Originally, 300 aircraft were scheduled to be upgraded with these capabilities, but the program was unfunded in the fiscal year 2015 budget request. The modernization of fourth generation aircraft continues to be a critical bridge with the fifth generation fleet and, although the Air Force is continuing with selected F–16 modernization, the lack of these specific avionic upgrades will result in F–16 Block 40–52 aircraft that will not be nearly as effective in a contested environment and will put the Air Force at greater risk from emerging threats.

To partially mitigate the impact of terminating CAPES, we are upgrading the F–16's electronic attack pod. This upgrade brings the self-protection capabilities of the aircraft in line with current and emerging threats, thereby increasing its effectiveness in the contested environments we expect it to encounter.

F–15 C/D

The fiscal year 2015 budget request divests the F–15C/D fleet by 51 aircraft across the FYDP. The fiscal year 2015 budget request invests approximately $1.7 billion across the FYDP on modernization and sustainment programs for the remaining F–15C/D fleet. We project the F–15C/D fleet will remain viable until at least 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.

We continue to modernize our F–15C/D fleet with AESA radars, a more capable aircraft mission computer, and a new electronic warfare self-protection suite, the Eagle passive/active warning survivability system (EPAWSS). This new system will be absolutely crucial to ensuring the F–15C/D is able to operate into the future, especially in highly contested environments. We have had to delay EPAWSS for 1 year

to remain within budget constraints. We expect these efforts to enable 179 F–15C aircraft to operate safely and effectively through at least 2035 as determined by the full-scale fatigue test.

F–15E

The fiscal year 2015 budget request invests approximately $2.2 billion across the FYDP for F–15E modernization and sustainment programs. This request 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 advancing capabilities to identify and engage targets, a more capable aircraft mission computer, and a slightly delayed self-protection electronic warfare system (EPAWSS). As with the F–15C/D, the EPAWSS system will be absolutely crucial to ensuring the F–15E is able to operate into the future in highly contested environments. 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.

Fifth Generation Fighters

Vital elements of our Nation's defense and deterrent capability are fifth generation fighters like the F–22A and F–35. These advanced, state-of-the-art aircraft are absolutely essential to maintain our current global superiority that permit air, sea, and ground forces freedom of action. Each aircraft possess exclusive, complimentary, and indispensable capabilities that provide synergistic effects across the spectrum of conflict. As future adversaries modernize, our legacy fourth generation aircraft will have limited capability to operate in a highly contested environment. Our Air Force must continue to invest in fifth generation weapon systems, and begin looking even further into the future, to ensure continued dominance of American Airpower.

F–22

The F–22 Raptor is the only currently operational U.S. fighter currently capable of operating in highly contested environments. F–22 attributes of stealth, super cruise, integrated avionics and sensors combine to deliver the Raptor's unique operational capability. F–22 modernization is required to counter advancing threats that specifically target F–22 capabilities. Accordingly, F–22 modernization is consistent with the DSG to "invest as required to ensure [the] ability to operate effectively in [anti-access and area denial] environments". Focused on maintaining operational superiority against the evolving threat, the fiscal year 2015 budget request for F–22 modernization investment includes $330.6 million in RDT&E in addition to $331 million in procurement. Increment 3.1 is fielding now and is scheduled to be complete in fiscal year 2017, delivering advanced air-ground capabilities including synthetic aperture radar ground mapping, threat geolocation, and Small Diameter Bomb (SDB) carriage. Increments 3.2A/B remain on track for fielding in 2015/2018 respectively, and will deliver advanced electronic protection and combat identification, AIM–120D and AIM–9X missile capability, and significantly-improved ground threat geolocation.

The F–22 is operating safely worldwide, averaging about 26,000 flying hours a year since return to flight in September 2011. It has been over 24 months since the last unknown-cause hypoxia-like event occurred. Notably, the retrofit of the automatic back-up oxygen system is on track for completion by 2015. Fielding of this system at Elmendorf Air Force Base is complete. The remaining fleet will be complete by mid-April 2015.

F–35

During fiscal year 2015, the Air Force will continue to manage risk across the global precision attack portfolio by prioritizing investment in fifth-generation aircraft while sustaining legacy platforms as a bridge to the F–35 Joint Strike Fighter. The aforementioned legacy fighter modifications are intended to keep a viable air superiority fleet in operation as the F–35 program works toward initial operational capability (IOC) in 2016.

The multi-role F–35A is the centerpiece of the Air Force's future fighter 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 2015 budget request includes $4.9 billion for continued development and procurement of 26 F–35A, conventional take-off and landing (CTOL) aircraft. The

program continues to make steady progress in overcoming software development delays and technical issues.

During calendar year 2013, the F–35 program team achieved a number of significant milestones, including: award of production contracts for aircraft low rate initial production (LRIP) Lots 6 and 7 and engine LRIP Lot 6; commencement of flight operations at Nellis Air Force Base; and the first live fire launch of an AIM–120 Advanced Medium Range Air-to-Air Missile (AMRAAM) from an F–35. Additionally, the program team completed all planned weapon separation events, the first multifunction advanced data link 4-ship connectivity test, and successful weapons delivery tests for the Joint Direct Attack Munition (JDAM). Thirty-five production aircraft were delivered for the Air Force, Navy, and Marine Corps, the program reached over 10,000 test and operational flight hours, and nearly fifty F–35A pilots have now been trained at Eglin Air Force Base. Further, the 61st Fighter Squadron at Luke Air Force Base was reactivated as the first of six training squadrons at the new pilot training center, and Hill Air Force Base and Burlington Air Guard Station were announced as the first operational locations for the Air Force.

In fiscal year 2014, the Air Force plans to procure 19 F–35A CTOL aircraft. Sequestration did not affect Air Force procurement quantities in 2014.

Affordability remains a major priority, and the F–35 program made great strides on this front in 2013. In the negotiations concluded for aircraft LRIP Lot 7 and engine LRIP Lot 6, costs dropped over 4 percent and 2 percent per unit, respectively, from previous lot negotiations, representing a decrease of approximately $5 million in unit recurring flyaway cost for each F–35A. These trends are expected to continue for many future production lots. Production efficiencies, as well as economies of scale, are critical in the overall affordability of the F–35 program. In 2013, efforts were taken to improve affordability, with more cost sharing between the Government and Contractors with respect to cost reduction initiatives. This along with other cost reduction initiatives and economies of scale should result in the price of an F–35A, including an engine and profit, between $80 million and $85 million by 2019 (TY$). In addition, the Joint Program Office (JPO) is pursuing a number of actions to lower the long term sustainment costs for the F–35. In partnership with prime contractors Lockheed Martin and Pratt & Whitney, the JPO established a Cost War Room to systematically examine the cost drivers with the intent to pursue initiatives that will reduce the overall operations and sustainment costs of the fleet. Linked to the Cost War Room is a strategy to define the most cost effective repair enterprise for the Services and partners. This effort is underway with a Level of Repair Analysis on key components to determine the optimum repair structure. The JPO has also instituted a robust reliability and maintainablity (R&M) program that is identifying cost and time drivers while continuing to contractually institute tighter repair turnaround times. As an integrated element of the R&M program, the JPO has stood up a readiness cell that is focusing on analyzing program metrics to improve aircraft availability. The combination of these efforts is intended to produce a mutually beneficial sustainment enterprise that supports the global system with relevant metrics and incentives, while meeting warfighter-defined readiness and cost objectives.

The progress made so far and the steps we take today are crucial in our efforts for declaring F–35 IOC. After the 2012 program re-baseline and Milestone B re-certification, the joint services were tasked to provide Congress our updated IOC criteria and timeline estimates by June 1, 2013. These IOC criteria and dates were established, and the Air Force plans to reach IOC for the F–35A by December 2016 (threshold).

Steady progress continues to be made on the development program, with over 50 percent of planned testing complete. The JPO has reduced risk on the helmet mounted display system, certification of night/IMC operations, fuel dump, and lightning protection issues. However, software remains the number one technical risk. We expect to reach initial warfighting capability, with Block 2B/3i software, and meet Air Force IOC as scheduled in 2016, but there is risk in reaching full warfighting capability with Block 3F as planned in 2017. Maturity of the Autonomic Logistics Information System (ALIS) remains a concern. The Air Force understands ALIS is a necessary and integral element of the F–35 weapon system, and as such, is a top program priority. As designed, ALIS will tie F–35 mission planning, operational flight, ops and maintenance training, debrief, tech and flight manuals, prognostic health management, and supply chain management into one seamless information system. Corrective actions for ALIS deficiencies are in work, and a maintenance release in place at Eglin Air Force Base and Marine Corps Air Station Yuma are successfully addressing many user concerns in an effort to improve aircraft turnaround time. Improvement in ALIS is now tied to the projected increase in production ramp rate beginning in 2015.

Air-to-Surface Weapons

All three mission areas (stand-off, direct attack, and penetrator munitions) in the air-to-surface munitions inventory are short of inventory objectives. The most critical are stand-off and penetrator weapons. Joint Air-to-Surface Standoff Missile (JASSM) and SDB weapons along with low observable platforms are force multipliers in a highly contested environment and their shortage could increase friendly force attrition driving a much higher level of effort enabling the attack of other critical targets. The shortage of penetrator weapons will result in some inability to target adversary critical capabilities and increase risk. Direct attack munition shortages drive the use of non-preferred munitions with decreased effectiveness and resulting in increased time and Air Force attrition to accomplish CCDR objectives.

JASSM and JASSM–ER

JASSM and JASSM–ER (Extended Range) are currently the Nation's only stealthy, conventional, precision, launch-and-leave, standoff missiles capable of fighter and bomber aircraft employment. They are capable of penetrating next generation enemy air defenses to strike high value, hardened, fixed, or mobile targets. The JASSM (baseline) has a range greater than 200nm while the JASSM–ER has a range greater than 500nm.

The JASSM (baseline) weapon is in FRP; the 11th and 12th production contracts were awarded to Lockheed Martin on December 19, 2013, for a total of 340 missiles. About 1,230 missiles have been delivered; of these about 1,000 are in the field and about 230 at the Lockheed Martin production facility for repair, mostly for the surface wrinkling due to exposure to high humidity conditions. The repair is fully covered by the warranty with no additional cost to the Air Force. A new coating (starting at lot 8) has corrected the surface wrinkling problem. Fiscal year 2016 is the last JASSM (baseline) buy for a total procurement of 2,054 missiles.

JASSM–ER is currently in LRIP; the third and fourth LRIP contracts were awarded to Lockheed Martin on December 19, 2013, for a total of 100 missiles. A problem with the fuel supply motor initially delayed the deliveries of the 30 LRIP lot 1 JASSM–ER missiles; however, the problem was resolved and deliveries will complete in April 2014. JASSM–ER will start FRP in fiscal year 2015. The combined JASSM production line transitions to JASSM–ER only at the maximum and most efficient rate of 360 missiles per year. The last JASSM–ER procurement is planned for fiscal year 2023, for a total JASSM–ER buy of 2,846 missiles.

SDB II

The SDB II will fill the capability gap of attacking mobile targets at standoff ranges through the weather outside of point defenses using a multi-mode seeker and dual band weapon data link. SDB II will be a force multiplier in the number of targets platforms can attack per sortie while inherently limiting collateral damage. Providing a four-fold increase in load out with its carriage system will allow the limited number of initial combat forces to achieve operational objectives early in conflicts, paving the way for follow-on forces. SDB II is an Acquistion Category (ACAT) ID program with the Air Force as the lead service in partnership with the Navy. Initial aircraft integration of the SDB II will be on the F–15E (Air Force threshold), F–35B & C (DoN threshold), F/A–18E/F and AC–130W.

Currently, SDB II is in engineering, manufacturing, and development with an LRIP decision planned by the end of this fiscal year. In fiscal year 2015, SDB II will continue developmental testing, complete live fire testing, and conduct government confidence test shots. The fiscal year 2015 procurement plans are to buy 246 weapons with deliveries starting in fiscal year 2017. SDB II fielding on the F–15E is planned for January 2017. The Air Force total planned procurement for SDB II is 12,000 weapons.

Air-to-Air Weapons

Air-to-air missile inventories are short of objectives. AIM–120 AMRAAM and the AIM–9X continue to be in short supply. These weapons enable the joint force to achieve air superiority by providing a first-look first-kill capability. The shortage of air-to-air missiles will increase the number of days required to gain Air Superiority, and will decrease the amount of time the Joint Force can maintain Air Superiority, which may leave the combatant commander short of their campaign objectives.

AIM–120D AMRAAM

The AIM–120 AMRAAM is the Department of Defense's premier beyond-visual-range missile to counter existing and emerging air vehicle threats, operating at high or low altitude with electronic attack capabilities. AMRAAM is a key enabler for gaining air superiority and air dominance providing F–22, F–16, F–15, F/A–18, and eventually F–35 aircraft the ability to achieve multiple kills per engagement. The

latest evolution of AMRAAM is the AIM–120D, which brings increased range and kinematics, improved high off-boresight targeting, and an enhanced two-way data link for improved accuracy and lethality at range. AIM–120D is an ACAT 1C joint program, with the Air Force as lead service in partnership with the Navy. The AIM–120D operational test readiness review was successfully completed in May 2012 and the program is currently in dedicated operational testing.

Operational testing is expected to be complete in this fiscal year and fielded on F/A–18 E/F and F–15 C/D aircraft. Total procurement for fiscal year 2015 is 200 units with increases in future procurement quantities for both the Air Force and Navy. The program will continue to update the AMRAAM technical data package to ensure a viable, producible design through the expected production life of the AMRAAM program, and to maintain a robust supplier base capable of sustaining production for the life of the program.

Industrial Base

The Air Force has been concerned over the future of the aerospace industrial base particularly in the segment supporting engineering design and development of tactical aircraft for several years. For the first time in over 50 years, there is only one tactical aircraft in development, the F–35. When production of the F/A–18 and the F–15 ends, there will be only one prime contractor producing tactical aircraft.

This situation presents a national challenge. Given the current fiscal constraints, how do we provide meaningful opportunities to develop, sustain, and advance the design, engineering, and technical knowledge to preserve our lead in this mission area? The Air Force continues to invest in key areas such as advanced turbine engines. However, as with all other programs, there are no easy choices left. We are accepting the risk that some elements of the current aerospace industrial capacity may atrophy. These capabilities, in terms of engineering and design teams, production workers, and facilities may need to be reconstituted to meet future requirements.

IV. CONCLUSION

The Air Force continues to be the world's finest across the spectrum of conflict, but the gap is closing. A return to sequestration-level funding would result in a less ready, less capable, less viable Air Force that is unable to fully execute the defense strategy. At fiscal year 2015 BBA-level funding, the Air Force has some ability to manage risk in supporting the strategy, but significant challenges will remain. In order to defeat advancing threats, the Air Force must continue investments in top recapitalization and key modernization programs, and gain and maintain full-spectrum readiness.

Our sister Services and allies expect the Air Force to provide critical warfighting and enabling capabilities. We remain focused on delivering global vigilance, reach, and power, through our core missions of air and space superiority, global strike, rapid global mobility, intelligence, surveillance and reconnaissance and command and control. We look forward to working closely together as we address the challenges of near-term uncertainty and risk to provide the ability to deliver combat air power for America when and where we are needed.

Senator BLUMENTHAL. Thank you very much, General.

Admiral Grosklags?

STATEMENT OF VADM PAUL A. GROSKLAGS, USN, PRINCIPAL MILITARY DEPUTY TO THE ASSISTANT SECRETARY OF THE NAVY FOR RESEARCH, DEVELOPMENT, AND ACQUISITION; ACCOMPANIED BY LTGEN ROBERT E. SCHMIDLE, JR., USMC, DEPUTY COMMANDANT FOR AVIATION

Admiral GROSKLAGS. Chairman Blumenthal, Senator Wicker, distinguished members of the subcommittee, thanks for the opportunity to appear before you today to discuss our Navy and Marine Corps aviation programs.

I think you are aware we had to make many difficult decisions in building our fiscal year 2015 budget submission, but what we have submitted for your consideration is a plan which ensures sufficient capacity and capability to fight and win, if necessary. But it is also a plan that includes increased levels of risk.

In our fiscal year 2015 submission, we are continuing development and procurement of fifth generation tactical aircraft. We are fully committed to both the F–35B and the F–35C and believe the program is on a solid path to meeting the IOC for both our Marine Corps in 2015 and our Navy in 2019.

Unmanned aircraft systems also maintain a full measure of our attention from already fielded unit-size aircraft such as the Marine Corps RQ–21 Blackjack to future carrier strike group assets such as the unmanned carrier-launched airborne surveillance and strike (UCLASS) program.

We continue investment in our critical development programs such as the CH–53K heavy lift helicopter, the MQ–4C maritime surveillance aircraft, and the presidential replacement helicopter program.

We are recapitalizing in other areas as well. Maritime patrol with the P–8, our carrier-based early warning aircraft with the E–2D, and virtually all of our helicopter and tilt rotor aircraft are being replaced with H–60s, new H–1s, and V–22s.

Finally, we are making focused investments in our currently fielded aircraft and systems to ensure they remain relevant, safe, and can counter the threat in the coming decade.

But as I mentioned earlier, the efforts I just described are not without risk. Even with the spending levels supported by the BBA, we have been forced to extend development timelines. We have reduced procurement rates, and we have reduced the rate at which we are modernizing both our capability and our capacity. A transition back to the BCA levels of spending would have significant negative impacts on our readiness, our modernization, and our relevancy, which ultimately results in increased risk to our deployed forces.

Mr. Chairman, we appreciate the opportunity to appear before you today. We look forward to your questions.

[The joint prepared statement of Admiral Grosklags and General Schmidle follows:]

JOINT PREPARED STATEMENT BY VADM PAUL A. GROSKLAGS, USN, AND LTGEN ROBERT E. SCHMIDLE, JR., USMC

INTRODUCTION

Mr. Chairman, Senator Wicker, and distinguished members of the subcommittee, we thank you for the opportunity to appear before you today to discuss the Department of the Navy's aviation programs. Our testimony will provide background and rationale for the Department's fiscal year 2015 budget request for aviation programs aligning to our strategic priorities and budgetary goals.

The United States is a maritime nation with global responsibilities. Our Navy and Marine Corps' persistent presence and multi-mission capability represent U.S. power projection across the global commons. They move at will across the world's oceans, seas, and littorals, and they extend the effects of the sea-base deep inland. Naval aviation provides our Nation's leaders with "offshore options" where needed, when needed. We enable global reach and access, regardless of changing circumstances, and will continue to be the Nation's preeminent option for employing deterrence through global presence, sea control, mission flexibility and when necessary, interdiction. We are an agile strike and amphibious power projection force in readiness, and such agility requires that the aviation arm of our naval strike and expeditionary forces remain strong.

There are several central themes to our 2015 Naval Aviation Budget plan: fifth generation fighter/attack capability; persistent multi-role intelligence, surveillance, and reconnaissance; supporting capabilities such as electronic attack, maritime pa-

trol, and vertical lift; robust strike weapons programs; and targeted modernization of the force for relevance and sustainability.

First, we are acquiring F–35 fifth generation fighter/attack aircraft while maintaining sufficient TACAIR inventory capacity. Our plan will integrate fifth generation technologies into the carrier air wing and expeditionary forces while maintaining and modernizing the capability of the current TACAIR fleet. The F–35B will replace Marine Corps F/A–18 and AV–8B aircraft. The F–35C, F/A–18E/F, and EA–18G provide complementary capabilities that enhance the versatility, lethality, and survivability of our air wings. We have maintained our F–35B procurement profile achieving program procurement stability in line with the improvements in program accountability, discipline and transparency. However, due to fiscal constraints and Navy priorities, we were compelled to reduce F–35C procurement by 33 airframes across the future years defense program (FYDP). The overall F–35 development program is adequately resourced and has implemented realistic schedule planning factors to complete system development and demonstration. The Navy and Marine Corps are fully committed to the F–35B and F–35C variants as we believe this aircraft is on solid path to delivering required capabilities.

The F/A–18A–F will continue to receive capability enhancements to sustain its lethality well into the next decade. Future avionics upgrades will enable network-centric operations for situational awareness and transfer of data to command-and-control nodes. To meet the demand for persistent, multi-role intelligence, surveillance, and reconnaissance (ISR) capability, the Navy and Marine Corps are building a balanced portfolio of manned and unmanned aircraft focused on missions in the maritime environment. The Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS) system will provide a persistent aircraft carrier-based ISR and strike capability as an integral part of carrier air-wing operations no later than the early part of the next decade. MQ–4C Triton will provide persistent land-based maritime ISR and complement our P–8 Multi-Mission Maritime Aircraft; MQ–8 Vertical Takeoff and Landing Tactical Unmanned Aerial Vehicle (VTUAV)/Firescout will provide ISR support to our Littoral Combat Ships (LCS); and smaller unmanned systems as the RQ–21A Small Tactical Unmanned Aircraft System and RQ–7B Marine Corps Tactical UAS will provide the shorter duration, line-of-sight reconnaissance capability integral at the unit level.

The fiscal year 2015 budget request enables naval aviation to continue recapitalization of our aging fleets of airborne early warning, maritime patrol, and vertical lift platforms. The Department is recapitalizing our fleet of E–2C airborne early warning aircraft with the E–2D. E–2D integrates a new electronically-scanned radar that provides a two-generation leap in technology with the capability to detect and track existing and emerging air-to-air and cruise missile threats in support of integrated air and missile defense. We have deployed our first P–8A squadron and are on a path to replace the P–3C by the end of the decade. Electronic attack capabilities, both carrier-based and expeditionary, continue to mature with 11 of 16 EA–18G squadrons fielded or in transition, while we also continue development of the Next Generation Jammer (NGJ) to replace the legacy ALQ–99 Tactical Jamming System.

The Navy and Marine Corps are participating in Joint Future Vertical Lift efforts to identify leverage points for future rotorcraft investment. In fiscal year 2015, the Department continues to modernize vertical lift capability and capacity with procurement of MH–60R/S, AH–1Z, UH–1Y, and MV–22B, and the continued development of the CH–53K and VXX (Presidential Helicopter replacement). The Special Purpose Marine Air-Ground Task Force-Crisis Response (SPMAGTF–CR), designed to support U.S. and partner security interests throughout the AFRICOM area of responsibility (AOR), leverages these vertical lift investments. The unparalleled speed and range of the MV–22B, together with the KC–130J, provides the SPMAGTF–CR with the operational reach to respond to crises throughout the AOR.

Within our fiscal year 2015 budget request, the Department continues investment in strike weapons programs. These include the Air Intercept Missile (AIM–9X/BLK II); Small Diameter Bomb II (SDB II); the Joint Standoff Weapon (JSOW C–1); Tactical Tomahawk Cruise Missiles (TACTOM/BLK IV); the Offensive Anti-Surface Weapon (OASuW); the Advanced Anti-Radiation Guided Missile (AARGM); the joint Air-to-ground Missile (JAGM); and the Advanced Precision Kill Weapon System (APKWS II).

These capabilities enable our Navy and Marine Corps warfighters to deter and dominate potential adversaries in any environment.

TACTICAL AVIATION

F–35B/F–35C Lightning II

The Department of the Navy remains firmly committed to both the F–35B short take-off 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 Navy and Marine Corps aviation strategy and the Nation's security. F–35 will supplant much of the Navy's aging Tactical Aviation (TACAIR) fleet by replacing Navy and Marine Corps F/A–18A–D Hornets and the Marine Corps AV–8B Harrier. 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. F–35B is scheduled to achieve Initial Operational Capability (IOC) between July 2015 and December 2015 while the F–35C is scheduled to achieve IOC between August 2018 and February 2019.

The Marine Corps will leverage the F–35B/C capabilities to ensure our TACAIR is able to provide fifth-generation capabilities in support of our ground warriors and strike missions. The concept is one aircraft capable of multiple missions, providing the Marine Air Ground Task Force (MAGTF) with flexible expeditionary basing options, either afloat or ashore, and superior technology to dominate the fight. Our requirement for expeditionary tactical aircraft has been demonstrated repeatedly since the inception of Marine aviation over 100 years ago. Given the threats we will face in the future, the F–35B is clearly the aircraft of choice to meet our expeditionary operating requirements at sea and ashore. Similarly, in the carrier strike group (CSG), the F–35C, F/A–18E/F, and EA–18G, operating together, provide survivable, long-range strike capability and persistence in an anti-access/area-denied environment. F–35C will provide the CSG commanders greater tactical agility and strategic flexibility to counter a broad spectrum of threats and win in operational scenarios that cannot be addressed by currently fielded aircraft.

The Department of Defense (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 has worked with the prime contractor (Lockheed-Martin) to implement a concurrency management structure and refine the estimate of concurrency costs based on discrete test and qualification events. 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 (LRIP) lots are built, their cumulative requirements for retrofit modifications decline. Furthermore, beginning with LRIP 5, Lockheed-Martin is contractually obligated to share in the costs associated with concurrency. LRIP 6/7 will further reduce the government's exposure to overruns as Lockheed-Martin is required to pay for all cost overruns via firm fixed-price contracts.

F–35 sustainment costs remain a concern. The Navy, working in concert with the Joint Program Office (JPO), is analyzing options, both inside and outside of the JPOs span of control to reduce operating cost. These include, reviewing basing options and sequencing, unit level manpower/squadron size, and discrete sustainment requirements. Through these combined efforts, the Department believes we will converge on an affordable F–35 sustainment strategy that meets both the required level of Service/Partner performance and lowers the total life-cycle cost of the program.

The fiscal year 2015 President's budget requests $1.0 billion in Research, Development, Test, and Evaluation, Navy (RDT&E,N) to continue the F–35 SDD program and $2.4 billion in Aircraft Procurement, Navy (APN) for eight F–35 aircraft (six F–35B and two F–35C) with associated aircraft hardware, modification requirements, and spares. The request includes funding for Block 4 systems engineering and planning to achieve follow-on capabilities for emerging and evolving threats and additional weapons integration. Additionally, the Marine Corps is pursuing the procurement of additional F–35s to replace the six AV–8B Harriers that were lost due to enemy action in Afghanistan on 14 September 2012.

The Navy is aware of the challenges that remain on the F–35 program, but we believe the program continues to demonstrate increased stability, accountability, and fiscal discipline. The F–35 is essential to the future of Navy/Marine Corps aviation and the Department is fully committed to the F–35B and F–35C variants of this program. The Navy continues to closely monitor all F–35 program aspects (development, production, and sustainment) to ensure that this capability is obtained at the lowest cost and at the earliest date possible, to meet our national security obligations.

F/A–18 Overview

The F/A–18 Hornet continues to meet readiness and operational commitments. There are 26 Navy Super Hornet squadrons with 513 F/A–18E/Fs; deliveries and squadron transitions will continue through 2016. There are 11 Navy and 11 Marine Corps F/A–18 A–D Active component squadrons with 618 Hornets. Super Hornets and F/A–18A–D Hornets have conducted more than 200,000 combat missions since September 11, 2001.

F/A–18 A/B/C/D Hornet

The fiscal year 2015 President's budget requests $250.3 million in APN to implement aircraft commonality programs to maintain relevant capability and improve reliability and ensure structural safety of the inventory of 618 F/A–18 Hornets of which $55.7 million is for the service life extension program (SLEP).

The F/A–18A–D was designed for, and has achieved, a service life of 6,000 flight hours. These aircraft have performed as expected through their design life and now service life management of this aircraft is intended to extend this platform well beyond its designed 6,000 flight hours. Through detailed analysis, inspections, and, as required, structural repairs, the Navy has been successful in achieving 8,000 flight hours per aircraft and is pursuing a strategy to go as high as 10,000 flight hours on select aircraft. Continued investment in SLEP, the high flight hour (HFH) program, program related engineering, and program related logistics is critical for our flight hour extension strategy and to sustain the combat relevancy of these aircraft.

In order to maintain warfighting relevancy in a changing threat environment, we will continue to procure and install advanced systems such as Joint Helmet-Mounted Cueing Systems (JHMCS), High Order Language (HOL) Mission Computers, ALR–67v3, ALQ–214v5, Multi-Function Information Distribution System (MIDS), APG–73 radar enhancements, Advanced Targeting FLIR (ATFLIR) upgrades, and LITENING for the Marine Corps on selected F/A–18A–D aircraft.

F/A–18 E/F Super-Hornet

The fiscal year 2015 President's budget requests $342.7 million in APN to implement aircraft commonality programs, maintain relevant capabilities, improve reliability, and ensure structural safety of the Super-Hornet fleet; and $13.8 million RDT&E,N to support the F/A–18E/F service life assessment program (SLAP).

The F/A–18E/F significantly improves 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 F/A–18A–D Hornets. The production program continues to deliver on-cost and on-schedule.

The Super-Hornet uses an incremental approach to incorporate new technologies and capabilities, to include: digital communication system (DCS) radio, Multi-Functional Information Distributed System (MIDS)-Joint Tactical Radio System (JTRS), JHMCS, ATFLIR with shared real-time video, accurate navigation (ANAV), digital memory device (DMD), distributing targeting system (DTS), infrared search and track (IRST) and continued advancement of the APG–79 AESA radar.

The $13.8 million RDT&E,N request supports the F/A–18E/F SLAP requirement. Currently, the F/A–18 E/F fleet, on average, has flown approximately 36 percent of the design life of 6,000 total flight hours. The remaining design service-life will not be adequate to meet future 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 determine 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 identify the necessary inspections and modifications required to achieve 9,000 flight hours and increase total arrested landings and catapults beyond currently defined life limits. This extension is currently assessed as low risk. The service life management plan philosophy has been applied to the F/A–18E/F fleet at an earlier point in its lifecycle than the F/A–18A–D. This will facilitate optimization of Fatigue Life Expended, flight hours, and total landings, thereby better aligning aircraft service life with fleet requirements.

AV–8B Harrier

The fiscal year 2015 President's budget requests $65.5 million in APN funds to continue the incorporation of obsolescence replacement/readiness management plan systems; electrical and structural changes; upgrades to air-to-air weapon system employment and integration components; inventory sustainment and upgrade efforts to offset obsolescence and attrition; LITENING Pod upgrades; and F402–RR–408 engine safety and operational changes.

The fiscal year 2015 President's budget requests $25.4 million in RDT&E,N funds to continue design, development, integration and test of various platform improve-

ments, to include: engine life management program, escape systems, joint mission planning system, and block upgrades to various mission and communication systems, navigation equipment, weapons carriage, countermeasures, and the obsolescence replacement/readiness management plan.

The AV–8B continues to be deployed in support of operational contingencies. Each Marine Expeditionary Unit (MEU) deploys with embarked AV–8Bs. The AV–8B, equipped with LITENING targeting pods and a video downlink to remotely operated video enhanced receiver ground stations, precision strike weapons, and beyond visual range air-to-air radar missiles, has continued to be a proven, invaluable asset for the MAGTF and joint commander across the spectrum of operations. During the first half of fiscal year 2015 the AV–8B will receive the H6.1 operational flight program enabling full integration of the Generation 4 LITENING targeting pod that includes correction of software deficiencies to smart weapon employment and targeting. During 2015, the program will also continue work on the H6.2 operational flight program to integrate Federal Aviation Administration (FAA) compliant RNP/RNAV capability and correct additional software deficiencies identified through combat operations. As an out-of-production aircraft, the AV–8B program will continue its focus on sustainment efforts to mitigate significant legacy inventory shortfalls, maintain airframe integrity, achieve full FLE, and address reliability and obsolescence issues of avionics and subsystems. The airborne variable message formal (VMF) terminals will be installed in AV–8B to replace the current digital-aided close air support (CAS) technology. Additional efforts include tactical datalink and sensor improvements in support of operational contingencies until transition to the F–35.

Operation Odyssey Dawn and Enduring Freedom, as well as current operations in the Horn of Africa, confirm the expeditionary advantages of STOVL capabilities by placing the Harrier as the closest multi-role fixed-wing asset to the battlefield. Such dynamic support greatly reduces transit times to the battlefield and enables persistent CAS aircraft without strategic tanking assets. Airframe sustainment initiatives, capability upgrades, and obsolescence mitigation is essential and must be funded to ensure the AV–8B remains lethal and relevant.

TACAIR Inventory Management

The strike fighter shortfall (SFS) associated with the fiscal year 2015 President's budget is manageable. The shortfall is currently predicted to peak at approximately 35 aircraft in fiscal year 2023; 20 of which are Marine Corps aircraft and 15 Navy aircraft.

The Navy and Marine Corps continue to carefully monitor strike fighter inventory requirements and projected availability. The Department's inventory forecasting tool (IFT) projects the combined effects of deliveries, force structure, aircraft usage rates, structural life limits, depot turnaround time, fatigue life expenditure (FLE), arrested and field landings, and catapult launches on the total strike fighter aircraft inventory. The IFT will be replaced by the naval synchronization tool (NST) no later than the end of fiscal year 2014. This transition will enable increased fidelity of aircraft inventory projections and management.

In addition, through lean-six sigma black belt analysis of the entire Navy F/A–18A–D inventory, the Marine Corps has created a TACAIR 2030 Roadmap that drives the IFT predicted 20 aircraft shortfall to zero, while saving (cost avoidance) of $1.14 billion. As F–35B enters service, it will initially replace the AV–8B, followed by the Marine Corps F/A–18A–Ds. The last active Marine Corps F/A–18 squadron is scheduled to transition in 2029 and the current Marine Corps F/A–18 Reserve squadron will not receive its F–35Bs until fiscal year 2030. The Marine Corps also plans to source AV–8Bs as Strike fighters in lieu of sourcing for F/A–18s in contingency operations.

Current IFT and Marine Corps TACAIR 2030 roadmap assumptions: The Navy will maintain its current tactical fixed-wing force structure; utilization rates will not increase; the delivery rate of F–35B/C remains as planned in the fiscal year 2015 FYDP; and FA–18 A–D HFH inspections/repair, and SLEP efforts on candidate aircraft allows fleet readiness center (depot) inducted aircraft to reach an extended authorized life of 9,000 hours, with a subset of those aircraft attaining 10,000 flight hours (a by bureau number squadron mapping is contained in the TACAIR 2030 Roadmap).

Airborne Electronic Attack/EA–6B Prowler

The fiscal year 2015 President's budget request includes $15.8 million in RDT&E,N for electronic warfare (EW) counter response; $7.8 million RDT&E,N for MAGTF EW; $34.8 million in APN for airborne electronic attack (AEA) systems; $11.0 million in APN for all EA–6B series aircraft; and $14.8 million APN for MAGTF EW.

Currently, there are 42 EA–6Bs in the Navy and Marine Corps. Of these aircraft, 37 are distributed to 6 active squadrons, 1 Reserve squadron, 2 test squadrons, and 1 Fleet Replacement Squadron, and 5 aircraft are in depot repair. The total includes 10 Navy and Marine Corps Improved Capability (ICAP) II aircraft and 32 ICAP III aircraft. Following the final Navy EA–6B transition to EA–18G in 2015, all remaining ICAP III EA–6Bs will transfer to and be operated by the Marine Corps, or be in pipeline for final disposition. Final retirement of the EA–6B from the Department's inventory will be in 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. Included in this plan 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.

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 Intrepid Tiger II is currently carried on the AV–8B, has successfully completed six deployments in U.S. Central Command's (CENTCOM) AOR, and is currently deployed with both the 13th and 22nd MEUs. Integration on Marine Corps F/A–18 aircraft is scheduled to be completed in the second quarter of fiscal year 2014 and on Marine Corps rotary-wing aircraft by the second quarter of fiscal year 2015.

Airborne Electronic Attack/EA–18G Growler

The fiscal year 2015 President's budget request is $43.5 million in APN for procurement of avionics peculiar ground support equipment for the EA–18G aircraft; $18.7 million in RDT&E,N for integration of jamming techniques optimization improvements and evolutionary software development; and $246.9 million RDT&E,N for NGJ.

In 2009, the Navy began transition from EA–6Bs to EA–18Gs. 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 and Operation Unified Protector. The EA–18G is a critical enabler in the joint force, bringing to the fight fully netted warfare capabilities that will provide electromagnetic spectrum dominance in an electromagnetic maneuver warfare environment.

The first carrier-based EA–18G squadron deployed in May 2011. Three Active component Navy expeditionary squadrons, 7 of 10 carrier based squadrons, and 1 Reserve squadron are in, or have completed, transition to the EA–18G. The 10 carrier based EA–18G squadrons will fulfill Navy requirements for AEA; 6 expeditionary EA–18G squadrons will fill the joint, high-intensity AEA capability required by the Joint Forces Commander previously fulfilled by the Navy and Marine Corps EA–6B. The Navy will be divested of EA–6Bs by 2015; the Marine Corps by 2019. The inventory objective is for 138 EA–18G aircraft. Since the initial deployment, Growlers have flown more than 2,300 combat missions, have expended on average a service-life of approximately 6 percent of the 7,500 total flight hours per aircraft, and are meeting all operational commitments.

The NGJ is new electronic warfare technology that is the replacement for the 41-year-old ALQ–99, currently the only Navy and Joint airborne tactical jamming system pod. The ALQ–99 has limited capability to counter tactically and technically advanced threats, is increasingly difficult and costly to maintain, and has a vanishing industrial supplier base. Navy/DOD requires NGJ to meet current and emerging electronic warfare threats. NGJ will have the necessary power and digital techniques to counter increasingly advanced and sophisticated adversary electronic warfare search, surveillance, and targeting-radars and communications systems. NGJ will be DOD's only comprehensive tactical AEA capability, supporting all Services and joint/coalition partners, and will be implemented in three increments: mid-band (Increment 1), low-band (Increment 2), and high-band (Increment 3). NGJ is designed to provide improved capability in support of joint and coalition air, land, and sea tactical strike missions and is critical to the Navy's vision for the future of strike warfare. Fiscal year 2015 funding is vital to maintain schedule, allowing the program to transition into the technology maturation and risk reduction (TMRR) development phase and ensure timely start of the critical EA–18G long lead integration activities. Planned fiscal year 2015 TMMR activities include: completion of the system functional review, development, and release of the Request for Proposal for

the engineering and manufacturing development phase, maturation of software specification requirements, and conduct of the technology readiness assessment demonstrations. Fiscal year 2015 constitutes the bulk of a 25-month effort to achieve technology readiness level (TRL) 6 in support of planned Milestone B in fiscal year 2016.

E–2D Advanced Hawkeye

The fiscal year 2015 President's budget requests $193.2 million in RDT&E,N for continuation of added capabilities to include: in-flight refueling, tactical targeting network technology, secret internet protocol router chat, and the advanced mid-term interoperability improvement program; $1,046 million in APN for four full rate production (FRP) Lot 3 aircraft (the second year of a 25 aircraft multi-year procurement (MYP) contract covering fiscal years 2014–2018), advance procurement for fiscal year 2016 FRP Lot 4 aircraft; and economic ordering quantity funding for the MYP for fiscal years 2017 and 2018.

The E–2D Advanced Hawkeye (AHE) is the Navy's carrier-based airborne early warning and battle management command and control system. The E–2D AHE 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 AHE works in concert with tactical aircraft and surface-combatants equipped with the Aegis combat system to detect, track and defeat air and cruise missile threats at extended range and provide strike group commanders the necessary required reaction time.

The first Fleet E–2D squadron (VAW–125) has transitioned and was designated "safe for flight" in January 2014. IOC is on track for the first quarter of fiscal year 2015.

ASSAULT SUPPORT AIRCRAFT

MV–22

The fiscal year 2015 President's budget requests $ 61.2 million in RDT&E,N for continued product improvements and $1.53 billion in APN for procurement and delivery of 19 MV–22s (Lot 19). Fiscal year 2015 will be the third year of the follow-on V–22 MYP contract covering fiscal years 2013–2017. The funds requested in the fiscal year 2015 President's budget request fully fund Lot 19 and procures long-lead items for fiscal year 2016 Lot 20 MV–22 aircraft. The Marine Corps continues to field and transition aircraft on time. The APN request includes $135.6 million to support the ongoing operations and safety improvement programs (OSIP), including correction of deficiencies and readiness.

MV–22 Osprey vertical flight capabilities coupled with the speed, range, endurance of fixed-wing transports, are enabling effective execution of current missions that were previously unachievable on legacy platforms. This capability is at the core of the Marine Corps' recently fielded SPMAGTF–CR. As the MV–22 approaches the 200,000 flight hour milestone, it is on pace to be one of the safest of any DOD aircraft dating back to the 1960s.

The follow-on MYP, which began in fiscal year 2013, will procure at least 93 MV–22s over 5 years and includes significant savings of approximately $1 billion when compared to single year procurements. The stability of the MYP supports the Marine Corps' need to retire old aircraft and field new and improved capabilities. This stability also benefits the supplier base and facilitates cost reductions on the part of both the prime contractor and sub-tier suppliers.

Through introduction of the Osprey tilt-rotor capability into combat, the service has gained valuable insight with respect to readiness and operating costs. Since 2010, MV–22 mission capability rates have increased 14 percent. During the same period, cost per flight hour rates decreased 14 percent. To keep these improvements on track, a readiness OSIP was introduced in fiscal year 2012. Fiscal year 2015 OSIP provides a necessary and stable source of crucial modification funding as the Ospreys continue to improve readiness and reduce operating cost.

CH–53K Heavy Lift Replacement Program

The fiscal year 2015 President's budget requests $573.2 million RDT&E,N to continue engineering and manufacturing development of the CH–53K. Since completing its critical design review in July 2010, the CH–53K program commenced system capability and manufacturing process demonstration, has nearly completed assembly of the first five test aircraft; one Ground Test Vehicle (GTV) and four engineering development model (EDM) aircraft. In December 2013, the program entered devel-

opmental test. The GTV has successfully completed numerous ground test requirements, to include the "bare head light-off." The program is currently on schedule to execute its first flight by the end of 2014. During fiscal year 2015, the program will continue to execute developmental test flights, deliver the final EDM, and start production of system demonstration test article aircraft which will be production representative aircraft utilized for Operational Test.

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 high-altitude and hot weather conditions, 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 dramatically increase protection 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 sea-basing and the joint operating concepts of force application and focused logistics.

The H–53E aircraft currently in service continue to meet unprecedented operational demand but are approaching 30 years of service and becoming ever more challenging to maintain. To keep the "Echo" viable until the "Kilo" enters service, the fiscal year 2015 President's budget requests $38.2 million in APN for both near and mid-term enhancements. These modifications include condition based maintenance software upgrades, T–64 engine reliability improvement program kit installations, Critical survivability upgrade (CSU) installations, smart multi-function color display (SMFCD) and sustainment efforts such as Kapton wiring replacement and improved Engine Nacelles. With the exception of the CSU and SMFCD, the same modifications are also made to the Navy MH–53E helicopters.

ATTACK AND UTILITY AIRCRAFT

UH–1Y/ /AH–1Z

The fiscal year 2015 President's budget requests $44.1 million in RDT&E,N for continued product improvements and $859.7 million in APN for 26 H–1 upgrade aircraft: 15 UH–1Y and 11 AH–1Z. The program is a key modernization effort designed to resolve existing safety deficiencies and enhance operational effectiveness of the H–1 fleet. The 85 percent commonality between the UH–1Y and AH–1Z will significantly reduce life-cycle costs and the logistical footprint, while increasing the maintainability and deployability of both aircraft. The program will provide the Marine Corps with 349 H–1 aircraft through a combination of new production and a limited quantity of remanufactured aircraft.

The H–1 Upgrades Program is replacing the Marine Corps' UH–1N and AH–1W helicopters with state-of-the-art UH–1Y "Yankee" and AH–1Z "Zulu" aircraft. The new 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 system designed to integrate these airframes, sensors, and weapons systems together with ground combat forces and other capable DOD aircraft. Integration of low-cost weapons such as the Advanced Precision Kill Weapon System II (APKWS II) has increased lethality while reducing collateral damage.

The UH–1Y aircraft achieved IOC in August 2008 and FRP in September 2008. The "Yankee Forward" procurement strategy prioritized UH–1Y production in order to replace the under-powered 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. The AH–1Z achieved IOC in February 2011. As of February 19, 2013, 126 aircraft (89 UH–1Ys and 37 AH–1Zs) have been delivered to the Fleet Marine Force; an additional 58 aircraft are on contract and in production. The last 2 aircraft from Lot 7 will deliver in March/April 2014. Lot 8 deliveries are progressing on or ahead of schedule.

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 the inventory rather than removing them from service to begin the remanufacture process. The transition to an all ZBN airframe strategy

began with Lot 10 (fiscal year 2013) as reflected in the current Marine Corps program of record. The aircraft mix is 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.

MH–60 (Overview)

MH–60 Seahawks have consistently met readiness and operational commitments. There will be 38 Navy Seahawk squadrons with 275 MH–60Ss and 251 MH–60Rs when transitions from the SH–60B, SH–60F, and HH–60H are complete. Production and squadron transitions will continue through 2017. Over the last 12 years of combat operations, deployed ashore and aboard our aircraft carriers, amphibious ships, and escort warships at sea, Navy helicopters have provided vital over-watch and direct support to our troops in combat, on the ground, and in multiple theaters of operation and in a variety of missions including support to Special Operations Forces, air ambulance, surface warfare, anti-submarine warfare, mine warfare, logistics support and humanitarian assistance/disaster relief.

MH–60R Seahawk

The fiscal year 2015 President's budget requests $1.04 billion in APN for 29 helicopters. The production program continues to deliver on-cost and on-schedule.

The MH–60R multi-mission helicopter provides strike group protection and adds significant capability in coastal littorals and regional conflicts. The MH–60R represents a significant avionics improvement to H–60 series helicopters by enhancing primary mission areas of undersea warfare and surface warfare which includes the fast attack craft/fast in-shore attack craft (FAC/FIAC) threat response capabilities. The MH–60R is the sole organic air ASW asset in the CSG and critical to its defense. Additionally, it serves as a key contributor to theater level ASW. The MH–60R also employs advanced sensors and communications to provide real-time battlespace management with a significant, passive, over-the-horizon targeting capability. Secondary mission areas include search and rescue, vertical replenishment, naval surface fire support, logistics support, personnel transport and medical evacuation.

The $11.5 million RDT&E,N request supports the MH–60R Test Program consisting of numerous system upgrades and pre-planned product improvements, to include the digital rocket launcher with Advanced Precision Kill Weapon System (APKWS II) and the helicopter infra-red suppression system.

MH–60S Seahawk

The fiscal year 2015 President's budget requests $210 million in APN for 8 helicopters to complete the production program of 275 total helicopters. The production program continues to deliver on-cost and on-schedule.

The MH–60S multi-mission helicopter provides strike group protection and adds significant capability in coastal littorals and regional conflicts. The MH–60S represents a significant avionics improvement to H–60 series helicopters by enhancing primary mission areas of mine warfare and surface warfare which includes the FAC/FIAC threat response capabilities. Secondary mission areas include combat search and rescue, support to Special Operations Forces, vertical replenishment, logistics support, personnel transport and medical evacuation.

The $25.9 million RDT&E,N request supports the MH–60S test program consisting of numerous system upgrades and pre-planned product improvements including: airborne mine countermeasures (AMCM); and armed helicopter FAC/FIAC Defense.

Armed helo block 3A OT was completed in June 2007 and block 3B (added Link 16 capability) OT was completed in November 2009. Test and Evaluation (T&E) of fixed forward firing weapon (FFW) (20mm gun system) was completed in fiscal year 2012. T&E of initial FFW unguided rocket (UGR) capability was completed in fiscal year 2013. T&E for FFW digital rocket launcher (DRL) with Advanced Precision Kill Weapon System and expanded UGR capability for the FAC/FIAC threat is in work and planned to complete in fiscal year 2015. Planned AMCM initial operational test and evaluation (IOT&E) and follow-on operational test and evaluation periods were changed to Operational Assessments with the final IOT&E aligned with LCS MCM Mission Package IOT&E.

EXECUTIVE SUPPORT AIRCRAFT

VH–3D/VH–60N Executive Helicopter 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 Navy is working closely with HMX–

1 and industry to sustain these aircraft until a Presidential Replacement platform is fielded. The fiscal year 2015 President's budget requests an investment of $71.3 million of APN to continue programs that will ensure the in-service Presidential fleet remains a safe and reliable platform. Ongoing VH–60N efforts include the cockpit upgrade program, engine upgrade program, and a communications suite upgrade (wide band line of sight). The continuing structural enhancement program and the obsolescence management program applies to both VH–60N and VH–3D. The VH–3D cockpit upgrade program, a fiscal year 2012 new start program, addresses a number of obsolescence issues. Continued investments in the in-service fleet will ensure continued safe and reliable execution of the Executive Lift mission. These technology updates for legacy platforms will be directly leveraged for the benefit of the ensuing replacement program (VXX).

VXX Presidential Helicopter Replacement Aircraft

The fiscal year 2015 President's budget request includes $388.1 million of RDT&E,N for continuing efforts on VXX, and primarily funds the EMD contract and government activities associated with the EMD phase of the program.

Significant progress has been made in the past year and the program requirements and acquisition strategy have now been approved. The acquisition approach is based on integration of mature subsystems into an air vehicle that is currently in production. This strategy will enable the program to proceed directly into the EMD phase. The Milestone B review and subsequent contract award are planned to occur during fiscal year 2014. The first of the planned inventory of 21 aircraft could begin fielding as early as 2020.

FIXED-WING AIRCRAFT

KC–130J

The fiscal year 2015 President's budget requests $92.3 million for procurement of one KC–130J included in the second year of the multi-service MYP request, one fuselage trainer, and continued product improvements of $21.6 million. Targeted improvements include aircraft survivability through advanced electronic countermeasure modernization, and obsolescence upgrades to the Harvest HAWK ISR/weapon mission kit.

Fielded throughout our Active Force, the Marine Corps declared IOC for the KC–130J transition in 2005; bringing increased capability, performance and survivability with lower operating and sustainment costs to the MAGTF. Forward deployed in support of ongoing operations since 2005, the KC–130J continues to deliver marines, fuel and cargo whenever and wherever needed. In 2014 the KC–130J remains in high demand, providing tactical air-to-air refueling, assault support, close air support and multi-sensor imagery reconnaissance (MIR) in support of OEF, special purpose MAGTF crisis response, and deployed MEUs.

Deployed in support of OEF since fielding in 2010, the bolt-on/bolt-off Harvest HAWK ISR/weapon mission kit for the KC–130J continues to provide the extended MIR and CAS required by Marine forces in Afghanistan. Five mission kits have been delivered to date, with one more kit on contract to deliver in fiscal year 2014. Funding included in the fiscal year 2015 budget request will be used to maintain operational relevance of this mission system through Hellfire P4 compatibility and the addition of a full motion video transmit and receive capability.

The Marine Corps has funded 52 of the 79 KC–130J program of record. The 3 aircraft included in the fiscal year 2013 budget will complete the Active component requirement of 51 aircraft. The Marine Corps will use the Active component backup aircraft to accelerate the Reserve component transition from the KC–130T aircraft to the more capable, more efficient, KC–130J beginning in fiscal year 2014. The aircraft requested in the fiscal year 2015 President's budget will continue to increase KC–130J inventory as we strive to achieve full operational capability (FOC) in the Reserve component. 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 fiscal year 2015 President's budget requests $308.0 million in RDT&E,N for integrated development and associated testing and $2.05 billion for procurement of eight FRP P–8A Poseidon aircraft which are scheduled to begin delivery in May 2017. APN funding includes advanced procurement for the subsequent FRP procurement lot. 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 with avionics that enables integration of modern sensors and robust communications. P–8A achieved IOC when the first fleet squadron (VP–16) deployed

to the Western Pacific with six aircraft in November 2013. As of February 2014, three Fleet squadrons have completed transition to P–8A. All Fleet squadrons are scheduled to complete transition by the end of fiscal year 2019. The P–8A program is meeting all cost, schedule, and performance parameters in accordance with the approved acquisition program baseline.

Boeing has delivered 13 aircraft (LRIP I/II) to the fleet as of February 2014. LRIP III (11 aircraft), LRIP IV (13 aircraft), and FRP 1 (16 aircraft) are under contract, with the contract for FRP 1 (16 aircraft) signed on February 25, 2014. The fiscal year 2015 budget proposes to procure eight P–8As. This will sustain the P–3C to P–8A transition in the Fleet but is a reduction of eight aircraft from the fiscal year 2014 request. In the fiscal year 2015 request, we were compelled by fiscal constraints to lower the final P–8A inventory objective from 117 to 109 aircraft, reducing procurement over the FYDP by 8 aircraft. The warfighting requirement remains 117 aircraft; however the revised inventory objective for 109 aircraft will provide adequate capacity at acceptable levels of risk.

As fleet deliveries of the Increment 1 configuration accelerate, integration and testing of P–8A Increment 2 capability upgrades continues. In particular, Phase 1 of P–8A Increment 2 multi-static active coherent ASW capability began initial flight testing in January 2014 and is on-track for IOT&E and fleet introduction in late 2014. The 2015 request also continues the prototyping and development of the more extensive P–8A Increment 3 upgrades, which expand the P–8A evolutionary acquisition strategy to deliver the next level of required P–8A capability.

P–3C Orion

In fiscal year 2015, $2.8 million in APN is requested for P–3C airframe and mission systems sustainment. Funding is for continued wing modifications and mission systems sustainment for P–3C aircraft that will remain in service until the end of the decade. The legacy P–3C fleet continues to provide ASW, ASUW, and ISR support for joint and naval operations worldwide. The P–3C is being sustained to maintain warfighting capability and capacity until completion of P–8A transition in fiscal year 2019.

The P–3C aircraft is well beyond the original planned fatigue life of 7,500 hours for critical components, with an average airframe usage of over 18,000 hours. Since February 2005, the Navy's fatigue life management program has identified over 140 P–3 aircraft with fatigue damage beyond acceptable risk, resulting in either temporary or permanent grounding of each. 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. To date, $1.3 billion has been invested in P–3 wing sustainment, which has improved the overall structural health of the P–3 fleet. As of February 2014, there are currently 84 P–3C mission aircraft available.

EP–3 Aries Replacement/Sustainment

In fiscal year 2015, the President's budget request is $32.9 million in APN for EP–3 Aries replacement/sustainment. The APN request supports the installation and sustainment of multi-intelligence capabilities and modifications necessary to meet emergent classified requirements. These efforts are necessary to keep the platform viable until the EP–3 capabilities are recapitalized.

The EP–3E Aries is the Navy's premier manned maritime intelligence, surveillance, reconnaissance, and targeting (MISR&T) platform. The joint airborne signals intelligence (SIGINT) common configuration includes SIGINT spiral upgrades. These upgrades, in conjunction with Secretary of Defense 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, and data links employed by the P–3 air vehicle help ensure effective MISR&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.

The Navy is in the process of developing the MISR&T family of systems construct to recapitalize the EP–3 MISR&T capabilities within existing programs of record. The strategy has been further refined to focus on modular systems and payloads required for the Navy to conduct MISR&T on a variety of vehicles, providing combatant commanders with scalable capability and capacity. The inclusive full-spectrum approach will deliver increased ISR persistence by the end of fiscal year 2018 and exceed the aggregate capability and capacity of our legacy platforms by the end of fiscal year 2020. However, as we transition from legacy platforms like the EP–3E Aries II, fiscal constraints will compel us to take moderate risk in some collection capabilities over the next few years.

MQ–4C Triton UAS

The fiscal year 2015 President's budget postpones the MQ–4C Triton (formerly known as BAMS or Broad Area Maritime Surveillance) LRIP from fiscal year 2015 to fiscal year 2016. The fiscal year 2015 President's Budget requests $498 million in RDT&E,N to continue Triton SDD and $37.4 million APN for procurement of long-lead materials for the first lot of LRIP aircraft. Due to software integration delays during initial testing, the program experienced a year-long delay to the start of flight testing. A program replan has been completed and the program remains executable within current funding levels. Triton will start establishing five globally-distributed, persistent maritime ISR orbits beginning in fiscal year 2017. MQ–4C Triton test vehicles have completed 12 test flights as of February 25, 2014 and are on schedule to begin developmental testing with sensors later this year. This rigorous integrated flight test program will support Milestone C planned for fiscal year 2016. The MQ–4C Triton is a key component of the Navy maritime patrol reconnaissance force. Its persistent sensor dwell, combined with networked sensors, will enable it to effectively meet ISR requirements in support of the Navy Maritime Strategy.

The Navy currently maintains an inventory of four U.S. Air Force Global Hawk Block 10 UAS acquired for demonstration purposes and to perform risk reduction activities for the Triton UAS Program. These aircraft, the Broad Area Maritime Surveillance Demonstrators (BAMS–D) have been deployed to CENTCOM's AOR for over 5 years. BAMS–D recently achieved over 10,000 flight hours in support of CENTCOM ISR tasking. These demonstration assets are adequate to cover all Navy needs through fiscal year 2016.

Unmanned Combat Air System Demonstration

The fiscal year 2015 President's budget requests $36.0 million in RDT&E, to be combined with an fiscal year 2014 $39 million reprogramming, to continue Navy unmanned combat air system demonstration flight testing of this unmanned carrier-suitable air vehicle commonly referred to as X–47B. These resources will advance technological development and risk mitigation for the UCLASS system and continue the autonomous aerial refueling (AAR) demonstration. The X–47B has completed carrier qualification detachments consisting of catapult testing, arrested landings and envelope expansion, to include testing in off-nominal conditions and increased sea states. The latest AAR testing period was completed in January 2014 utilizing a manned surrogate aircraft. Carrier demonstration and AAR development and testing activities are planned to continue throughout 2015. The Department is working to reduce risk and align program/CVN operational schedules to best accommodate risk mitigation and meet demonstration objectives.

Unmanned Carrier Launched Airborne Surveillance and Strike System

The fiscal year 2015 President's budget requests $403.0 million in RDT&E,N for UCLASS system development efforts. The major portion of this funding will enable contract award to industry for air system development to meet Joint Requirements Oversight Council (JROC) direction to expedite fielding of an early operational capability. The UCLASS system will enhance carrier air wing capability and versatility for the Joint Forces commander through integration of a persistent and mission flexible unmanned aircraft into the Carrier Air Wing by fiscal year 2021. The JROC issued a new memorandum in February 2014, reaffirming the need for rapid fielding of an affordable, adaptable carrier-based ISR platform with precision strike capability. The UCLASS system will provide persistent ISR with precision strike capabilities supporting missions ranging from permissive counter-terrorism operations, to missions in contested environments, to providing enabling capabilities for high-end area denied operations. It will be sustainable onboard an aircraft carrier and designed to be fully integrated with 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 to exploitation nodes afloat and ashore. Interfaces will be provided with existing ship and land-based command and control systems, as well as processing, exploitation, and dissemination systems. The UCLASS system will achieve these capabilities through development of a carrier-suitable, semi-autonomous, unmanned air segment; a control system and connectivity segment; and a carrier segment. These segments will be overseen by the Government as the lead system integrator, providing government-led system-of-systems integration for the UCLASS Program.

MQ–8 Vertical Takeoff and Landing Unmanned Aerial Vehicle and Associated Rapid Deployment Capability Efforts

The MQ–8 Fire Scout is an autonomous vertical takeoff and landing tactical UAV (VTUAV) designed to operate from any suitably-equipped air-capable ships, carry modular mission payloads, and operate using the tactical control system and line-of-sight tactical common data link. The fiscal year 2015 President's budget requests $47.3 million of RDT&E,N to continue development of an endurance upgrade (MQ–8C), integrate radar and weapons on the MQ–8C, and continue payload and LCS integration with the MQ–8B and MQ–8C. The request for $40.7 million in APN defers procurement of MQ–8C air vehicles to better align with LCS deliveries, while procuring MQ–8 System ground control stations, ancillary, training and support equipment, technical support and logistics to outfit the ships and train the aviation detachments. Commonality of avionics, software, and payloads between the MQ–8B and MQ–8C has been maximized. The MQ–8B and MQ–8C air vehicles will utilize the same ship-based ground control station and other ship ancillary equipment.

Fire Scout was deployed to Afghanistan from May 2011 until August 2013, and amassed more than 5,100 dedicated ISR flight hours in support of U.S. and coalition forces. Successful deployments aboard USS *Klakring,* USS *Simpson*, USS *Bradley,* USS *Samuel B. Roberts,* USS *Haylyburton*, and USS *Elrod* have supported Special Operations Forces (SOF) and Navy operations since 2012. The MQ–8 Fire Scout has flown more than 4,800 hours from frigates, performing hundreds of autonomous ship board take-offs and landings. The Fire Scout program will continue to support integration and testing for LCS-based mission modules.

Tactical Control System

The fiscal year 2015 President's budget requested $8.5 million in RDT&E,N for the MQ–8 System's Tactical Control System (TCS). TCS provides a standards compliant, open architecture, with scalable command and control capabilities for the MQ–8 Fire Scout air system. In fiscal year 2015, TCS will continue to transition to the Linux operating system software to a technology refreshed ground control station, enhance the MQ–8 system's ocean surveillance initiative for ships automatic identification system and sensor track generation. The Linux operating system conversion overcomes hardware obsolescence issues with the Solaris based control stations and provides 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 System (CCS).

Small Tactical Unmanned Aircraft System RQ–21A Blackjack

The fiscal year 2015 President's budget requests $12.9 million in RDT&E ($4.8 million Navy, $8.1 million Marine Corps) and $70.5 million in Procurement, Marine Corps for 3 RQ–21A systems which include 15 air vehicles that will address Marine Corps ISR capability requirements currently supported by service contracts. This Group 3 UAS will provide persistent ship and land-based ISR support for expeditionary tactical-level maneuver decisions and unit level force defense and force protection missions. Blackjack entered LRIP in 2013 and is currently executing IOT&E.

The RQ–21's current configuration includes full motion video and signals intelligence capability. The Marine Corps is actively pursuing technological developments for the RQ–21 system in an effort to provide the MAGTF and Marine Corps Forces Special Operations Command (MARSOC) with significantly improved capabilities. Initiatives include over-the-horizon communication and data relay ability to integrate the system into future networked digital environments; electronic warfare and cyber payloads to increase non-kinetic capabilities; and change detection radar and moving target indicators to assist warfighters in battlespace awareness and force application.

RQ–7B Shadow Marine Corps Tactical UAS

The fiscal year 2015 President's budget requests $0.9 million in RDT&E,N for the RQ–7B Shadow to continue development efforts and government engineering support and $2.5 million in APN to acquire new air vehicle data processors and update engines to improve air vehicle reliability. The more capable RQ–21 Blackjack is scheduled to perform the preponderance of Marine Corps ISR responsibilities as divestment from the RQ–7B Shadow continues.

STRIKE WEAPONS PROGRAMS

Tactical Tomahawk BLK IV Cruise Missile Program

The fiscal year 2015 President's budget requests $194.3 million in Weapons Procurement, Navy (WPN) for procurement of an additional 100 BLK IV TACTOM weapons and associated support, $ 61.5 million in OPN for the Tomahawk support

equipment, and $27.4 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 ship load-outs and combat requirements. OPN resources will address the resolution of TTWCS obsolescence and interoperability mandates. RDT&E will be used to initiate engineering efforts for A2/AD navigation and communication upgrades.

Tomahawk Theater Mission Planning Center

Tomahawk Theater Mission Planning Center (TMPC) is the mission planning and command and control segment of the Tomahawk weapon system. Under the umbrella of TMPC, the Tomahawk command and control system (TC2S) develops and distributes strike missions for the Tomahawk Missile; provides for precision strike planning, execution, coordination, control and reporting; and enables maritime component commanders the capability to plan and/or modify conventional Tomahawk land-attack missile missions before and in flight. TC2S optimizes all aspects of the Tomahawk missile technology to successfully engage a target. TC2S is a Mission Assurance Category 1 system vital to operational readiness and mission effectiveness of deployed and contingency forces for content and timeliness. The fiscal year 2015 President's budget requests $13.4 million in RDT&E and $40.3 million OPN for continued TMPC system upgrades and sustainment. These planned upgrades support integration, modernization and interoperability efforts necessary to keep pace with missile, imagery and threat changes, retain/enable capabilities of the Tomahawk missile and includes providing an improved GPS denied navigation system, rewrite/update of Tomahawk planning system's unsupported legacy software code, and technology refreshes to reduce vulnerability to cyber-attacks. These resources are critical for the support of over 180 TC2S operational sites to include: cruise missile support activities, tomahawk strike and mission planning cells (fifth, sixth, seventh fleet), CSGs, command and control nodes, surface and subsurface firing units and labs/training classrooms.

Offensive Anti-Surface Warfare Weapon

The fiscal year 2015 President's budget requests $203 million in RDT&E for the continued development and technology transition of the Defense Advanced Research Program Agency (DARPA) Long Range Anti-Ship Missile (LRASM) in support of the air launched offensive anti-surface warfare (OASuW)/Increment 1 program. LRASM will provide the combatant commanders the ability to conduct anti-surface warfare operations against high value surface combatants protected by integrated air defense system with long-range surface-to-air-missiles and will deny the adversary the sanctuary of maneuver. OASuW/Increment 1 program is a Department of the Navy led joint program with a schedule to field LRASM on the B–1B by the end of fiscal year 2018 and the F/A–18E/F by the end of fiscal year 2019. Funding supports analysis of alternative updates to assess fully capable OASuW/Increment 2 material solution(s) geared to the advanced 2024 threat. Surface and air-launched material solutions will be assessed and study results will inform investment options in fiscal year 2016 and beyond.

Sidewinder Air-Intercept Missile

The fiscal year 2015 President's budget requests $47.3 million in RDT&E,N and $73.9 million in WPN for this joint Navy and Air Force program. RDT&E,N will be applied toward Sidewinder air-intercept missile (AIM–9X) Block II developmental/operational tests and requirements definition for Joint Staff directed insensitive munitions requirements, redesign critical components facing obsolescence, and continue AIM–9X/Block III development activities. WPN will be for production of a combined 167 all-up-rounds and captive air training missiles and missile-related hardware. The AIM–9X Block II Sidewinder missile is the newest in the Sidewinder family and is the only short-range infrared air-to-air missile integrated on Navy/Marine Corps/Air Force 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; a data link; 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 (AIM–120)

The fiscal year 2015 President's budget requests $10.2 million in RDT&E for continued software capability enhancements and $32.2 million in WPN for missile-related hardware. Advanced Medium-Range Air-to-Air Missile (AMRAAM) is a joint Air Force and Navy missile that counters existing aircraft and cruise-missile threats. It uses advanced electronic attack capabilities at both high and low alti-

tudes, 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. Prior missile production delays caused by rocket-motor anomalies were corrected when the Nordic Ammunition Group was brought on-line as an alternate source to Alliant Technologies. We now anticipate AIM–120D production will recover for both the Air Force and the Navy in 2014.

Small Diameter Bomb II

The fiscal year 2015 President's budget requests $71.8 million in RDT&E for the continued development of this joint Department of the Navy and Department of the Air Force (lead) 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 Department of the Navy variants of the Joint Strike Fighter (F–35B and F–35C) as well as onto the Navy Super Hornet (F/A–18E/F). 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. JMM BRU entered technology development in June 2013.

Joint Standoff Weapon

The fiscal year 2015 President's budget requests $4.4 million in RDT&E,N to complete JSOW C–1 operational testing activity and $130.8 million in WPN for production of 200 all-up rounds. The JSOW C–1 variant fills a critical gap by adding maritime moving-target capability to the highly successful baseline JSOW C program. JSOW C–1 targeting is achieved via a two-way data-link and guidance software improvements. JSOW C–1 is planned to achieve IOC in fiscal year 2015 after the completion of F/A–18E/F H10E Software Configuration Set operational testing.

Advanced Anti-Radiation Guided Missile

The fiscal year 2015 President's budget requests $16.1 million of RDT&E,N for Block 1 follow-on development and test program and $111.7 million of WPN for production of 108 all-up-rounds and captive training missiles. The Advanced Anti-Radiation Guided Missile (AARGM) cooperative program with Italy transforms the 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 target set. IOC on the F/A–18C/D aircraft was reached in July 2012 and forward deployed to U.S. Pacific Command. With release of H–8 SCS, AARGM is integrated on F/A–18E/F and EA–18G aircraft.

Advanced Precision Kill Weapon System II

The fiscal year 2015 President's budget requests $45.9 million in PANMC, for procurement of 1,555 Advanced Precision Kill Weapon System II (APKWS II) precision guidance kits. APKWS II provides an unprecedented precision guidance capability to Navy unguided rocket inventories improving accuracy and minimizing collateral damage. Program production is on schedule to meet the needs of our warfighters in today's theaters of operations. IOC was reached in March 2012 on the Marine Corps' AH–1Z. The Navy is finalizing an APKWS II integration effort on the MH–60S for an early operational capability by April 2014.

Joint Air-to-Ground Missile

The fiscal year 2015 President's budget requests $6.3 million in RDT&E to begin a 5-year integration effort for Joint Air-to-Ground Missile (JAGM) Increment 1 onto the Marine Corps AH–1Z to achieve an IOC by fiscal year 2021. JAGM is a Joint Department of the Army and Department of the Navy pre-Major Defense Acquisition Program with the Army designated as the lead service. JAGM is a direct attack/close-air-support missile program that will utilize advanced seeker technology and be employed against land and maritime stationary and moving targets in adverse weather and will replace the Hellfire and TOW II missile systems. In November 2012, the Joint Chiefs of Staff authorized the JAGM incremental requirements and revalidated the Department of the Navy's AH–1Z Cobra aircraft as a threshold platform. JAGM Increment 1 is expected to achieve Milestone B certification in fiscal year 2015.

Senator BLUMENTHAL. Thanks very much.

General Schmidle?

General SCHMIDLE. Sir, Admiral Grosklags had the statement from the Department of the Navy.

Senator BLUMENTHAL. Thank you.

Let me begin with a 5-minute round of questioning, and we will see how far we can get before the vote. We have a vote at 4:30 p.m., and then we can try to come back, if possible, depending on how many votes we have.

On the F–35, General Bogdan, I have heard varying estimates about how long the software has been delayed. I think you perhaps used the number of 6 months. GAO has talked about 13 months. Could you give us your assessment, your most up-to-date assessment, on whether it has been delayed, and if so, by how much?

General BOGDAN. Yes, sir. I would like to go through a little terminology so I am very clear with what I am saying and I am not misinterpreted.

We have three blocks of software on the F–35 program. The first block of software we call the 2B capability. 2 with a B. That is the initial capability that the Marine Corps will declare IOC with. The date we need that software ready for the Marine Corps is July 1, 2015. As of today, the software development for the 2B block of airplanes is not delayed at all.

What is more critical to the Marine Corps IOC in July 2015 is making sure that the 10 airplanes that they need to declare IOC are modified with hardware so that they can have what we call a production representative and a combat-capable airplane. We have fixes on the airplane that we need to put in, changes to the engine, changes to pieces and parts on the airplane. That, in itself, is on the critical path to July 2015, not the software for the initial capability.

We have a second block of software called the 3I. That block of software is basically the same capability as the 2B capability, but it is exportable. That will be the software that our partners get when they first take airplanes outside of the United States. That software also is on a defined path that we put in place in 2011, and none of the dates that we need that software for, to include Air Force IOC, as well as our Italian partners and our Israeli Foreign Military Sales (FMS) customers or the first two participants to get that software—none of the dates for their airplanes have been delayed by the software either.

Now, when you get to the final block of software in the F–35, what we call the Block 3F, that is the full capability. If we do not change anything in the way we are doing business today and we do not get smarter or figure out a way to go faster or do things better, I project that that software will be 4 to 6 months late. But I have until 2018 to try and figure out ways to bring that 4 to 6 months late back. That software is the software that the Navy will declare IOC with in August 2018. So I will not tell you today that the Navy IOC is being delayed because I have a lot of time to try and catch up that 4 to 6 months.

Senator BLUMENTHAL. What do we do to get smarter and do better?

General BOGDAN. There are a number of things we have done already that we are seeing the fruits of, sir. We have fundamentally changed the way we are developing the software on this airplane.

I can frankly tell you that until 2011, the contractor was in charge of all software development, and the U.S. Government and the Department of Defense (DOD) was watching. We are no longer watching. We are directing. As a result of that, we have directed them to have various metrics. We have upgraded the laboratories in Fort Worth, TX. We have also created governance boards where we know each and every increment of software when it gets to the airplane for flight test, we know what it is supposed to do. We are starting to see the fruits of that change because we are much more predictable now. For the last year and a half, each and every increment of software we have put in the field has been on time with the capability we expected. So that, in and of itself, will help us in the future bring that 4 to 6 months back.

The additional thing that we will be using is we have many operational test airplanes that are going to be possessed by all three Services. The operational test airplanes can also be used to help finish the development program by doing some of the extra testing that we need to get through. The combination of those things leads me to believe that over time we will bring that number back in, the 4 to 6 months.

Senator BLUMENTHAL. Thank you.

Senator Wicker.

Senator WICKER. Thank you. I am going to defer to Senator McCain and then Senator Sessions and save my questions for last.

Senator BLUMENTHAL. Senator McCain?

Senator MCCAIN. I thank you, Mr. Chairman. I thank Senator Wicker.

So, General Bogdan, if I understand your testimony and the answer to the chairman's question, there is a 4- to 6-month delay in the third block of software. Is that what you are saying?

General BOGDAN. That is correct, sir. There is a risk of a 4- to 6-month delay because we have 3 or 4 years before we actually incur that. But yes, sir.

Senator MCCAIN. If there is a risk of it, I would think you would know whether it is going to happen or not.

General BOGDAN. If I do not do anything else, it will happen, sir.

Senator MCCAIN. What else can you do?

General BOGDAN. We can use operational test airplanes to help shorten the development span time. We can improve——

Senator MCCAIN. Did we not try that before in concurrency?

General BOGDAN. The fact that we have operational test airplanes out there today, sir, while it was part of the problem with concurrency early on, now we can use that to our advantage.

Senator MCCAIN. Does a 4- to 6-month delay mean an increase in costs?

General BOGDAN. It does not, sir.

Senator MCCAIN. It does not.

General BOGDAN. It does not. I have management reserve and Lockheed Martin has management reserve and Pratt & Whitney has management reserve to cover that delay because when we rebaselined the program in 2010, we put a much more realistic budget and a much more realistic schedule in place.

Senator MCCAIN. This is the first trillion dollar system that we have ever had. What are the lessons learned in this imbroglio

where we have gone from $233 billion in 2001 to over $391 billion this year? What are the lessons learned here, General?

General BOGDAN. Sir, we could probably, you and I, get together and write a book about this. But I will give you a couple of the things from my perspective on some good lessons learned.

The first lesson is we tend to be overly optimistic when we start programs in terms of how much they are going to cost, what the real risk is, and how long they are going to take. We need to do a better job up front of being more realistic and more honest with ourselves about how much programs are really going to cost and what the real technical and fiscal risks are. I do not think we did that on this program. That is one.

Two, it is very hard to run a program when you start production before you have ever tested a single airplane because every time you find something new in flight test, you now have to not only go back and fix airplanes you have already produced, but you have to cut all those fixes into the production line. That creates a complexity that is pretty significant and it costs some money.

Senator MCCAIN. Has anybody ever been held responsible for that decision that you know of?

General BOGDAN. Sir, I do know one of the previous program executive officers on this program was asked to leave the program.

Senator MCCAIN. Certainly Lockheed Martin has not. They have just jacked up the cost.

General BOGDAN. Sir, what I can tell you is from my perspective, I promise you that I am doing everything I can to hold Lockheed Martin and Pratt accountable and balancing the risk on this program, because I think the third thing I have learned from the program in your lessons learned, is you have to have a balancing of risk. When we started this program, all the risk was on the Government. Every cost overrun on this program was going to be borne by the Government. Today, at least, when we build airplanes—

Senator MCCAIN. At least we ought to know the names of the people who made this kind of cockamamie agreement to start with because there were many of us that—you forgot the fundamental that we adopted during the Reagan years: fly-before-you-buy.

General BOGDAN. I do not disagree with you, sir.

Senator MCCAIN. If we had adhered to that principle, we probably would not find ourselves in the situation we are in.

I just have a short time left. General Davis, right now I understand the A–10s are to be phased out. Is that your understanding?

General DAVIS. Sir, that is.

Senator MCCAIN. What is going to replace it?

General DAVIS. Sir, if you look at the systems we are using today and have used since Iraq, the A–10s have basically failed about 20 percent of the call for close air support (CAS) missions. So that means we are doing it with F–16s. We are doing it with F–15Es. We are doing it with B–1s and B–52s. We are doing it with precision weapons that were not part of the A–10 suite.

Senator MCCAIN. So they are better suited for CAS than the A–10 is. Is that correct?

General DAVIS. Sir, I did not say they are better suited. I said they can do that mission based on——

Senator MCCAIN. Depending on what kind of conflict we are in. Right?

General DAVIS. It does.

Senator MCCAIN. If we are in a more conventional conflict, there is no aircraft or weapons system that does the job of the A–10. Is there?

General DAVIS. Sir, it does its mission very well. It is designed for one mission. It does that mission well.

Senator MCCAIN. That one mission happens to be CAS.

General DAVIS. Yes, sir.

Senator MCCAIN. I thank the chairman.

Senator BLUMENTHAL. Thank you very much. Thank you, Senator McCain.

Senator Donnelly.

Senator DONNELLY. Thank you, Mr. Chairman.

As the Air Force retires its A–10 fleet, there are several wings around the country that will be transitioning to a new mission, including the 122nd Fighter Wing in my home State. Can you explain how the Air Force determined the timeline for these conversions?

General DAVIS. Sir, I cannot do that, but I can take that for you on the record. All I know is that your unit in your State is going to be transitioning to F–16s in about the 2019 timeframe.

[The information referred to follows:]

The timeline for the A–10 fleet conversion was primarily based upon gaining mission availability. In the case of the 122nd Fighter Wing, the unit is scheduled to receive F–16s from Hill Air Force Base in fiscal year 2019 as Hill transitions to the F–35.

Senator DONNELLY. Also, if you could get for me what factors are taken into account in determining when to transition each unit and how the transition goes as to who goes first.

General DAVIS. Yes, sir.

[The information referred to follows:]

There were multiple factors taken into account when determining how and when A–10 units transition to their new missions. The primary factors the Air Force examined were: the viability of divesting and gaining missions; current operations tempo; operational rotational requirements; and training availability and timeline.

Senator DONNELLY. Also in regards to that, as we transition back to F–16s, making sure we have the frontline fighters until JSF comes into full production is critical. I was wondering if you have a timeline showing when specific units will undergo the Service Life Extension Program (SLEP) enhancements.

General DAVIS. Sir, we know basically that we are going to upgrade 300 of the future force structure of F–16s with the extension that will keep them viable through their lifetime. It really depends on where those F–16s will be coming from, what unit, and what the structure is. We can see if I can give you an answer as to when those 18 F–16s will be going into your unit in 2019. We will get the SLEP modifications. But I am almost certain by then those airplanes will be SLEPed, but I will verify that.

[The information referred to follows:]

The Air Force A–10 divestment plan, as submitted in the President's fiscal year 2015 budget, plans to transition the 122nd at Fort Wayne, IN (ANG) to F–16 Block 40s in 2019. The Air Force intends for these F–16s to receive Service Life Extension

Program (SLEP) modifications. SLEP is currently planned to be installed on a total of 300 F–16 aircraft beginning in fiscal year 2018. The Air Force has not yet completed the assessment of which specific tail numbers are the best candidates to receive SLEP and when specific aircraft would be modified. The install schedule will take into consideration the operational tempo of affected units and the number of flying hours on each aircraft. This will ensure SLEP is installed at a point in time that results in the greatest life extension programmatically possible.

Senator DONNELLY. Obviously, hopefully, the F–35 stays on schedule, but are you confident the SLEP, as envisioned in this year's budget in the future years defense program (FYDP), is sufficient to maintain the F–16 fleet to maintain combat effectiveness until the F–35s are procured in sufficient numbers?

General DAVIS. Sir, I think I am. I think our Chief has mentioned that, and I think that the money we have set aside to keep that 300 fleet of F–16s viable—some of which will, obviously, replace the A–10s—we will certainly keep that very well-suited for that combat mission they are going to be stepping into that we just discussed with Senator McCain.

Senator DONNELLY. Could you also let us know how you intend to distribute the F–35s in regard to the Active, Reserve, and Guard? Is it going to be proportional or how will it be done?

General DAVIS. Sir, again, I will have to dig that one up. We are going mission-by-mission area now. We are going through the training bases. We are going through the first operational units. We are looking at where the first outside the contiguous United States base is going to be. Then we will continue to fill out the rest of the units from that point on. I will have to see. I imagine those decisions, to be honest with you, sir, are yet to be made down the road, but I will see how we are looking at balancing Guard and Reserve.

[The information referred to follows:]

The specific order and locations will be decided based on a number of factors including wartime/combatant commander requirements, contiguous United States/outside the contiguous United States mix, trained operations and maintenance personnel, infrastructure, and costs. From a process standpoint, Air Combat Command (as the Combat Air Force lead for F–35), will propose a basing strategy for the next round of F–35 beddowns (including Active Duty/Air National Guard/Air Force Reserve ownership) to the Secretary of the Air Force for approval later this year. In accordance with our Strategic Basing process, this will begin the next round of specific basing decisions which we anticipate to be made mid to late 2015.

Senator DONNELLY. With the ultimate intention for the F–35 to take over the CAS role of A–10s, how many F–35s do you expect to be fully operational over the next 5 years to replace those A–10s on the retirement timeline?

General DAVIS. Again, sir, like I was trying to mention there, we will go through an interim transition of what is going to replace the A–10s. It will not be the F–35s. It will be the F–16s. It will be the F–15Es. When the CAS mission is called for, those will be the airplanes. As we get to the point where we field more F–35s—and our view of when we would declare IOC on the F–35 is around 2016—we will have over 100 airplanes fielded at that point. At that point, we believe those airplanes will be fully capable of doing CAS missions. So at some point, then they will start to relieve other units of F–16s that will move on to other areas. So by the end of the FYDP, as you talk about, we will continue to buy airplanes at the rate of about 60 a year and gradually fill out all those other

units. But again, like I mentioned earlier, we will have to get you the full schedule on that.

[The information referred to follows:]

Over the next 5 years, by the end of calendar year 2019, the Air Force will have received 219 fully operational F–35A aircraft.

Senator DONNELLY. One more A–10 question real quick. How will you address the engagement time differences between the A–10s and those aircrafts that will be filling in the interim role?

General DAVIS. Sir, to be honest with you, I think the engagement time would actually be a lot quicker because what we have put into place—and this is why CAS is affected today between your joint terminal air controller on the ground that has data links to an F–16 sitting on a cap that has an advanced targeting pod that can then pick up where the troops and contact are occurring. They can then relay that quite effectively between the individual on the ground and the displays on the pilots to the precision weapons that have a lot of capability to go in places that other weapons have not to be even updated by data link on the way down to that point. So I am thinking that your timeline for these troops and contacts is probably a lot shorter today——

Senator DONNELLY. You think it will be better. Okay.

I just got back from Ukraine about 2 weeks ago, and we have seen just in the last day what has again happened in Donetsk and in other areas. I was wondering if you are or the Air Force is making any plans to step up aviation operations with other North Atlantic Treaty Organization partners in the Eastern European region, what additional plans are being made to show some commitment to try to make sure that we show strength in that area?

General DAVIS. Sir, I am going to have to let our operations folks try to give you a better and more detailed answer on that one. I do not have any insight on that right now, to tell you the truth.

[The information referred to follows:]

The Air Force has increased presence in terms of bomber, fighter, tanker, and intelligence, surveillance, and reconnaissance assets. In addition, the Air Force is currently reviewing and determining the feasibility of providing increased and/or persistent presence, which is proposed by U.S. European Command as part of the President's recently announced $1 billion European Reassurance Initiative.

A more detailed explanation may be provided in a classified forum.

Senator DONNELLY. Okay. Does anybody on the panel have any insight on that? [No response.]

Thank you, Mr. Chairman.

Senator BLUMENTHAL. Thanks very much, Senator Donnelly.

Senator Sessions.

Senator SESSIONS. Thank you, Mr. Chairman.

General Bogdan, I would just like to ask a few fundamental questions to get my head straight on these programs. If you can work with me quickly, that would be good.

What is the current cost of each one of the aircraft?

General BOGDAN. If you wanted to buy an F–35A today, sir, it would cost you about $112 million.

Senator SESSIONS. How has the cost increased with reduction or decreased and where do you see the trends on that?

General BOGDAN. We have seen the price of the airplane come down lot after lot. We believe that will continue well into the

2020s. The target we have set for ourselves and our industry partners have set for us is in 2019, an airplane with an engine, with profit on top of that for Lockheed and Pratt & Whitney, in fiscal year 2019 dollars will cost between $80 million and $85 million, sir. We think we can get there. I would not call that a stretch goal. I would call that a realistic goal. So we think lot after lot over the next 5 years, we are going to see a continued decrease in the price of the airplane. That is my promise to everyone in the enterprise. I will negotiate that. We will work to do that. By 2019, we should have an airplane that is about $80 million.

Senator SESSIONS. It is just not a myth that once the bugs are out of an aircraft or ship or any major procurement and you are buying in large numbers, the price goes down.

General BOGDAN. That is a fact, sir. That is a physics fact of acquisition.

Senator SESSIONS. The last 2 budgets showed that planned production has fallen from 40 to 50 aircraft per year to 30 aircraft per year. Is that correct? The last 2 budgets, as I have it here, projected our production would be 40 to 50 aircraft per year. Their last 2 reduced it to 30 aircraft.

Let me just ask you, what is our production rate per year now, and is it at a level that adds cost per copy because it is lower than otherwise had been projected?

General BOGDAN. Yes. That is an interesting way to put it. The profile over the next 4 years, just to let you know what I believe the profile is, is next year we will buy and produce 43 airplanes. The year after that will be 57. The year after that will be 96, and then the year after that will be 121. That is the next 4 years.

Senator SESSIONS. So 121 would be cruising speed?

General BOGDAN. No. Cruising speed on this program is actually going to be in the order of about 180 airplanes a year, sir. We will not even get there until about 2023.

But you made a very interesting point, sir, and I will try and explain it very quickly. The price of this airplane continues to come down as long as we continue to buy the same number or more airplanes as we move out in years. But if you move airplanes further out to buy, then the price does not come down as rapidly as you would like. It is not that the price would ever go up anymore. It just will not go down as fast as you would have otherwise had it come down if all those airplanes had been bought when you thought. So by pushing airplanes to the right and not buying them, the price does not come down as fast. It still comes down, sir.

Senator SESSIONS. General Davis or Admiral Grosklags, maybe you can contribute to this, and I will let you answer. What is the need for the F–35? How do we intend to utilize it? What is the threat that is driving this production?

General DAVIS. Sir, our average fighter is 30-years-old today, and so there is no doubt that that has to be replaced. If you just look at what we consider to be any region around the world, the thing that probably is most concerning is that if we ever have to conduct operations in many regions around the world, there are advanced integrated air defense systems that have been sold by Russia and China to at least 10 to 12 nations today. It will probably be 20 by the end of the FYDP. So in other words, the areas that we would

go into are becoming increasingly denied if it becomes the President's direction that we do so.

The threat is growing. The threat is growing faster. You have seen the Chinese have produced two versions of their own stealth fighter in about a 3-year period.

If we are going to carry out the National Military Strategy or the Defense Strategic Guidance, then clearly the fighters that we have done well with in the last four wars will continue to do well for some period of time, but their usefulness is going to gradually degrade and it is going to become increasingly degraded over time. We already see that with some of our legacy weapons.

It has been the intent of the Chief, General Michael Hostage III, and the folks in the Air Combat Command, that the F–35 is the future for tactical air combat in the Air Force. Its capabilities not only bring the ability to penetrate those threats, but it brings a net enabled linkage that shares data with the entire Joint Force. It is that alone that probably makes this airplane more valuable than any of its capabilities right there because of the information it can collect and supply across everybody that is in the battle space. It is for that reason that we think it is very important that we try to replace as much of our fleet as we can with the F–35s.

Senator SESSIONS. My time is up. I will let the chairman decide whether he wants more answers on that. He was going to contribute to the same question, but I will let you decide whether you want to go forward. I am satisfied.

Senator BLUMENTHAL. Thank you.

Senator Wicker.

Senator WICKER. General Bogdan, let me just ask. I think 11 countries have agreed to purchase the F–35. Is that correct?

General BOGDAN. Yes, sir. We have eight partner countries and two for sure FMS customers in Israel and Japan. I believe before the end of the year, we will have a signed contract with the South Koreans. So 8 plus 3 is 11, plus our 3 Services.

Senator WICKER. That would be the United Kingdom, Turkey, Australia, Italy, Netherlands, Canada, Norway, and Denmark, in addition to those three that you mentioned.

General BOGDAN. You have them right, sir.

Senator WICKER. Now, are you briefing, giving formal briefings, to other countries on the F–35?

General BOGDAN. When you say other countries, you mean other than the partners?

Senator WICKER. Other than.

General BOGDAN. Yes, sir. Just in February, I visited Singapore, and I spent a week there at their annual international air show, and they have shown significant interest in the F–35. We sat down with them and had a discussion about the F–35. They actually have a very small FMS case with us now where they have paid for some information about the F–35 so they could decide if it would meet their requirements.

Senator WICKER. Of course, you are keeping them informed and engaged on the program status and schedule.

General BOGDAN. That is correct, sir.

Senator WICKER. However, is it also true that several foreign partners have reduced their projected buys, namely Canada, Italy, and Netherlands, or they are considering doing so?

General BOGDAN. Yes, sir. Let me go on record here and give you the latest of what I know.

Canada has yet to decide if they are going to buy an F–35.

Senator WICKER. At all?

General BOGDAN. At all. They initially chose the F–35 as their replacement for their F/A–18s. Their parliament did not believe that that process for selection was up to snuff, I guess you would say, and they have what we call a seven-point plan we are going through to revalidate or decide to start another competition for their replacement for their F/A–18s. They are still in the program, but they have yet to commit to buying a single airplane.

Senator WICKER. What aircraft are our toughest competitors there?

General BOGDAN. I would tell you that the Super Hornet is a great airplane. I would imagine that some of the European airplanes, the Eurofighter and the Typhoon, would also be potential competitors in that market for Canada.

Italy is committed to buying airplanes, but they reduced their buy from 130 to 90 2 years ago. So they are committed to buying 90.

Senator WICKER. Budgetary constraints there in Italy?

General BOGDAN. Yes, sir.

Netherlands originally committed to buying 80 airplanes. Now they are committed to only buying 37. Budgetary problems.

Turkey was supposed to buy their first two airplanes this year, but have made no commitment whatsoever.

Senator WICKER. With regard to Italy, Netherlands, and Turkey, they are not buying from anyone else.

General BOGDAN. They are not.

Senator WICKER. But Canada is thinking of doing so.

General BOGDAN. Correct.

Senator WICKER. Now, this goes to what Senator Sessions was talking about. That hurts us in trying to reduce the cost each year, does it not?

General BOGDAN. It does. Anytime a partner or anyone on this program reduces their total buy or pushes airplanes out to buy them later, everyone else will pay the price for that because the unit cost of the airplane will go up.

Now on the flip side of that, sir, is we do have some FMS customers like Singapore in the future, South Korea, and Israel, who I believe will buy more airplanes than the first 19 they have committed to. They actually help offset some of the partners that are not buying so many airplanes. So it is a give and take there.

Senator WICKER. Could you quantify how much one cancellation costs us?

General BOGDAN. It is hard to do it that way, sir. How about I do it in a little more general terms, but I will give you an answer.

Senator WICKER. That would be great.

General BOGDAN. I wish I could give it to you by airplane, but that is a very small number.

With all the movement we have seen from last year to this year—and that includes the U.S. Services moving 37 airplanes out, Turkey moving their buy out a year, Canada moving their buy out a year, Netherlands reducing their buy—the price of any one of the variants of the airplane goes up 2 percent. So everybody else who is buying airplanes next year will pay 2 percent more because of all those plans to move airplanes out. For an A model, that is $2 million to $3 million, if you assume it is about a $100 million airplane.

The partnership is an interesting thing, sir. Folks will sink and swim together.

Senator WICKER. Thank you.

Mr. Chairman, I may take another round.

Senator BLUMENTHAL. Do you want to just continue your questions now?

Senator WICKER. I think I will take another round because I have to go.

Senator BLUMENTHAL. Please do. Go ahead.

I have some additional questions. Your estimates that you gave earlier about the reduction in costs are dependent on all of those allied purchases going through. Are they not?

General BOGDAN. Sir, what we do in the Program Office is we look at the cost of the airplane under a best-case scenario. We look at the cost of the airplane under what we call a worst-case scenario, and we look at the cost of the airplane under a most-likely scenario. In all three of those cases, the price of the airplane year after year still goes down but does not go down as much.

Senator BLUMENTHAL. But you gave us an estimate earlier, going by memory, that it would go from $112 million a copy down to about $80 million.

General BOGDAN. $80 million to $85 million. That includes all the things we just talked about, sir.

Senator BLUMENTHAL. The reductions in purchases by our allies.

General BOGDAN. Correct. That is the most current estimate I have today, including all the movement of the partner airplanes and the known FMS buys we have with Japan and Israel.

Senator BLUMENTHAL. If I may, General, let me ask you about a related technology issue, and I think I may know the answer but I want to be sure we have it on the record. The Generation (Gen) 3 helmet that I understand will not be available until the block 3I, as you referred to it, 3I capabilities fielded in 2016. Is that still on schedule? Whatever the obstacles or challenges were, the glitches in that helmet to make it suitable—have those been overcome?

General BOGDAN. Yes, sir. The Gen 2 helmet, which will be available from now until 2016, is adequate to meet the Marine Corps IOC. I defer to General Schmidle because he is the gentleman I asked when we went and talked about if it's good enough. He is the guy that said it is good enough. Beyond 2016, when we get the Gen 3 helmet, I believe that from a technical standpoint we will have a fully capable helmet that meets all of the requirements at the end of the program for everybody.

We had a tough time over the last 2 years, but I think we have turned the corner on that, sir.

Senator BLUMENTHAL. General Schmidle, I think you have commented on that helmet, the Gen 2 helmet, as being suitable for the IOC. Is that correct?

General SCHMIDLE. Yes, sir, we did, Mr. Chairman. From talking to the pilots that are flying in the helmet today and putting it through its paces, we believe that that helmet will, in fact, be adequate to get us to the IOC.

What General Bogdan just said is, in 2016 we look forward to getting the Gen 3 helmet which will give us the full capability prior to the squadron's first deployment in 2017.

Senator BLUMENTHAL. Thank you.

Admiral Grosklags, the Navy's unfunded priority list includes $2.1 billion to buy 22 more E/A–18G electronic warfare aircraft. But I understand that 22 additional Growlers do not appear on the Secretary of Defense's Opportunity Growth and Security Initiative. When we authorized and appropriated 21 E/A–18G aircraft in the fiscal year 2014 budget, we were led to believe that with delivery of the fiscal year 2014 aircraft, we had met the requirement for the airborne electronic attack (AEA). Have requirements changed since last year? If so, why?

Admiral GROSKLAGS. Sir, we are currently looking at the total number of aircraft that we require. Our program of record—you are correct—is 138 aircraft, which is fulfilled by the fiscal year 2014 procurement. As we have continued to look at the electronic warfare environment that we see coming in the future, growing ever more complex, ever more difficult, we believe that an additional 22 aircraft would significantly reduce the risk to not only the Navy but the Joint Force in that integrated air and defense environment that General Davis mentioned earlier.

Specifically, in 2019 when we retire all of our E/A–6Bs across the Department of the Navy, the E/A–18 Growler will represent the only, I will call it high-end, full spectrum AEA capability within DOD. That provides a standoff jamming capability that enables the rest of the Joint Force to use some of their equipment in a more stand-in role. We can address radars and communication systems from a greater distance with the Growler with its combined ALQ–99 and in the follow-on next generation jammer pod.

When we looked at this, we said if we are going to buy any additional aircraft, we need to do it now because it is the end of the production line if we do not procure those 22 aircraft. The Chief of Naval Operations quite honestly said it would be a prudent time to look at this option now rather than waiting to the future.

We do have a couple of analyses ongoing. We have one from the Naval Air Systems Command that was completed late last year which shows that the ability to increase the number of aircraft in one of our carrier air wings deployed on a carrier from five to seven represents a significant improvement in capability in not only defending the carrier but also supporting our strike packages as they go forward or go over the beach. That 22 aircraft would enable us to increase 5 of our carrier air wing squadrons from 5 aircraft, which is the current program of record, to 7 aircraft and give us that additional capability.

Now we are going to conduct a fleet battle experiment this summer off the east coast with one of our carriers. We are actually

going to put eight Growlers on board that carrier, fly it through a bunch of exercises, and determine whether five or seven or eight truly provide what we believe will be that knee in the curve for a significant increase in capability.

Senator BLUMENTHAL. What will you do then in coming to us with the results of those more up-to-date analyses and the exercises that you have planned?

Admiral GROSKLAGS. I think after we finish the exercise this summer we have an ongoing warfare analysis which will take that information, combine it with what I will call the paper analysis, and see if the two line up. Ideally they will. Then we will have to come back to Congress and have that discussion.

Senator BLUMENTHAL. Thank you.

I think we may have time before the vote for another round. I do not know whether Senator Sessions might have some additional questions. Sorry to interrupt. I just want to give you an opportunity if you have additional questions.

Senator SESSIONS. Are we voting now?

Senator BLUMENTHAL. We are voting at 4:30 p.m., and we also have a meeting of our full committee afterwards to talk about sequestration, which all of you have raised as a very pressing issue. So I am not sure we will have time to come back here, with apologies to witnesses and to members of this subcommittee.

Senator SESSIONS. Thank you, Mr. Chairman. I will just conclude and say there has never been a program as massive and as international, I think, as the JSF. Would you agree, General Bogdan?

General BOGDAN. Sir, I would agree that we have built a very big, complex program that is global in scope.

Senator SESSIONS. We just have to keep it on track. We made a mistake.

Let me just ask you this. The curtailment of a number of F–22s resulted in a disproportionately high cost per copy of that aircraft. Did it not? That is not just a myth.

General BOGDAN. That is an absolute true statement, sir.

Senator SESSIONS. I am not saying every single aircraft we need to buy we have to reach that number, but we should not be backing off that too much. It is your challenge to keep it on track, and I believe that maybe you are getting there.

Mr. Chairman, I hope that we can keep this program on track. It is just so massive, such an international commitment that if we let it get away from us, we will regret it, I do believe. Thank you for having this hearing.

Senator BLUMENTHAL. Thank you, Senator Sessions. I join Senator Sessions in the hope that we can stay on track. I think members of the subcommittee—I cannot speak for all of them—have increasing assurance about both the timing and effectiveness of the program as we go on. I have spent a lot of time talking to people involved, learning about the JSF, a lot of time at Pratt & Whitney learning a lot about the engine, which I know has been greatly enhanced as a result of the oversight and scrutiny that you and others have given to it.

I want to thank you for your work, facing great challenges posed by sequester and other obstacles. There is no question that there are difficult days ahead for our modernization objectives as we con-

tinue to develop these programs. I look forward to working with you and the other military leadership.

I have some questions that I would like to submit for the record. You have been very gracious in suggesting that others may as well. We are going to keep the hearing record open until 5 p.m. on Thursday, April 10, for any additional questions that I or other Senators may wish to submit. I am going to ask the witnesses to respond for the record as quickly as possible so that we can get full consideration by the Senate Armed Services Committee as we begin the markup.

With that, thank you all very much. Thank you to all who are attending who serve with you and to everybody under your command.

This hearing is adjourned.

[Whereupon, at 4:37 p.m., the subcommittee adjourned.]

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR RICHARD BLUMENTHAL

MH–60R MULTI-YEAR PROCUREMENT

1. Senator BLUMENTHAL. Admiral Grosklags, the Navy budget request continues the planned buy of 29 MH–60R helicopters in fiscal year 2015, but would cancel the planned buy of 29 aircraft in fiscal year 2016. The Navy has suggested that this is in part due to the planned retirement of the carrier USS *George Washington* and reducing the planned buy of Littoral Combat Ships (LCS). However, the *George Washington*'s air wing only contains three to five MH–60R aircraft. Likewise, the Navy is still pursuing a fleet of surface vessels to replace LCS that will also, in all likelihood, need helicopters. Moreover, the Navy's failure to execute the planned purchase of 29 aircraft in fiscal year 2016 would break the multi-year procurement (MYP) contract for H–60 helicopters, managed by the Army. This action would result in the U.S. Government having to pay termination charges of at least $250 million and getting nothing in exchange for those payments. This action would result in increased cost to the Army as well. Can you please explain why the Navy intends to cancel the fiscal year 2016 MYP when there are only five MH–60R aircraft in the air wing?

Admiral GROSKLAGS. A final decision on maintaining or terminating the MH–60R MYP contracts has been deferred to fiscal year 2016. The proposed fiscal year 2015 budget fully funds the MYP in fiscal year 2015 with advance procurement for the 29 fiscal year 2016 MH–60R aircraft. The MH–60R procurement decision is tied to potential force structure reductions, most specifically that associated with the 11th Nuclear Aircraft Carrier (CVN) and the associated 10th Carrier Air Wing (CVW). There are 11 MH–60R aircraft in a helicopter maritime strike (HSM) CVW squadron. Also tied to that 10th HSM CVW squadron are three Fleet Replacement Squadron training aircraft and two pipeline (depot maintenance) aircraft for a total of 16 aircraft directly tied to the decision on the 11th CVN and 10th CVW.

2. Senator BLUMENTHAL. Admiral Grosklags, how much will this cost the Navy in termination fees and how much extra will this cost the Army to buy their helicopters?

Admiral GROSKLAGS. Actual costs associated with a potential early termination of the two multi-year contracts have not yet been determined. Costs will be calculated in accordance with the Federal Acquisition Regulations and through negotiations with industry once official notification of cancellation occurs. If the level of advance procurement funding requested in the President's fiscal year 2015 budget request is approved, the official cancellation would occur as a result of the fiscal year 2016 Appropriations and Authorizations Acts becoming law.

3. Senator BLUMENTHAL. Admiral Grosklags, how is this aircraft reduction related to future or potential surface ship restructuring?

Admiral GROSKLAGS. Any potential modifications to our MH–60R procurement plan will be aligned with other Navy force structure adjustments.

4. Senator BLUMENTHAL. Admiral Grosklags, will this leave the Navy with a capability gap either now or in the future?

Admiral GROSKLAGS. A decision to truncate MH–60R quantities following the fiscal year 2015 procurement would be based on matching MH–60R quantities to overall Navy force structure requirements and therefore would not result in any aircraft shortfalls/gaps.

MARINE CORPS STRIKE FIGHTER SHORTFALL

5. Senator BLUMENTHAL. General Schmidle, in September 2012, U.S. Forces suffered an attack on Camp Bastion, Afghanistan, where two marines lost their lives and six Harrier aircraft were destroyed. What is the replacement plan for these lost aircraft?

Admiral GROSKLAGS. The AV–8B is no longer in production, and the F–35 Joint Strike Fighter (JSF) is the recognized replacement. The replacement price for six F–35 JSFs is more costly when compared to six AV–8Bs, however, replacing the six lost AV–8B aircraft with AV–8Bs would require re-opening an AV–8B production line—a cost that would far exceed the requested funding to procure new F–35 aircraft.

The AV–8B combat loss aircraft will eventually be replaced under the current planned transition from the AV–8B to the F–35 JSF. This transition will continue throughout the current future years defense program and will be completed in 2030. Additionally, the Marine Corps' fiscal year 2015 Unfunded Priorities List (UPL) submission included $875.5 million for five F–35C combat replacement aircraft, and $141.6 million for one F–35B combat replacement aircraft.

If a plan moves forward to fund the six F–35 replacement aircraft in fiscal year 2015, the aircraft will be low rate initial production (LRIP) 9 aircraft and delivered from the production line in 2017 with a Block 3I configuration—a capability commensurate with the projected threat at the time of delivery. These aircraft would then be upgraded to Block 3F by the fourth quarter of 2017, just months after delivery.

6. Senator BLUMENTHAL. General Schmidle, if we authorize a Continuing Resolution with regard to Overseas Contingency Operations (OCO) funds, what would the effect be upon your ability to backfill these combat losses?

Admiral GROSKLAGS. Continuing Resolutions are short-term temporary solutions to provide leaders with decision space to plan and manage a budget within a fiscal year. Under the rules of a Continuing Resolution, new starts are not permitted and therefore replacement aircraft for combat losses not previously appropriated for would not be funded.

7. Senator BLUMENTHAL. General Schmidle, will you request replacement aircraft in the OCO request for fiscal year 2015?

Admiral GROSKLAGS. The Marine Corps OCO submission is developed in concert with guidance from the Office of Management and Budget (OMB) and the Office of the Secretary of Defense (OSD). Until the fiscal year 2015 OCO budget is formally submitted to Congress, the Marine Corps is unable to confirm a request for combat loss replacement aircraft in the fiscal year 2015 OCO submission.

The Marine Corps did submit a fiscal year 2015 UPL which included $875.5 million for five F–35C combat replacement aircraft, and $141.6 million for one F–35B combat replacement aircraft.

8. Senator BLUMENTHAL. General Schmidle, when will we get the administration's OCO request?

Admiral GROSKLAGS. The Marine Corps OCO submission is developed in concert with guidance from OMB and OSD. The Marine Corps is working with OSD on the fiscal year 2015 OCO request and defers to them as to when the final product will be submitted to Congress.

DEPARTMENT OF DEFENSE AUTHORIZATION OF APPROPRIATIONS FOR FISCAL YEAR 2015 AND THE FUTURE YEARS DEFENSE PROGRAM

WEDNESDAY, APRIL 9, 2014

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

ARMY MODERNIZATION

The subcommittee met, pursuant to notice, at 9:16 a.m. in room SR–232A, Russell Senate Office Building, Senator Richard Blumenthal (chairman of the subcommittee) presiding.

Committee members present: Senators Blumenthal, Donnelly, Sessions, and Wicker.

OPENING STATEMENT OF SENATOR RICHARD BLUMENTHAL, CHAIRMAN

Senator BLUMENTHAL. Good morning, everyone. I'm very pleased to call this subcommittee hearing to order. Today we are going to be hearing testimony on the Army modernization program in review of the fiscal year 2015 budget request and Future Years Defense Program. I look forward to a very open and productive relationship with the Services under our jurisdiction. I especially appreciate your being here today, the very distinguished witnesses that we have before us, and we certainly want to be helpful and supportive in any way that we can be.

I'm going to put my full remarks in the record and keep somewhat short my opening statement, just because we are here to hear you, not to hear ourselves talk, and these issues are very important to us, hearing you present the facts. But clearly we want to first thank you and the remarkable men and women under your command who have performed so ably and courageously over more than a decade of war in Iraq and Afghanistan. I am always awestruck by the ability and the bravery, sacrifice, and dedication of our Army, and we are grateful to our leaders, as well as the men and women under your command.

I am looking forward to hearing how Army requirements, acquisition, and modernization strategies support the Army we have today and will have out to 2019 and beyond; how, given uncertainty about availability of resources and necessary changes to the Army's size and structure, the Army will ensure that equipment,

readiness, reset, and modernization programs are appropriately prioritized with tradeoffs and risks managed, while at the same time are stable, achievable, and affordable.

I'd like to know from the witnesses in particular how the Budget Control Act (BCA), the Bipartisan Budget Act (BBA), sequestration, the pending overseas contingency operations (OCO) request, all figure into the dangers of an unstable, unaffordable, and unachievable modernization program. We want to avoid those dangers. We want it to be achievable, stable, and affordable.

Finally, how will the Army identify and manage the inevitable and growing strategic risk to the Army's industrial base during times of declining budgets? I'm particularly familiar with the challenges of maintaining a sound and stable industrial base, being from a State that is so committed to meeting the needs of our military in production and manufacturing.

Readiness and preparedness are very much at the forefront of our mindset today, and I want to welcome each of you. General John F. Campbell, USA, is the Vice Chief of Staff of the Army and has the responsibility to assist the Secretary and Chief of Staff of the Army with sorting through the many needs of the Army and making tough choices that prioritize what we're developing and producing to meet our soldiers' most important equipment needs.

Lieutenant General James O. Barclay III, USA, is the Deputy Chief of Staff, G–8, and the Army's principal staff officer, responsible for matching available resources to meet the Army's requirements for mission success.

Lieutenant General Michael E. Williamson, USA, is the Military Deputy and Director, Army Acquisition Corps, and the Army's principal staff officer, responsible for research, development, and acquisition (RDA), and he has policy and program oversight of how the Army buys and maintains current equipment and how it buys new equipment. I think, General Williamson, you've been in your position about 3 weeks or so. So you're a veteran right now. You're seasoned.

Thank you, each of you, for being here today. I look forward to a good give-and-take here.

I want to express my appreciation to Senator Wicker for his great work on this subcommittee and being my partner in this effort.

[The prepared statement of Senator Blumenthal follows:]

PREPARED STATEMENT BY SENATOR RICHARD BLUMENTHAL

Good morning. The Subcommittee on Airland meets today to receive testimony on Army modernization programs in review of the fiscal year 2015 budget request and Future Years Defense Program.

After more than a decade of war in Iraq and Afghanistan I am always impressed that the soldiers of our Army have performed with remarkable professionalism, courage, and no small measure of sacrifice. Today's Army is battle-tested, proven, and hardened by years of combat in the harshest and most unforgiving conditions against a ruthless enemy.

I ask all Army leaders here with us today whenever you have a chance to please convey our gratitude to all those people who are serving for us. Our Nation is deeply grateful.

The subject of today's hearing, Army modernization, merits particular attention because of the exceptionally challenging fiscal environment and the many twists and turns taken over the last few years to reorient, rationalize, and restructure the Army's acquisition policies and programs.

Despite some of the often painful turmoil and, frankly, the heartbreaking loss of time and money, in the Army's modernization efforts over the last 15 years, the Army always finds a way to give our soldiers the equipment they need to get the job done. This doesn't mean we should not insist upon more stability and efficiency in Army modernization, but it's quite remarkable how American soldiers always accomplish the mission.

This year's hearing examines an Army modernization program complicated by the scope of recent strategic changes, the challenges of fiscal realities, and the natural uncertainty as our wars wind down and our national priorities shift.

We look forward to our witnesses' testimony to address the underlying questions of how the fiscal year 2015 budget request, linked to likely changes to this year's request when the Overseas Contingency Operations portion of the budget finally arrives, and, looking forward into the near future, keeps our Army the best in the world, ready today and tomorrow for whatever the Nation may ask it to do. We look forward to hearing:

- How Army requirements, acquisition, and modernization strategies support the Army we have today and will have out to 2019 and beyond?
- How, given the uncertainty about the availability of resources and the necessary changes to the Army's size and structure, will the Army ensure that equipment readiness, reset, and modernization programs are appropriately prioritized with tradeoffs and risks managed, while at the same time are stable, achievable, and affordable? In this regard, the witnesses can paint a picture for the subcommittee of how the Budget Control Act, the Bipartisan Budget Act, sequestration, and a pending Overseas Contingency Operations request all figure into the dangers of an unstable, unachievable, and unaffordable modernization program.
- How will the Army identify and manage the inevitable and growing strategic risk to the Army's industrial base during times of declining budgets?

The Army's fiscal year 2015 modernization objective is to maintain the technological advantage no matter where our wars are fought. The base request, however, is $1.7 billion (almost 7 percent) less than last year's request. The Army is accepting measured risk to accommodate a tightening fiscal environment and manage precarious readiness shortfalls begun and carried forward from 2 years ago. These reductions for fiscal year 2015 are compounded by modernization reductions started in prior years and likely further reductions under full sequestration.

Clearly, the readiness of today's soldiers is Army leadership's most important duty. It is not a question of "balance" at the ground level; units must be manned, trained, and equipped to support operations in Afghanistan and other unforeseen contingencies. The Nation plans for and resources the Army to be "ready" and therefore it is a strategic imperative that it should always be so.

Our witnesses today will argue that the Army remains oriented on winning today's fight and trying to prepare for an uncertain future that is complicated by the requirements to reduce spending in the Budget Control Act. All of this drives the Army to a new modernization approach. We look forward to their description of how and why the fiscal year 2015 request makes tough choices, for example, cancels the Ground Combat Vehicle program and slows or concludes several procurement or upgrade programs, yet remains an adequate and affordable approach to equipping the force for today and tomorrow at acceptable levels of risk. The Army is truly in transition during a period of declining funding, yet must continue to equip soldiers for what we ask them to do today—frankly the future, as is common in periods of declining resources, is less important. But this subcommittee's oversight responsibility is to ensure that the tradeoffs, although necessary, are reasonable, realistic, and manage risks in an appropriate manner relative to our defense strategy and the Army's needs.

We have before us a distinguished panel of soldiers and Army leaders:

General John Campbell is the Vice Chief of Staff of the Army and has the responsibility to assist the Secretary and Chief of Staff of the Army with sorting through the many needs of the Army and making the tough choices that prioritize what we are developing and producing to meet our soldiers' most important equipment needs.

Lieutenant General James Barclay is the Army's principal staff officer responsible for matching available resources to meet the Army's requirements for mission success and support soldiers by managing current force needs and future force capabilities.

Lieutenant General Michael Williamson is the Army's principal staff officer responsible for RDA. As such, he has policy and program oversight of how the Army buys new and maintains current equipment. I believe General Williamson has been in his position about 3 weeks or so and I guess that makes this a bit of a "training"

hearing for him. Although I understand that he has already testified to our counterpart House Armed Services subcommittee, therefore this perhaps is a validation exercise? Good luck.

Thank you all for your many years of service to the Nation and the Army.

Senator BLUMENTHAL. Senator Wicker.

Senator WICKER. Thank you very much. Mr. Chairman, college basketball season is over. The State of Connecticut is beaming today. I want to congratulate you on the national champions for the men's and women's programs.

Senator BLUMENTHAL. Thank you. Thank you very much.

Senator WICKER. Amazing.

Senator BLUMENTHAL. I still have my Huskies tie on. I think I may wear it as long as it holds out.

STATEMENT OF SENATOR ROGER F. WICKER

Senator WICKER. Thank you very much, and thank you to our witnesses. Thank you for your years of dedicated service.

We are here today to discuss Army modernization. Before we talk about equipping the force, I want to talk about manning the force. The fiscal year 2015 President's budget request draws down total Army end strength to 450,000 Active, 335,000 National Guard, and 195,000 Reserve by the end of fiscal year 2017. If budget caps remain unchanged, the Army will be required to cut even deeper, reducing the Active Army to 420,000, the National Guard to 315,000, and the Reserve to 185,000.

If we've learned anything about assumptions regarding national security and ground forces, it's usually that they are wrong. That is why it's important for us to get Army modernization right in the current fiscal year.

The Army's fiscal year 2015 budget request for $120.5 billion represents the fifth straight year the Army has budgeted for an amount that was lower than the previous year. Given the fact that personnel costs are 46 percent and operations and maintenance (O&M) costs are 35 percent of the Army's budget, the Army's approach to the 2015 budget is to prioritize near-term readiness. Accordingly, the Army's budget request for investment accounts, procurement, research, development, test, and evaluation is $20.1 billion or 17 percent of the Army's total budget.

In short, this means that the Army's modernization efforts will continue to be vulnerable as full sequestration reemerges in fiscal year 2016.

This subcommittee appreciates the immense planning challenges the Army faces, given the lack of budget certainty on Capitol Hill. The subcommittee also notes that the Army still does not know what its OCO funding is going to be for fiscal year 2015.

That being said, I'd like to highlight four specific issues that are of concern, with the hope that our witnesses will elaborate on them during the hearing. First, I have major reservations about the Army aviation restructure initiative's proposal to remove Apache helicopters from the National Guard. Our National Guard Apache units, located in 10 States, have performed superbly. I continue to believe that we've made significant investments in the National Guard to make the Guard a fighting force able to supplement and augment our Active-Duty Forces in times of need. Any decision to

undo these investments must be carefully considered, given the global challenges we face today in Europe and in Asia.

Second, the budget request for Army aircraft is $4.4 billion, a $432 million increase from 2014 enacted levels. This includes funding for AH–64 Apache Block 3s, remanufactured and new build CH–47 Chinooks, the utility and medical version of the Black Hawk, and the UH–72 light utility helicopter that is manufactured in my State of Mississippi.

While this is welcome news for the helicopter industrial base, I can assure you this subcommittee is concerned about sequestration's impact on multi-year procurement of the UH–70 Blackhawk and the Army's acquisition plan for an Armed Aerial Scout helicopter. While the Army plans to use Apache helicopters teamed with unmanned aircraft, I'm concerned about the long-term cost and sustainment issues associated with this proposal.

Third, with the termination of the Ground Combat Vehicle (GCV), the Army has few programs to modernize its combat and tactical wheeled vehicle fleet. With the exception of the procurement of the Joint Light Tactical Wheeled Vehicle, the Army does not have a program which provides an entirely new platform. The Paladin Integrated Management (PIM), the Armored Multi-Purpose Vehicle (AMPV), Stryker hull upgrades, Abrams tank, Bradley Fighting Vehicle upgrades, and Stryker Combat Vehicle fleets are based on existing platforms that are no longer in production. Accordingly, I am interested in learning about the Army's plans for vehicle modernization.

Finally, General Raymond T. Odierno, USA, the current Chief of Staff of the Army, has testified on numerous occasions that a fully funded Army reset program is critical to ensuring that equipment returning from overseas missions is recovered and restored for future Army requirements. The Army and Marine Corps previously testified they will require OCO funding for equipment reset for 3 years after the last piece of equipment returns from Afghanistan. The Army must face the reality that this may not be achievable in the current fiscal environment.

Gentlemen and Mr. Chairman, let me conclude by observing that our Army continues to perform with remarkable courage, professionalism, and effectiveness despite incredibly difficult circumstances. I had the opportunity to visit West Point in February. I encourage my colleagues to do so. During my visit, I had lunch with and spoke with some outstanding cadets from my home State of Mississippi. I am so proud of them. It is the solemn duty of this subcommittee to ensure that these young leaders have the resources to execute their mission in the defense of our Nation.

Thank you, Mr. Chairman.

Senator BLUMENTHAL. Thank you, Senator Wicker.

We'd be very pleased to hear any opening statements that each of you may have, beginning with General Campbell. Thank you, sir.

STATEMENT OF GEN JOHN F. CAMPBELL, USA, VICE CHIEF OF STAFF, U.S. ARMY; ACCOMPANIED BY LTG JAMES O. BARCLAY III, USA, DEPUTY CHIEF OF STAFF, G–8, U.S. ARMY; AND LTG MICHAEL E. WILLIAMSON, USA, MILITARY DEPUTY AND DIRECTOR, ARMY ACQUISITION CORPS, OFFICE OF THE ASSISTANT SECRETARY OF THE ARMY FOR ACQUISITION, LOGISTICS, AND TECHNOLOGY

General CAMPBELL. Sir, thanks. I'll make the opening statement for all three of us. We'll get through that and go to questions and answers (Q&A), as I know you want to go there, sir.

Chairman Blumenthal, Senator Wicker, thank you very much for the opportunity to discuss the modernization of your U.S. Army. We appreciate your support, your commitment to our soldiers, our Army civilians, our families, our wounded warriors, and our veterans.

I'd first like to take a moment to send our regards to our brethren in arms at Fort Hood, TX, especially to the families who have been affected by the terrible tragedy last week. There's a memorial ceremony today. So just a shout-out to all those at Fort Hood and our Army family that they're in our thoughts and prayers.

Today, your Army remains globally engaged, with more than 66,000 soldiers deployed, including nearly 32,000 still in Afghanistan, and about 85,000 forward stationed in nearly 150 different countries. The future, as you talked about, is uncertain and recent headlines highlighting Korea, Ukraine, Syria, all remind us that we must plan for the world as it is, not as we wish it to be.

Over the past 3 years, the Army has absorbed several budgetary reductions in the midst of conducting operations overseas and at the same time rebalancing the force for a wider array of missions called for by the defense strategy. During this period of fiscal and strategic uncertainty, our goal has been to maintain the proper balance between end strength, readiness, and modernization across the total Army, all three of our components.

We are reducing end strength as rapidly and as responsibly as possible, while at the same time doing our best to meet our operational requirements. Additionally, we need to concentrate funds on rebuilding our readiness. However, to do this we must accept greater risks in our modernization programs in the near-term.

As a result, RDA investments have declined 39 percent since the fiscal year 2012 budget planning cycle. Historically, the Army's RDA accounts have averaged about 21.9 percent of our obligation authority. For fiscal year 2015, the RDA account is about 17.1 percent, as Senator Wicker talked about, or $20.1 billion of obligation authority.

Regardless of the austere fiscal conditions, it remains the Army's responsibility to ensure that every soldier that is deployed is equipped to achieve his decisive overmatch. To do this, the Army has developed several initiatives that guide our equipment modernization. I'd like to outline those very quickly.

First, we are using incremental improvements to modernize our critical systems and will build new systems only by exception.

Second, we are divesting of older systems and niche capabilities to decrease sustainment costs and generate additional resources we can invest in our modernization and readiness priorities.

Third, we are resetting much of the equipment procured for Iraq and Afghanistan since that is what we will fight with in the near-term contingency. To accomplish this, we do require OCO funding for 3 years after we complete the retrograde equipment. I just point out, this is not new. I was the Executive Officer to retired General Peter J. Schoomaker, when he was the Army Chief of Staff from 2003 to 2007. In about 2004, we started saying already that we would need OCO to help us do reset. That's been a constant thing for your Army over the last 13 or 14 years here.

We are procuring smaller quantities because the Army cannot afford to equip and sustain the entire force with the most advanced equipment. We are protecting science and technology (S&T) efforts, which are the seed corn of our generation of capabilities. We are focusing S&T investments where we are technology makers and reducing S&T where we are technology takers.

These guiding principles ensure the Army will maximize every dollar towards putting the best equipment in the hands of our soldiers. First and foremost, the soldier and squad are the centerpiece of the Army equipment modernization. From this we build outward by enabling them with a network and other key equipment.

Within this year's budget request, we seek to empower and unburden the soldier through funding for advanced weapons capabilities, next-generation optics and night vision devices, and advanced body armor and individual protection equipment. We will modernize the network to improve soldiers' decisionmaking with information and connectivity to the lowest tactical level.

Our priorities include Warfighter Information Network Tactical (WIN–T) systems. This is a family of networked radios and a joint battle command platform. Investments in the network, however, are not untouched by the resource constraints, and as a result, we will have to delay portions of WIN–T Increment 3 and reduce our investments in some of our tactical radio systems.

We are committed to developing and fielding the AMPV to replace our obsolete M–113 family of vehicles and augmenting our wheeled fleet with the Joint Light Tactical Vehicle (JLTV) Family of Vehicles.

The PIM remains a significant priority and we will continue funding a third brigade set of the double-V hull (DVH) Strykers as well, while supporting incremental upgrades to existing Strykers under DVH power and mobility.

A new Infantry Fighting Vehicle (IFV) remains a key requirement for your Army. However, due to the significant fiscal constraints the Army will conclude the GCV program upon completion of the technology demonstration phase. We expect this in June of this year. Instead, the Army will now focus its efforts on refining concepts, requirements, and key technologies in support of a future IFV. This will include investment in vehicle components, subsystem prototypes, and technology demonstrators. In the distant future we anticipate initiating a new combat vehicle program informed by these efforts as resources become available.

Fiscal constraints also drove the Army to reevaluate its strategy for Army aviation. Analysis of missions, age, costs, and available funding led to an aviation plan that restructures the formations and balances operational capability across the total Army to

achieve a leaner, more efficient force that is the best use of taxpayers' dollars. You can find more detail on the aviation restructure initiative in my written testimony. To save time now, I won't say more, but can address this topic during the Q&A period.

In closing, we are adjusting to reduced resources, which means we must accept greater risk in Army modernization. The Army's ability to modernize equipment relies on sufficient, consistent funding. While the BBA of 2013 provides greater budget certainty for fiscal year 2014 and fiscal year 2015, reductions in modernization accounts continue to challenge your Army. Without Congress' intervention, sequestration-level budget caps will return in fiscal year 2016 and impose greater risk on Army equipment and modernization, leaving our soldiers less prepared in an unpredictable world.

Ultimately, the Army is about people. As we downsize, we are committed to taking care of those who have sacrificed for our Nation over the last 12-plus years of war. Assisting our transitioning veterans, our wounded warriors, and our Gold Star families will remain a top priority and we will protect programs that support their needs.

I thank you again for your steadfast and generous support of the outstanding men and women of your U.S. Army. Please accept my written testimony for the record. Lieutenant General James Barclay and Lieutenant General Michael Williamson and I look forward to your questions. I would add that Michael was just promoted to our newest three-star last Friday. So he's been on the job since Friday, sir. All three of us, if we weren't before a couple of minutes ago, are great University of Connecticut fans. It's a great day there that they can have both the men's and women's national championships. [Laughter.]

Sir, we appreciate the opportunity here and we look forward to your questions.

[The joint prepared statement of General Campbell, General Barclay, and General Williamson follows:]

JOINT PREPARED STATEMENT BY GEN JOHN F. CAMPBELL, USA, LTG JAMES O. BARCLAY III, USA, AND LTG MICHAEL E. WILLIAMSON, USA

INTRODUCTION

Chairman Blumenthal, Ranking Member Wicker, distinguished members of the Subcommittee on Airland, thank you for the opportunity to discuss the Army's fiscal year 2015 President's budget request as it pertains to Army Modernization.

The world today continues to present our Army and our Nation with dynamic and uncertain security challenges. It is imperative that the Army clearly assesses the future security environment and prioritizes investments and allocates resources accordingly. Potential adversaries will develop disruptive technologies and increasingly destructive weapons making it imperative that the Army continues to develop and field overmatching capabilities. The demand for Army units will continue to meet combatant commander requirements for the range of military operations to Prevent, Shape, and Win in support of national interests. Accordingly, the objective of Army equipment modernization is to enable our soldiers to conduct that range of military operations by developing and fielding versatile and tailorable equipment; equipment that is affordable, sustainable, and cost-effective. We want our Total Army to be ready and capable of conducting operations in any location and environment while maintaining tactical and operational overmatch with our adversaries. On behalf of our Secretary, the Honorable John McHugh, and our Chief of Staff, General Ray Odierno, we look forward to discussing with you the Army's fiscal year 2015 modernization budget that takes the next step towards meeting these future challenges.

RESOURCING ARMY MODERNIZATION

Over the past 3 years, the Army has absorbed several budgetary reductions in the midst of conducting operations overseas and rebalancing the force for a wider array of missions called for by the President's defense strategy. During this period of fiscal and strategic uncertainty, our goal has been to maintain the proper balance between end strength, readiness and modernization across the Total Army. We are reducing end strength as rapidly as possible, while still meeting our operational commitments, to concentrate remaining funds on rebuilding readiness. However, to do this we must accept greater risk in our modernization programs in the near-term. As a result, Research, Development, and Acquisition (RDA) investments planned for fiscal year 2015 have declined 39 percent since the fiscal year 2012 budget planning cycle. Historically, the Army's RDA accounts have averaged 21.9 percent of its obligation authority. For fiscal year 2015 the RDA account is 17.1 percent, or $20.1 billion, of obligation authority.

Even under these austere fiscal conditions, it is the Army's responsibility to ensure every Soldier deployed is equipped to achieve decisive overmatch regardless of the situation. To do this, the Army has developed several initiatives that guide equipment modernization during this period of fiscal constraint. First, we use incremental improvements to modernize existing critical systems as our primary option, and build new systems to address key capability gaps. Second, the Army is divesting older systems and niche capabilities to decrease sustainment costs and re-allocate those resources for modernization and readiness. Third, we are slowing procurement and limiting quantities because the Army cannot afford to equip and sustain the entire force with the most advanced equipment. Fourth, we will insert technologies and capability improvements only as needed, leveraging commercial investment where we are "technology-takers" (e.g., information technology, fixed wing aviation) and focusing our Science and Technology investments where we are "technology-makers" (e.g., lethality, armor). Finally, each equipment decision is scrutinized to ensure it is both affordable within the overall budget and is cost-effective in addressing capability gaps. The Army has established overarching equipment objectives and budget priorities to help guide this investment strategy for which I will provide you some specifics.

Equipment Objectives

Enhance the Soldier for Broad Joint Mission Support

The centerpiece of Army modernization continues to be the soldier and the squad. The Army's objective is to facilitate incremental improvements by integrating technologies and applications that empower, protect, and unburden the soldier and smaller formations. This provides the Soldier with the right equipment, at the right time, to accomplish their assigned mission. The fiscal year 2015 budget supports this priority by investing in technologies that provide the soldier and squad with advanced warfighting capabilities. We are pursuing enhanced weapons effects, next generation optics, night vision devices, advanced body armor and individual protection equipment.

Enable Mission Command

The Army's objective is to facilitate overmatch through better decisionmaking of our leaders and soldiers with real-time networked data and connectivity across the Joint Force down to the soldier as well as across platforms through commodity-like procurement and rapid innovation. The fiscal year 2015 request resources enhanced mission command capabilities and platform integration of network components through Operational Capability Sets, and software applications for the Common Operating Environment (COE), in concert with operations and intelligence network convergence efforts.

Remain Prepared for Decisive Action.

The Army's objective is to facilitate fleet capabilities to increase lethality and mobility while optimizing survivability by managing the full suite of capabilities to enable the most stressing joint warfights. This year's budget request continues to support the Armored Multi-Purpose Vehicle (AMPV), Paladin Integrated Management (PIM) program, Joint Light Tactical Vehicle (JLTV), and critical Aviation programs.

Budget Priorities

To satisfy our equipment objectives, the Army has identified several critical systems, discussed in detail below:

The Network

Warfighter Information Network-Tactical (WIN–T) is the Army's deployed mobile network, providing intranet and telephone service to command posts from Theater to Company level. It extends an Internet Protocol (IP) based satellite and line-of-sight (LOS) communications network throughout the tactical force supporting telephone, data and video. Increment 2 provides initial on-the-move capability as well as a robust LOS transmission network and greater satellite data down to company level for maneuver brigades and division headquarters. Fiscal year 2015 funding fields Increment 2 sets to 1 division headquarters, 1 Brigade Combat Team (BCT), and 11 Battalions. Increment 3 will improve throughput for LOS and beyond LOS transmissions through the development of the Highband Networking Waveform (HNW). Fiscal realities forced a delay of the Increment 3 aerial layer. Fiscal year 2015 funding will focus on the development of a common Network Operations tool and completion of the HNW.

Family of Networked Tactical Radios is the Army's future family of tactical radio systems. It provides advanced joint tactical end-to-end networking data and voice communications to dismounted troops, ground, and aircraft platforms. Formally known as the Joint Tactical Radio Systems, these multi-band/multi-mode radio capabilities leverage IP-based technologies. Fiscal year 2015 funding reduces investments in the development and limited procurement of Mid-Tier Networking Vehicular Radio systems, Manpack and Rifleman radios.

Joint Battle Command-Platform (JBC–P) is the next generation of Force XXI Battle Command Brigade and Below and Blue Force Tracking and is the foundation for achieving affordable information interoperability and superiority on current and future battlefields. JBC–P is the principal command and control/situational awareness system for the Army and Marine Corps at the brigade level and below. Fiscal year 2015 funding procures JBC–P for BCTs and brigades to include replacement of Enhanced Position Location and Reporting Systems in BCTs.

Distributed Common Ground System-Army (DCGS–A) provides integrated Intelligence, Surveillance, Reconnaissance (ISR) Processing, Exploitation, and Dissemination (PED) of airborne and ground sensor platforms providing commanders, at all levels, access to the Defense Intelligence Information Enterprise and leverages the entire ISR community. The DCGS–A program modernizes and procures components for fixed sites and data centers needed for the Army's ISR component of the COE. The DCGS–A hardware and software will be integrated into select ISR current Programs of Record systems to enable networked PED capabilities. Although fiscal challenges have caused a reduction in the number of software releases, fiscal year 2015 funding continues the development and testing effort for Increment 1 software, to include integration into the Command Post Computing Environment.

Nett Warrior is a dismounted soldier mission command system that provides unprecedented command, control, and situational awareness capabilities for dismounted leaders down to the squad level. The design leverages commercial technology, while incorporating operational unit mission needs and provides assured power in austere environments. Nett Warrior is the foundational program to converge handheld devices onto one technology—the Handheld Computing Environment in the COE. Fiscal year 2015 funding procures soldier worn communications sets for Capability Set 15 fielding.

Combat Vehicles

AMPV replaces the M113 family of vehicles at brigade and below. It will provide required protection, mobility and networking for the Army's critical enablers including mortars, medical evacuation, and command and control vehicles. The fiscal year 2015 request provides for one Engineering, Manufacturing and Development contract and program management support.

PIM provides readily available, low risk upgrades enhancing the responsiveness, force protection, survivability, and mobility of the self-propelled howitzer fleet. The PIM replaces the current M109A6 Paladin and M992A2 Field Artillery Ammunition Supply Vehicle with a more robust platform incorporating Bradley common drive train and suspension components in a newly designed hull. The fiscal year 2015 request supports procurement of 18 low-rate initial production (LRIP) systems, 18 self-propelled howitzers, and 18 ammunition carriers.

Light Tactical Vehicles

JLTV is the centerpiece of the Army's Tactical Wheeled Vehicle modernization strategy. The Army will procure 49,099 JLTVs by 2041. The JLTV family of vehicles is being designed to provide the necessary leap in protection, performance, and payload to fill the capability gap remaining between the High Mobility Multipurpose Wheeled Vehicle and the Mine Resistant Ambush Protected family of vehicles. This

multi-mission vehicle will provide protected, sustained and networked mobility for personnel and payloads across the full range of military operations. The fiscal year 2015 funding completes limited user testing and procures 176 vehicles for LRIP. The Army anticipates down-select to one vendor in fiscal year 2015.

Aviation

Aviation Restructure Initiative. Following a comprehensive review of our aviation strategy, the Army will restructure aviation formations to achieve a leaner, more efficient and capable force that balances operational capability and flexibility across the Total Army. The Army National Guard will transfer all AH–64 Apache helicopters to the active Army, where they will be teamed with Unmanned systems for Armed Reconnaissance or continue their traditional attack role. The Active Army will transfer 111 UH–60 Black Hawk helicopters to the Army National Guard, which will significantly improve its capabilities for support of civil authorities, such as disaster response. The UH–72 Lakota will replace the TH–67 helicopter fleet as the next generation glass cockpit, dual engine training helicopter. We will transfer nearly all Active Army UH–72 Lakota helicopters to our training base at Fort Rucker, Alabama. With no sequestration, the Army will procure an additional 100 UH–72 Lakotas to support the initial entry rotary wing training requirement. Also, we will sustain the current fleet of Army National Guard UH–72 helicopters, which perform dual-purpose state and homeland defense missions. The Active Army's overall helicopter fleet will decline by about 23 percent, and the Army National Guard's fleet of helicopters will decline by 8 percent. This smaller, more efficient force will facilitate Aviation readiness when needed.

AH–64E Apache is the Army's world class heavy attack helicopter for the current and future force assigned to Attack Helicopter Battalions. The AH–64E provides the capability to simultaneously conduct close combat, mobile strike, armed reconnaissance, security and vertical maneuver missions across the full spectrum of warfare, when required in day, night, obscured battlefield and adverse weather conditions. AH–64E enhancements consist of several technical insertions to include Level IV Manned-Unmanned Teaming, Cognitive Decision Aiding, improved drive system, composite rotor blades, new fuselage, and open system architecture. Apache investment is also key to the Army Aviation Restructure Initiative. AH–64 aircraft will be assigned to Armed Reconnaissance Squadrons as part of the Manned-Unmanned teaming capability that will provide a viable option and allows divestment of legacy Kiowa Warrior aircraft. The fiscal year 2015 request supports the remanufacture of 25 AH–64D aircraft to the AH–64E models, and associated modifications to the existing AH–64D fleet.

H–60 Black Hawk aircraft comprises the Army's largest helicopter fleet. The Black Hawk is a vital asset to fulfill lift and medical evacuation missions in the current and future force theater operational plans. The Black Hawk also serves a key role in the Army Aviation Restructure Initiative by supporting maneuver commanders through air assault, general support, command and control, and aero-medical evacuation missions. The Black Hawk is the mainstay of the homeland defense mission. With its day, night and adverse weather capability it is a key component of the Army National Guard's forest fire, tornado, hurricane, and earthquake relief missions. In addition to supporting the Army Aviation Restructure Initiative, the fiscal year 2015 Black Hawk funding request procures 55 UH–60M, 24 HH–60M; continues the Improved Turbine Engine program and UH–60 Digital L efforts; and purchases mission equipment packages.

OTHER MAJOR CHANGES IN FISCAL YEAR 2015

The Army has carefully prioritized our efforts to ensure we maximize every dollar toward putting the best equipment in the hands of our soldiers. The most notable change is the conclusion of the Ground Combat Vehicle (GCV) program. GCV will conclude at the end of the technology development phase, expected in June 2014, and will not continue further development. In the near-term, the Army will focus on refining concepts, requirements and key technologies in support of a future Infantry Fighting Vehicle (IFV) modernization program. This will include investment in vehicle components, subsystem prototypes and technology demonstrators to inform IFV requirements and future strategies for developing a needed replacement for the Bradley IFV. Over the long-term, the Army anticipates initiating a new IFV modernization program informed by these efforts as resources become available.

The Army will also re-scope Network Integration Evaluation (NIE). NIE continues to provide the mechanism to evaluate and incrementally improve the network baseline, incorporating critical Soldier feedback into system functionality and training methods. The reduction in funding for these biannual events will extend some timelines for Programs of Record or divert their tests to alternative events. In addi-

tion, accepting risk in this program will reduce opportunities to evaluate new technologies in an operational network.

In addition, the Army will accept risk in the Integrated Air and Missile Defense-Battle Command System (IBCS). IBCS is a network centric system-of-systems that integrates sensors, shooters, and battle management, command, control, communications and intelligence systems for Army air and missile defense. The program decrements will cause a 2-year delay in fielding the initial operational capability, from fiscal year 2016 to fiscal year 2018.

The fiscal year 2015 request will also reflect a significant acceleration of funding for Patriot Advanced Capability, or PAC–3, launcher upgrades for combatant commanders in fiscal year 2016 and fiscal year 2017. Additionally, we will also continue to fund a third brigade's set of Double V-Hull (DVH) Stryker vehicles, while supporting an incremental upgrade to DVH Strykers for power and mobility improvements.

Finally, the Army will not pursue the Armed Aerial Scout and will halt the Cockpit and Sensor Upgrade Program for the Kiowa Warrior. We will divest almost 900 legacy helicopters including the entire single engine OH–58D Kiowa Warrior and TH–67 helicopter training fleets. Instead, the Army will fund modernization and sustainment of our most capable and survivable combat-proven aircraft: the AH–64 Apache, UH–60 Black Hawk, and CH–47 Chinook helicopters.

DEFENSE INDUSTRIAL BASE

As lower funding levels for the Army continue, we are concerned about the health of the Army's commercial and organic industrial bases and the subsequent consequences for the Army and our Nation. Shrinking demands and corresponding budgets for new combat platforms and smaller production rates lead to higher proportional costs. A smaller commercial industrial base may reflect a workforce with reduced expertise in design, development, and manufacturing. Diminished capacity in this industrial base may decrease competitiveness and increase response time to future requirements. The likely loss of critical skill sets and suppliers at all tiers, and an increase in the number of single-points failure in the supply chain is of particular concern to the Army.

The Army continues to assess the commercial industrial base to provide leadership with evaluations of current operations, risks, and issues in the Army Industrial Base. We intend to address critical impacts through planning for ongoing and future modernization efforts within our equipment portfolios.

The Army has also conducted a comprehensive Combat Vehicle Portfolio Industrial Base Study through A.T. Kearney, a global management consulting firm. In response to the findings of these assessments, the Army has:

- Initiated Engineering Change Proposals, to upgrade fielded vehicles, earlier to help fill production gaps at Joint Manufacturing Center for the Abrams vehicle;
- Slowed production deliveries of the Abrams vehicle to distribute workload and prevent workforce furloughs;
- Provided production funding to second-tier suppliers to mitigate critical production breaks;
- Developed second source suppliers for financially fragile suppliers for Abrams and Bradley vehicles; and
- Continued advocacy for Foreign Military Sales (FMS) with defense industry.

We are equally concerned about the health of the organic industrial base containing our depots, arsenals, and ammunition plants. The Army is preserving needed capabilities by modernizing facilities through new technology, training, and plant equipment. We will maintain our depots by workloading them to preserve their core functions and capabilities and encouraging depots to partner with commercial firms to meet future requirements. The Army also advocates FMS, extended production in certain programs, and investment in key suppliers on a case-by-case basis. In terms of monitoring the health and management of the community, the Army has initiated Joint Acquisition and Sustainment Reviews to synchronize efforts to address issues faced by our Program Executive Offices and our depots and arsenals. These periodic reviews led by the Army Materiel Command and Army Acquisition Executive help effectively manage challenges across the materiel enterprise.

CLOSING COMMENTS

Our Total Army remains the best in the world today. It has unique capabilities to provide regionally aligned, expeditionary, and decisive land power, but its capacity and capability overmatch is eroding. Adequate resources are essential to meet

the President's defense strategy and defense budget priorities. Ultimately, the ability to modernize Army equipment relies on sufficient, consistent funding. While the Bipartisan Budget Act of 2013 provides greater budget certainty for fiscal year 2014 and fiscal year 2015, reductions in RDA continue to challenge the Army's ability to deliver capabilities to our soldiers now and in the future. Without Congress' intervention, Sequestration level budget caps will return in fiscal year 2016 and impose additional risk on Army equipment modernization. Those risks include fewer mitigation options, aging fleets, eroding overmatch, higher sustainment costs, longer timelines to re-generate and higher costs, leaving our soldiers less prepared for future conflicts.

Mr. Chairman, members of the subcommittee, I 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 BLUMENTHAL. Thank you very much, General Campbell. The question is not how long you've been UConn fans, but how long you will be UConn fans. But I do appreciate even your fleeting support. [Laughter.]

I would agree with you that the greatest resource that the Army or any of our Military Services has is its people. It is, as you've said very powerfully, all about people. As we grow leaner and more efficient, as you have also said, the risk is a hollowing out, as it's often called, of our military, particularly in attracting and recruiting and training the most able men and women in any military force in the history of the world, which we have right now.

My first question is, how do we avoid that hollowing out or, more precisely, what will be the danger signs, do you think, to you? What will be the alarm bells of a hollowing out, both in terms of modernization of equipment and in the recruitment of personnel?

General CAMPBELL. Sir, thanks. I'll start off, then turn to my colleagues here if they want to add.

But, sir, great question. The best thing that we can do is get rid of the uncertainty. The biggest frustration for the Chief, for the Secretary, for, I think, all the Services, is the uncertainty on the budget. What we don't want to do is make decisions today that we would make differently down the road if we knew what 2016, 2017, and 2018, and where we were going to go.

2014 and 2015, as we talked about, with your leadership, we do appreciate the BBA and what that will bring for us. But as you know, 2013 was a very bad year. We're going to dig ourselves out of 2013 and part of 2014. We really do have to focus on the short-term readiness. That's what we will do.

In 2015 for us, we actually come down a little bit based on where the money will be spread out in 2015. Then in 2016, again we drop off the map with sequestration, or the risk, as General Odierno has talked about, goes much higher and we would not be able to accomplish, we really believe, what is required of the Defense Strategic Guidance (DSG).

Really, the signs, though, are about balance. You talked about that, sir. You put your trust and confidence in our senior leadership, our Secretary, our Chief, under their title 10 responsibilities to make sure that we do keep all of our components balanced. So there are some very tough decisions that we have to make.

A very tough one: We're all about people, but we have to cut people. That's where we get that money to be able to put back toward everything else. What we want to be able to do is cut them at the right ramp and have the right personnel policies in place so that

we can take care of these great soldiers and these families that have sacrificed so much over the last 12 to 13 years.

We felt very comfortable prior to sequestration we can do that. We made a very tough decision. We were going down to 490,000 by 2017 and the Chief and the Secretary took a look at that, the impact that it had on readiness, the impact that would drive us more out of balance, and moved that decision to fiscal year 2015 to come down to 490,000. So these boards we're having, that will take out some lieutenant colonels and colonels, will select some majors and captains that have to leave the Service involuntarily, that's to get us to 490,000. We have to go back now and really look at what it does to us to go from 490,000 to 450,000.

The same thing with equipment modernization. Those decisions were based on an Army of 490,000. We're going back now to apply all of that to an Army of 450,000 for the Active, 335,000 for the Guard, as you talked about, and 195,000 for the Reserve.

Some of the signs that we'll see is that we'll lose that trust and confidence in our soldiers, in the families. We could go to 490,000 by almost natural attrition for the most part. There are going to be some very small involuntary separations. 490,000 to 450,000, the sign there is we're going to have to move more of those out early, and we'll just erode that trust. We have to do that and keep everything in balance.

That's why the Chief and the Secretary look across all the components and they can't make a decision that looks just at the Reserve, looks at just the National Guard, or looks at just the Active Duty. They take that horizontal cut across all. We've run models, simulations, have really looked at this very hard. As you talked about upfront, we can plan, but with the uncertainty that we have on the budget, that will really be the sign that hurts us as we move forward.

I'll defer to Jim or to Mike if they want to add to that.

General BARCLAY. Sir, as General Campbell has said, again is we try to balance. There's three categories, so you can look at different signs in those. The readiness aspect of it, you'll start to see some of those readiness indicators that your Army is not as ready as you're moving forward and taking some of the actions you have to take.

Second is on the manning aspect of it. There are some key indicators you start looking at: your reenlistment rates, the propensity for young Americans to come into an Army that is struggling, that doesn't have the money to train soldiers that come in, or to equip soldiers that come in properly. So you'll start to see some of those. Those are some indicators that you might see.

Then on the modernization side, we're already seeing it: the slowing down of programs, major procurement programs, and the termination of some of those programs, for example the GCV. Those are some of the key things that you start looking at across the three legs as you're trying to maintain an Army that's in balance.

Senator BLUMENTHAL. Yes, sir, General Williamson?

General WILLIAMSON. Sir, I'd just like to add a couple of very specific areas in terms of acquisition. One of the things that worry me most as you look out across some of these indicators are things

like our contracting officers, our engineers. We're in a situation now where it's almost a split distribution. We have some older professional contracting folks and we have the younger. The challenge that we have is that as the older workforce chooses to retire, because we have younger individuals who are concerned about the budget, about the likelihood of them having positions, we may not have the opportunity to continue to bring in talent and keep that talent so that we have the ability to negotiate contracts, to work through changes in the environment. So we start to see that in terms of personnel.

On equipment, I think I would add that I grew up in times where there were significant budget pressures, where we invested more on repair parts and sustainment. It's not unlike you and I keeping our 1976 or 1977 car. It's a wonderful thing; it did great for us; but now I'm pouring more money into keeping that sustained and I'm falling behind in terms of the technological advances and the economic efficiencies that we get from new platforms.

Senator BLUMENTHAL. Thank you.

I have more questions, but I'm going to defer to Senator Wicker, and then I'll come back with additional questions.

Senator WICKER. General Campbell, it's not desirable to go to 450,000 by 2017, but we can do it; is that your testimony?

General CAMPBELL. Yes, sir. The only way that we can get back and meet the money that we will be given is take it out of people. We have to drop our end strength across the total force. The Chief and our Secretary have been very consistent about how we should do that: disproportionately with the Active Force because we grew the Active over the last 12 years for Iraq and Afghanistan; and then take some from our Guard and from our Reserve.

We want to do that and make sure that we take care of those soldiers, that we do everything we can to help them transition either from the Active to the Guard or the Reserve or back out into civilian society. We have programs that will help us do that.

But yes, sir, bottom line, we'll go to 490,000 by 2015 and we're working hard to get to 450,000 by 2017. But that's going to mean we're going to have to take out more involuntary separations as we go forward.

Senator WICKER. That, according to General Williamson, is going to cause recruiting problems when people thinking of making the Army a career are looking at that going in. Also, I believe you testified it is not good for the trust factor; is that correct?

General CAMPBELL. Sir, absolutely. As General Barclay said as well, we're going to go down lower on end strength. What American society will hear is: The Army continues to go down, they're not going to have modern equipment, they're not going to have money to train.

We've been working for 40-plus years on an All-Volunteer Force. I don't see us going away from an All-Volunteer Force, but to keep an All-Volunteer Force you have to make sure that you provide them the best resources that our Nation can afford. I believe our Nation can do anything it wants to do. We have to put our mind to it and we have to make sure we prioritize correctly.

Sir, only a couple of years ago, probably 33 percent of the American people could even join any of our branches of Military Service based on medical issues, obesity, on and on. Today, that's about 22.5 percent. The population that we would draw from continues to decrease. The propensity to serve——

Senator WICKER. 22.5 percent of age-eligible Americans?

General CAMPBELL. Yes, sir, are even eligible to come into any branch of Service, based on the requirements to get in, whether it's a medical issue, a criminal record, obesity, those types of things. Only about 22.5 percent.

Senator WICKER. In terms of American security, do you feel comfortable at 450,000 by fiscal year 2017?

General CAMPBELL. Sir, I think, again, both our Chief and our Secretary and I have testified before that at 490,000 we deal in terms of risk, risk to mission, risk to force. We have to mitigate that and offset as we continue to come down. People is where we have our money invested, as you talked about, 46 percent. So the only way to get down to the levels that Congress wants us to get to based on the budget is to take it out in people.

At 490,000, there is some risk to completing the DSG from where we were at 570,000 just a couple years ago. At 450,000 that risk is significant. Below 450,000, what all the senior leadership of your Army has testified is that we will not be able to meet the DSG below 450,000. But at 450,000, it is significant risk.

Senator WICKER. Was my statement correct at the beginning of this hearing, that if budget caps remain unchanged, we'll be down to 420,000 Active, 315,000 in the Guard, and 185,000 in the Reserve? Were those figures correct?

General CAMPBELL. Sir, those figures are correct.

Senator WICKER. I'm relieved to know they were correct, although they're disturbing. Now what are we going to have to do without if that doesn't change, sir?

General CAMPBELL. We'll go back and take a look at what we would lose between the 450,000 and 420,000 numbers. Of course, 30,000, but what you would expect us to do is where we take that 30,000 out on the Active side. Do we take it out of brigade combat teams? Do we take it out of enablers? Again, there's a mix that the Chief and the Secretary provides them some different courses of action, how we have to get to that.

There's a certain amount of your Army that we just can't go below. The institutional force that drives the training, that drives the day-to-day things that makes your Army run, is about 92,000. We need that 92,000. Whether you're at 420,000, you're at 450,000, you have to keep that 92,000 just to keep your Army going.

We'll take a hard look. We've come down in 2010 from 45 brigade combat teams and we're going to 32 brigade combat teams on the Active side. Now brigade combat teams only make up 30 percent of your Army, but they're the pacing item. You think of the Navy, you look at carriers. You think of the Air Force, you think about fighter squadrons. For the Army, it's brigade combat teams. Again, only 30 percent.

But we're going from 45 to 32, and the 32 number is for 490,000. Below 490,000, we'll probably have to cut back in the brigade combat teams. We're continuing to take a look at that analysis to see

where that will take us, and it's probably somewhere in the neighborhood of potentially four, but we have some more analysis to do.

I'll defer to Jim or Mike if they want to add.

Senator WICKER. Thank you, Mr. Chairman. I do think you and I will take a second round.

Senator BLUMENTHAL. Thank you, Senator Wicker.

I'm going to now turn to Senator Donnelly, with condolences on a great performance by a great team, but just a little short last night.

Senator DONNELLY. Thank you, Mr. Chairman. We give you last night. We will be back.

Senator Wicker, yesterday you were giving condolences from the Southeastern Conference (SEC)—or congratulations from the SEC. Today, I give them from the Atlantic Coast Conference (ACC), so you're collecting a lot these days.

To all of you, thank you so much for being here. When it went from 33 percent to 22.5 percent, what were the biggest changes that caused even fewer Americans to qualify?

General CAMPBELL. Sir, I'm not the expert there, but I would tell you a lot of it had to do with obesity. Obesity is a big factor in the world today in our high school children. That medical piece of it has caused a great deal not to be eligible to come into any of your Services.

Senator DONNELLY. Okay. We were talking yesterday afternoon, a few of us, about the numbers projections in the years ahead and sequestration, and were wondering if it was the exact same amount at the end of the day, but some of it was pulled forward. So instead of no increase now that you had approximately a 1.6 percent, 1.7 percent increase, glide path for the next 7, 8 years, would that combined with flexibility make it easier for you to be in a position where the numbers in the earlier years are a little bit higher and at the very back end are a little bit lower?

General CAMPBELL. Are you talking about budget?

Senator DONNELLY. I'm talking about budget. I apologize, yes.

General CAMPBELL. Sir, the number one thing I said up front was that any amount of certainty we get will help us plan. If we have more flexibility now, it will give us more time to make some of the tougher decisions and put some procedures in place. I think yes, but again, certainty is what we really need to get at. We'll take a look at that and we'll have to come back and lay it out in terms of the risk again, as I talked about before.

I don't know if you want to add to that, Jim.

General BARCLAY. Sir, I think 2015, 2014 to 2015, of course, with the BBA that changed the numbers. Then if you look at 2016 going into the BCA, your numbers are a little bit different. I know Senator Sessions has talked about the inflation rate of about 2.2 percent or 3 percent, as you're talking about. You're looking at the 2017, 2018, and 2019. Now that growth just keeps us en route from the Army's perspective of flat-lined.

The other side of that is the fact that that's always ensuring that the Army gets that percentage share of the overall Department of Defense (DOD) budget. Senator Sessions, in a couple of the last testimonies, talked about 496,000, going to 497,000, 498,000, the numbers. But again, at the end of the day, it's how much of a share

do we get. Typically, we're somewhere between about the 26 percent or 27 percent. I will tell you that, depending on where we fall in the fiscal guidance, it comes out sometimes we don't necessarily get that 26 percent or 27 percent, as DOD starts moving, looking across all the Services to set their priorities.

So again, it's a complex environment you're trying to work with.

Senator DONNELLY. Let me ask you about one of the pieces of equipment that's going to be moving along here in the very near future. That is the JLTV. One of the companies, obviously AM General LLC, is from my home State. But what I'm trying to find out is when do you expect to make a final determination on who will produce the JLTV? I know we're down to three right now.

General WILLIAMSON. Sir, the intent is in 2015. One of the things I like about this procurement is that they've done a lot of work, they understand the requirements, they're well-defined, the technology is mature. So really what we're doing now is working our way through the evaluations, the test criteria, to get down to that down select. I think we are on track for a 2015.

Senator DONNELLY. What is your highest priority criteria in making that selection?

General WILLIAMSON. Our criteria?

Senator DONNELLY. What are some of the critical elements that you're looking at in terms of making the selection?

General WILLIAMSON. I think there's a few that would obviously jump out, Senator. Obviously, it's the mobility, the survivability. But I'd also have to put a lot of emphasis on the cost and the sustainability. One of the things that we're looking for is how do we maintain a fleet of 49,000, if you include the Marine Corps 54,000 initial platforms? How do we sustain that over time at a cost that gives us all of those things we talked about, the survivability, the mobility, but also is cost-effective for us to operate?

Senator DONNELLY. Okay. When we look at our Mine-Resistant Ambush Protected (MRAP) vehicles that are coming back, when we transfer something like an MRAP through the Excess Defense Articles (EDA) program, do you see any benefits to working with partners in the Department of State (DOS), the Department of Commerce, and industry to foster refurbishment or sustainment opportunities to ensure these vehicles perform well for our allies?

They have been, they earned their keep and then some out in the theater. I was wondering how you feel about that? I know we're looking at keeping maybe 8,500 of them, the most capable, the best ones, but for the other ones.

General WILLIAMSON. Absolutely, sir. Having just returned from theater, I've engaged with not only a number of Foreign Military Sales (FMS) cases, but a number of our allies in terms of their desire to receive these platforms. Obviously, our goal would be to give them something that's operational. There are costs associated with that in terms of FMS cases.

Partnering with both our partners here in the United States and then with our allied nations to deliver that absolutely makes sense.

General CAMPBELL. Sir, if I could just add to that. There's a difference here. FMS is one way, but when you declare something as EDAs, what that means is we cannot put any more money toward it. If you take an MRAP in Afghanistan and say this is EDA, then

we move it over to the side and we make sure we advertise and all these countries can understand that we have this available. But we can't do anything to it.

Senator DONNELLY. You're done with it?

General CAMPBELL. We're done with it. We can't touch it. We can't spend money to transport it. They have to come to Afghanistan to get it.

Senator DONNELLY. They have to figure out how to get it out of there, too.

General CAMPBELL. Right, the third countries that want to come to Afghanistan to get an EDA-type vehicle. We're working very hard with DOS and with the Office of the Secretary of Defense (OSD) to make sure we have the right policies in place, to make sure we do the right things to help out our coalition forces to gain this equipment that for us is not economically feasible to bring that back to us, or we're only keeping a certain amount. But there are some policy things there.

General BARCLAY. We can give you some numbers. Really, of about the almost 22,000 that we've bought, 8,500 sounds like a small number, but that's just for certain portions. There's another 1,800 to 2,000 that we're repurposing. We're a little over 11,500 that the Active Army's going to use. We've also had about 2,000 of those that are coded out battle losses or unrepairable.

As you total all those numbers up, it accounts for about 16,300 or 16,400 that are accounted for. Then we have about 5,000 that move into that EDA-type category or FMS or other government. There's about 5,000 there to play with depending on how they fall.

Senator DONNELLY. I would just like to finish up by saying—and I've mentioned this before—I heard once or twice folks say: Wow, how could you spend so much on MRAPs? My answer is: How could we not? That somewhere in our country there's a young man or woman who is back home safe and sound because of those vehicles. For every one that is unrepairable because it got banged up, we are grateful to that vehicle for what it did.

With that, sir, Mr. Chairman, thank you.

Senator BLUMENTHAL. Thanks very much, Senator.

Senator Sessions.

Senator SESSIONS. Thank you, Mr. Chairman.

General Campbell, maybe we ought to change the EDA rules if they're not allowing you to use common sense to get the best effect for the taxpayers and for the military. Maybe we ought to say you can't do anything to them might not be the smartest thing. General, that's probably correct, it may not always be so.

Senator SESSIONS. General Campbell?

General CAMPBELL. We are working with OSD and we're working with DOS to make sure we do everything we can to provide coalition partners with equipment. Again, as General Barclay talked about, there's FMS, where a country will come and just buy that, and put certain specifications on what they want on the vehicle or not want on the vehicle, or any other type of equipment. That's worked very closely with OSD and DOS.

But EDA is a whole other category. Again, once you declare it EDA, you can't put any money toward it. We're working that very hard with OSD and making sure that we can reduce that number.

We potentially could get it some place that might be easier. There was a big push in January and February to move many of the vehicles to Kuwait. In Iraq we were able to drive everything to Kuwait that we were going to get out. We don't have that catcher's mitt in Afghanistan. We're dependent upon multi-modal, we're dependent upon if the Ground Lines of Communications are going to open up through Pakistan, if we're going to go up through the Northern Distribution Network, or we're going to pay a lot of money to put it on an aircraft to fly it back.

We work all of those and balance that, and I think we have the best and the brightest over in Afghanistan and they continue to work that for us.

But again, if we declare it EDA then we can't put Army money towards that. That is not an Army policy; that is, I believe, by law, by statute. Any relaxation or adjustments to that would have to come from Congress.

Senator SESSIONS. Just briefly, what's the status of the Russian helicopter purchase for Afghanistan that was discussed, briefly?

General CAMPBELL. I'll let General Williamson talk to that. I know he's been working that very hard on the Mi–17s. The only thing I would say is that my discussions with General Joseph F. Dunford, Jr., Commander of the International Security Assistance Force and U.S. Forces Afghanistan, over there, this is a huge priority for him, to make sure that he can provide the Afghans with their aviation capability. People say, why do you have to do that, or why do you use this——

Senator SESSIONS. I know the argument on it. I don't agree.

General CAMPBELL. I'll let Mike talk about the specifics on where we are, then.

Senator SESSIONS. Where are we on that?

General WILLIAMSON. Sir, that procurement action had already started. They had taken delivery of six of those aircraft. As late as this month, they've taken another three. There are still another 20, 23 left to be delivered. We're still on path to——

Senator SESSIONS. So it's still ongoing as planned?

General WILLIAMSON. It is. Sir, let me just clarify, though, that part of that was because we have provided the funding for the next increment of aircraft, and so it was still on path. It was held up briefly so that we could understand the environment. But those funds have already been provided.

Senator SESSIONS. If the Russians invade Kiev are we going to still buy it?

General WILLIAMSON. Sir——

Senator SESSIONS. You don't need to answer. That's, I guess, above your pay grade, and mine too maybe. Maybe it's not above ours. We're supposed to be responsible. I'm concerned about that.

General Campbell, you mentioned that we have 92,000 that you need to keep the Army going strong. I would just say that there's no business in the world that's competitive that isn't reducing and being more efficient. If you draw down the personnel 100,000 troops, we ought to be able to draw down the number of people that support, the core staff that are not the point of the spear.

I know you have to have a substantial effective group there, but that has to be challenged also.

General CAMPBELL. Sir, we are. I did say that, but I would tell you there is a bottom line that we have to keep. You need someone to keep the lights on, somebody to do X. But we are looking at it to make sure we're doing everything most efficiently. The Secretary of Defense announced a 20 percent cut in all the two-star and above headquarters. Our Secretary and Chief are going to a 25 percent cut, so we're looking hard at headquarters to get rid of a lot of that tail.

But on the institutional side, whether you have 490,000 or whether you have 450,000, there's a certain amount you need to train, provide medical care to recruit, on and on. If I said we're not downsizing at all, I was wrong. We are downsizing. But we will come to a point where we have a bare minimum that we have to keep.

Senator SESSIONS. We had 220,000 civilians on September 11, 2001. That surged to 284,000 in 2011. We're taking troop levels down to a point below what we had in 2001. In 2001 we had 481,000 military uniformed personnel. I don't see why the civilian personnel can't be reduced in the Army alone by the 60,000 that were added during that time.

General CAMPBELL. Sir, we are reducing our civilians at a proportional rate. I think that rate's about 14 percent. Today, we're about 240,000, so we've come down about 20,000 here in the last year or so. We'll continue to work that. Our Department of the Army civilians will continue to come down.

Senator SESSIONS. I just think it may be a little more difficult to terminate a civilian than a uniformed personnel. Is that correct?

General CAMPBELL. Sir, there are policies that we have to follow, yes. It is more difficult.

Senator SESSIONS. You can tell a soldier goodbye, basically. Not always.

General CAMPBELL. No, sir, we do more than that.

Senator SESSIONS. I know you do. But I mean, you have more control over the uniformed soldier.

General CAMPBELL. Sir, we do.

Senator SESSIONS. I hope that that doesn't become an impediment and that we end up taking down uniformed soldiers more than we take down the civilians. I think it ought to be at least proportional, and, in fact, I remember former Secretary of Defense Donald H. Rumsfeld had some heartburn, but his firm view and goal when he took office was to get more people at the point of the spear and less back in the headquarters. I think that was a movement in the right direction and we have to keep that in mind as we go forward.

I am worried that the Army is going to be hammered more than other Services. You're drawing down a lot more in personnel than the other Services. You were surged upward to deal with the crisis that you faced. I think the Army did a fabulous job. People were deployed for long periods of time. They served heroically. We know we're going to have a drawdown, but it needs to be done in a way that the Army isn't taking more than its share of the reductions than other Services.

I don't know at this point where the right place to draw that line is, but I am concerned about it and all of us in Congress are going to have to give it their attention.

Thank you for your service. I thank you for all the work you've done for this country.

Senator BLUMENTHAL. Thank you, Senator Sessions. Thank you for raising the issue of the Russian helicopters. I was going to raise it, but I wanted to begin on a more global issue first.

What I'm about to say and ask I hope will not be taken personally, because I recognize that you're not the decisionmakers in this issue. But I think I want to just express to you as strongly and respectfully as possible the strong sense of outrage, I think, is the word that best characterizes my feeling, and, I think, it's a feeling of bipartisan outrage because Senator Cornyn and I and others on this committee have raised this issue repeatedly. I think it is brought into the starkest and most staggering profile by the Russians in effect thumbing their nose at us in Ukraine and our continuing to purchase these helicopters from Rosoboronexport, the Russian arms agency, that at the same time is selling arms to President Assad in Syria and bankrolling the troops that are on the border of Ukraine, having seized Crimea and now threatening the rest of that country.

I have enormous respect for General Dunford. I have met him. I can't say that he's a personal friend, but he is one of our finest military leaders, one of our finest national leaders. I have great admiration for the work that he's doing right now in Afghanistan under the most challenging of circumstances. I respect his view that the Afghanistan army is accustomed to using those Russian helicopters. They know how to fly them. They're much less sophisticated. They are, as was once said to me, the equivalent of flying refrigerators, and they are much easier to maintain.

But our helicopters are better, and eventually if the Afghans are really going to defend their country, they're going to have to use the best military equipment. Moreover, for U.S. taxpayers to be funding those helicopters and to buy them from the Russians, I think, is just absolutely unacceptable.

Senator SESSIONS. Mr. Chairman?

Senator BLUMENTHAL. Senator Sessions, of course.

Senator SESSIONS. Could I just add that when we were there maybe a year ago and this was being discussed, I pressed the issue and found out there's not that many Afghans that have been trained on these helicopters, very few, in fact. They have had some training on them, but not a lot, very few.

Senator BLUMENTHAL. Absolutely correct, Senator. My understanding is they don't have enough pilots right now to fly them. They don't have enough mechanics to maintain them. The latest report, done by the Government Accountability Office, I think sheds very serious doubts on the whole program going back some years. I hope there will be bipartisan support for a letter that I have drafted to be sent to Secretary of State Kerry asking that we cease all purchases of military equipment from Russia across the board.

Let me ask you, General Williamson, if Congress were today or tomorrow to instruct our DOD to cease all delivery—I recognize

that there has been perhaps some payment—what would be the loss in dollar terms to the United States?

General WILLIAMSON. Sir, I'd have to go back and check the specific number. But I believe it would be upwards of about $100 million.

[The information referred to follows:]

The total contract option value for the purchase of 30 Mi-17 aircraft from the Russian joint stock company Rosoboronexport is $552.2 million. The contract option was for the procurement and delivery of 30 Mi-17 aircraft for the Afghan Special Mission Wing along with initial spares and engineering and warranty services. Nine of 30 aircraft have been delivered and $353.4 million has been paid to date, leaving $198.8 million undisbursed.

Senator BLUMENTHAL. $100 million already paid, or is that in costs or fees in connection with breaking a contract?

General WILLIAMSON. I think it's a combination of all of those.

Senator BLUMENTHAL. I'd like to know more precisely, because in my view, if it's simply penalties for breaking contracts, let the Russians try to collect from us.

General WILLIAMSON. I understand, sir.

Senator BLUMENTHAL. As much detail as you can provide. I recognize you didn't come prepared today to answer these detailed questions and I don't want to be unfair to you or any of the others, any of your colleagues who are here with you today. But this is serious business and I think as you've sensed at this table it's a bipartisan feeling. I intend to continue to raise it. I appreciate your cooperation.

I want to ask a few other questions about helicopters. Fiscal year 2015 is the fourth year of a 5-year multi-year procurement contract for the UH–60M Black Hawk helicopter. It's the eighth time that the Army has entered into this multi-year procurement to buy Black Hawks, a very successful program I'm proud to say, supported by Sikorsky, which happens to be in the State of Connecticut. We're very proud of the work done with those Black Hawks. I put them in the same category as Senator Donnelly did the MRAPs in saving lives and providing service.

There are indications now that the Navy is going to back out of its share of the fiscal year 2016 part of that contract due to force structure changes. So my question is: Is there a plan for avoiding breaking the UH–60 multi-year procurement, and what is the potential impact of the reduction, which I understand is in the range of 39 Black Hawks in fiscal year 2016?

General BARCLAY. Sir, you're absolutely correct. Last year the issue arose as the Navy's changing its force structure, that they were going to back out of the Black Hawk program. They were directed to put money in in 2014, so that will come back up again as we look to get the last year of the multi-year plan.

But as Senator Wicker noted, we are starting to put more money—as we are doing the Aviation Restructure Initiative (ARI), we're also changing our quantities and the rate that we're buying and we're putting—we added some money into the Black Hawk line to move some of those up to try to help as we fielded the Black Hawks across all three components, as we move airframes around between the three components.

But as we're going in now building this program—and it'll come up again this fall, I'm sure—I have not been able to see what the Navy's final plans are. We won't really get that until the late summer, going into fall, in the fall review to determine how many they think they will end up procuring. Then that will drive us then to the decisions we'll have to make to keep the multi-year program.

Multi-year programs are great, not only for the Services; they're also great for the American taxpayers as we save a large amount. It also gives us some certainty as we move forward to drive those programs, which allows us then to do a better job of modernizing our equipment. So to us, it's a critical aspect and we're very concerned that we continue with the multi-year program with the UH–60s.

Senator BLUMENTHAL. What about the loss of the 39 helicopters? Will that break apart the multi-year procurement?

General BARCLAY. Sir, I think Michael can—I don't know the exact numbers. We were trying to look. Waiting on what the Navy says, because originally it was up around 58 that they were not going to buy. We have traded some trade space in us buying some more moving forward. As they look at changing based on the BBA and how that timeline moves, that gave a little bit more dollars. They have slowed their force structure, but again, we won't see that until we go in for the fall review from the Navy. That number could be 39, it could be less. Then we'll have to make that determination.

Senator BLUMENTHAL. General Williamson?

General WILLIAMSON. Sir, the only thing I would add is that we are looking at those numbers, but as you know the value for the multi-year for us is that it gives some planning for industry, which allows us to normalize the flow on that line. Understanding whether it's 39—I've heard as low as 25—allows us to go and figure out how those costs have to be distributed and what the workload is. Once we have more definition on that, we'll be able to talk about the impacts.

General CAMPBELL. Sir, a key point, though, on what General Barclay said that I just want to highlight, is that the Army's ARI helps this problem. It doesn't get rid of it, as you talked about, but it helps that problem as we've restructured.

Senator BLUMENTHAL. Thank you. Thanks, General.

I'm going to turn again to Senator Wicker. I'll have some additional questions.

Senator WICKER. General Campbell and General Barclay, with regard to Army ARI. The Army states it has taken an integrated total Army approach to reducing the cost of aviation while preserving modern capabilities and meeting the national security demands of combatant commanders and the civil support missions for the governors.

The Army also asserts that they included the Reserve component throughout the process.

Walk us through—and we can begin with General Campbell—the rationale for the ARI, including the savings, and how involved was the Reserve component and how involved was the Guard in this process?

General CAMPBELL. Sir, thanks for the question. The bottom line is funding constraints drove the Army to reevaluate Army aviation. Today we have the very best aviation in the world, and what we want to be able to do is continue to have the very best aviation in the world. But based on the budget, we couldn't do that. If we just went status quo or if we just took cuts out of our combat aviation brigades, continued to have seven platforms, didn't divest of the old aircraft, kept that, we would not have the best aviation.

You would expect us to be bold and to figure out how we could do that, and I really do believe that the aviation restructure has done that. I'll let Jim talk more on the details here in a second that goes into that, as he's worked that very closely.

I will talk to you about how we discussed this with all components. I've personally been involved with the aviation restructure probably since last summer, at least last summer, maybe even before that. But I know that since last summer we've had National Guard, we've had U.S. Army Reserve and Active components together talking about this, maybe not every day, but several times a week, at colonel level, at one-star level, at two-star level. I've personally been in several sessions that all of The Adjutants General (TAG) from all the States where we talked about it. I've personally talked to General Frank J. Grass, ARNG, the Chief of the National Guard Bureau, and I can't even count the number of times we've talked about aviation restructure since last summer.

Our plan for aviation restructure is actually better today because of the input that we have from our National Guard aviators and the folks that were on the planning teams that helped us work through this.

Senator WICKER. Is it fair to say TAGs are not overly delighted?

General CAMPBELL. Probably the 9 or 10 that have Apaches are not overdelighted, sir. I would tell you many TAGs have come forward and said: "Hey, I don't use an Apache in my State; why do I need an Apache for my State? I need more lift," and this ARI does that.

But I think you're right. I think they've come back and said, for a lot of different reasons—this is very emotional, as the Chief talked about yesterday. We have to take the emotion out of it and do what's best for our Nation. I really do believe that the ARI does that, and we get rid of three old airframes. We divest that. We go down to four.

It started out years ago where we were looking for a new reconnaissance platform, we need an Armed Aerial Scout, there is not one out there that will meet the requirements that we have. The Apache, when you add the Shadow and the manned and unmanned teaming, has proved to be the very best. So we're going to move that and make that the reconnaissance platform until we can afford an Armed Aerial Scout.

The light utility helicopters (LUH), sir, we need to change how we train our aviators. We need to get them into a more modern aircraft. The training helicopter we have at Fort Rucker will not do that for our future. The LUH, we have it. We already have the requirement. With your help, with Congress' help, we'll buy more of those. We don't have to take those from the Guard, so we think that's a good thing.

Total annual just in the operating and support costs that we save is just over $1 billion, the cost avoid. This is over $12 billion. I would think that our taxpayers, the American public, want us to do something like this to make sure we have the very best aviation force that we can afford.

I'll defer to Jim. He's been very tied into it and his folks have been leading the discussion. But, sir, make no doubt, this has been a consolidated effort, working with all the components. We don't always agree and I got that, and we will never ever get consensus with all 54 TAGs. But we've been working it very hard, open, candid. We appreciate that ability. But in the end, the Secretary and the Chief have to make some very tough decisions and they have to look at this across all the components and do what's best for our Nation.

Senator WICKER. As we toss it to General Barclay, help us with how we get to the $12 billion in savings and what period of time?

General BARCLAY. Okay, sir. As the Vice Chief has said already, in just your operations and sustainment costs it's $1.1 billion a year the ARI saves annually. Now, the aviation restructure total avoid is $11.9 billion, $12 billion. There's $3.35 billion of that for the OH–58 Delta cockpit and essential upgrade program that we will no longer do. There's $6.96 billion for the OH–58 Delta service life extension program (SLEP). In other words, we'd have to SLEP those aircraft as you move them in to make them last into the 20s. There's about $191 million for the TH–67 SLEP. There is $1.43 billion for a new training aircraft, the TH–67. As you total all that up, that's about $11.9 billion as you're looking at those, those different things.

Now, the Guard has come back with several different proposals keeping different levels, 6 battalions, 4 battalions, 18 aircraft, 24 aircraft. There's been, I said, I think three or four of those that we have taken a look at the cost measures.

I will tell you that roughly, just if you don't move the AH–64s out of the National Guard, the one-time cost if you're just going back to equip your Active component, there's about $3.65 billion to procure additional AH–64s to be able to man and equip and keep those units.

One of the key things, sir, is we're coming down from 37 shooting battalions—that includes your Kiowa Warriors and your Apaches—to 20 shooting battalions. That's why, as the Chief and the Secretary have testified and the Chief yesterday testified, it's important that we understand and do the complementary roles that we're doing across each of the three components, so we can meet the mission sets and operational requirements along the timelines that we know we're going to have to. So that was always part of the driving factor as we look at the ARI.

Senator WICKER. TAGs get more lift under this proposal?

General BARCLAY. No, sir, not every TAG gets more lift under these proposals. Again, we have an Active component version of how you could spread those aircraft across. Again, most of the 50 States total, 54 with the territories, some States may lose 1 to 2 Black Hawks. Some States would gain 10 or 11 Black Hawks. One of the examples is a State that has 16 Apaches and it would give

up 16 Apaches. They would get back 11 Black Hawks. So they're losing roughly a five-aircraft swing in that State.

But again, the National Guard Bureau would have to work those, as they do each of the States, and work those plans about where, which States would be impacted greater than other ones.

Senator WICKER. General Barclay, General Campbell said we're going to use the Apache teamed with the unmanned aircraft for reconnaissance until we can afford a new Scout helicopter. I had information that it's more costly from an O&M perspective than if we went ahead and acquired the new Scout helicopter. So help us with that.

General CAMPBELL. I'll start, Jim, and then you can add to it.

The cost of the OH–58 is much lower than the cost of the AH–64, but we're not going to keep the OH–58 over time. I think really for an Armed Aerial Scout of the future as we look at the requirement, what we would want that platform to do, what we want to do, is continue to invest in the technology to get the very best. We don't think there's anything out there right now that would take us to spend that money completely on a brand new platform when we have the AH–64 that as we've run some tests with industry out there, that the AH–64 with the unmanned and manned teaming—and that is very complex—that provides the best Armed Aerial Scout today.

It's different, and it's very emotional for the Active guys that own OH–58s. There's only one OH–58 squadron in the Guard. For all of our OH–58 pilots, it's very emotional for them. We'll train them in the other aircraft. But it is different from looking out a window, flying 50 feet above, and taking a look, versus what you can do with the optics sitting way back with the AH–64.

But I don't think the technology is where we need it. We want to invest in the technology, get the very best, and have that down the road.

But I'll let you add to that, Jim.

General BARCLAY. Sir, the cost of an OH–58 Delta flying hour is $2,373 per hour. The cost of an AH–64 Delta is $6,034 per hour. But with the ARI, as you take down the number of airplanes—for example, we're removing 9 Active component OH–58 Delta squadrons, for a savings of $479 million. We're removing 1 Reserve or Guard OH–58 Delta, for a savings of $19 million. It removes 6 AH–64 battalions for a savings of $195 million, and it adds 3 manned Active component AH–64 squadrons for $198 million.

So yes, it's apples and oranges when you talk hour comparison, a Kiowa to an AH–64. But when you look at the total fleet, which is what we did with the ARI, the total end cost, because we're coming down, of our total fleet, if you divest yourself of 898 aircraft total either divested or transferred, 687 of those aircraft are coming out of the Active component. 212—I mean, and then 111 we're transferring Black Hawks back to the National Guard.

So again, you have to take all these together. You can't just compare an AH–64 flight hour to a Kiowa Warrior flight hour and tell you it's going to cost you more. Again, it's the total cost across the entire fleet and all three components of where we're going to end up in the total number of aircraft we have.

Senator WICKER. Okay. Mr. Chairman, it may be that our staff will want to get together with these gentlemen and understand this issue further.

Let me ask you this, General Barclay. Was the Apache conceived as a Scout helicopter?

General BARCLAY. Sir, the Apache was designed as an attack-reconnaissance. That's why they're in the attack reconnaissance battalions. But its main purpose is as a heavy attack aircraft. I will tell you that when we did the analysis of alternatives back when I was the commanding general at Fort Rucker, trying to develop the next armed reconnaissance helicopter, we looked at five different variant model types to meet the requirement. The Apache came out number one in meeting the capabilities and requirements that we wanted, but it was the most expensive. That's when we went to make some tradeoffs to go to a lesser model.

As we now restructure because we cannot afford the total fleet we have in the Army, much like we can't afford our total manpower structure, we started looking back, and so with this downsizing and coming down from an 810–Apache—originally the acquisition objective was 810 Apaches. We're bringing that down to 690.

So again, it's the combination of all these different things we're doing that allows us to afford this and, yes, provide us the capability that is greater than what we would have.

Senator WICKER. Mr. Chairman, I'll take another round. I'll yield to you for a few moments.

Senator BLUMENTHAL. Thank you.

I want to shift gears from aircraft to ground vehicles, if I may. Can you explain—and you make reference to it, General Campbell, in your testimony the slowed production of the Abrams tanks and Bradley Fighting Vehicles. I think in your testimony you talk about slowed production deliveries of the Abrams Vehicle to distribute workload and prevent workforce furloughs. A little bit later you talk about developing a second source supplier for—your term—"financially fragile suppliers" for Abrams and Bradley vehicles.

Could you elaborate a little bit on that point? Is the slowed production the cause or the effect of the financial fragility of those suppliers? What is the thinking behind the slowed production.

General CAMPBELL. I'll defer to Michael at the end, as he's really tied into that. But I think it's a combination of both. As the budget comes down we have to look at where we can make adjustments. But also, we've been able to reset a lot of our Abrams. Over the last several years, the average shelf life of an Abrams is only 4 to 5 years now, based on where we've been, so that's very good.

With the help of Congress, we will slow down, but we'll also bridge a gap that was going to be out there. We've depended upon FMS and some other things to help keep the line open, to make sure that we continue to work the workers. It's a very select group of engineers and workers that work on this particular vehicle. So there was a gap out there in the 2016 time range, and with some additional monies that Congress has provided we'll be able to bridge that gap for about 12 months.

But it is a combination of the budget plus we feel pretty good about the number of tanks and the quality of tanks that we have now. We just don't need as much. We're working engineering

change proposals (ECP) that takes the ones we have and continues to make them better with some upgrades.

I'll let Michael add to that.

General WILLIAMSON. Sir, I'd just like to add that I'm not going to characterize it as much as a slowdown as I am a smoothing. The challenge for the industrial base is the peaks and valleys, where there is not enough workload to keep the skilled labor, the design engineers, the integrating engineers, all gainfully employed and to distribute the cost of the facility, the machinery, all of those things.

What's really important in sustaining the industrial base is to have that workload smoothed out. We've done some things, as the Vice Chief indicated. I look at it on three prongs: one, there's the investment we're doing in continuing the remaining build of Abrams; there's the ECP work that we're doing on things like Bradleys, as an example; there's also the FMS cases, so there's a large one that we are working with the Saudis that will allow us to smooth that load and make sure that we don't have production breaks where we lose that talent and skilled labor.

But then there's another piece that talks to the efficiencies associated with these facilities. It's both on the organic and it's also on the industrial base. The critical aspect of this is to make sure that there is a sufficient workload to keep folks employed and to bring in the right amount of talent and keep it sustained over time.

What we've done, as was indicated, is make sure that we have the workload to support that across all of ours. It's not, sir, just on vehicles, but we have to do the same thing on things like ammunition. We need to make sure that we steady-state that.

Senator BLUMENTHAL. Let me ask you, what was the thinking behind the cancellation of the GCV?

General CAMPBELL. Sir, there's still a requirement for an IFV. As I talked about in the opening statement, we can't afford one right now, bottom line.

Senator BLUMENTHAL. Will the technologies be used that were developed?

General CAMPBELL. Sir, absolutely. We will continue to learn. We'll continue to take and spiral out technologies from what we've already had going. Then we believe probably in the 2019 to 2020 timeframe, we'll see another IFV requirement come up there. The requirement's there. We just have to get the budget back up, and it's going to take us a few years to be able to do that.

Senator BLUMENTHAL. So it was really a cost issue more than anything?

General CAMPBELL. Absolutely.

Senator BLUMENTHAL. We've talked a little bit about the Reserve and National Guard. But in terms of going from the concept of a strategic reserve to an operational reserve component—and I recognize that over the last decade our Reserve components have played an increasingly active role and there's been increasing reliance on them—will the sacrifices in the modernization program for our Reserves be different from Active-Duty Forces in terms of equipment, training, and so forth, given that we are increasingly reliant on them?

General CAMPBELL. Let me start it and I'll turn to Jim or Mike to add to it.

Sir, you're absolutely right, and I've served in combat both in Iraq and Afghanistan with our National Guard, our U.S. Army Reserve, and our Active component, and they've all performed very well. We have moved from pre-September 11 from a strategic reserve to an operational reserve. The Chief has testified over and over that we want to continue with an operational reserve.

But that means you have to be in balance. If we keep the same end strength and we don't drop the Guard, we keep the same force structure and we don't drop the Guard, then where do you take that out of? It comes out of readiness. If they don't have readiness and they have all the end strength and force structure, you are a strategic reserve.

You have to reduce that a little bit, and we'll continue to work that, and our National Guard will remain an operational reserve. But they have to come down a little bit in end strength, a little bit in force structure, and keep the readiness up there.

On equipping, our National Guard is equipped better than they ever have been. The percentage of their equipment that continues to—from 2001 to now, and Jim may have the exact numbers—is pretty phenomenal. But our challenge will be to continue to maintain that in the environment we live in today. But I think all of our National Guard would tell you that the equipment they have, based on help from Congress and our priority has been to make sure we provide them that.

Our reliance on our Reserve component is going to be greater in the future. We're moving from about a 51 percent Guard and U.S. Army Reserve, 49 percent Active, to about a 54 percent of the total force to about 46 percent with the Active. There's no doubt that our reliance on our National Guard and our U.S. Army Reserve is going to be more in the future. The key is to make sure we have the right balance, and that's what the Chief and the Secretary are working very hard to do.

General BARCLAY. Sir, the Vice Chief is absolutely correct. Over the last 10 years, not only has the Guard, but all three components, our equipment on hand levels have risen somewhere between about 14 percent all the way up to 17 percent, and the modernization levels for all three components have been raised. For example, right now the modernization level for the Active component is 91 percent. The Army Guard is at 86 percent and the U.S. Army Reserve is 76 percent.

To give you a touchpoint for that, the Reserve was sitting at about 54 percent going into this war. Everyone has made tremendous gains, not only in the modernization, but also the equipment on hand. For example, the equipment on hand now to get to that 100 percent, the Active component is at 95 percent, the Guard is at 91 percent, and the Reserve is at 87 percent.

That's one of the critical parts, as we move forward in shaping our Army and balancing the manning and the readiness and the modernization, is we're going to improve all three components as we draw down on the modernization side. For example, the ARI, the critical part of that is removing some of those older platforms. For example, the National Guard, as we move forward with this, we will take all the A model Black Hawks out and they will move into Lima (UH–60L) models and Mike (UH–60M) models. So again,

that's part of our plan as we're getting smaller, is to ensure we keep the most modern aircraft across all three components.

Senator BLUMENTHAL. Thank you.

Senator Wicker, if you have other questions.

Senator WICKER. I do. We're going to be submitting a number of follow-up questions for the record.

I'm really very impressed with this panel, Mr. Chairman, and I want to work with them to get the best result. But if I could, I want to pivot to General Williamson. You just got back from Afghanistan, is that correct?

General WILLIAMSON. That's correct, sir.

Senator WICKER. Where were you and how long were you there?

General WILLIAMSON. I was in Kabul, sir. I was there for almost 8 months.

Senator WICKER. Did you spend your time principally in Kabul?

General WILLIAMSON. Sir, I went across the region, but most of my time was invested with resources, with the coalition. So I spent most of my time in Kabul working for General Dunford.

Senator WICKER. This is a hearing on modernization, but Mr. Chairman, if I might just draw on the experience that Lieutenant General Williamson brings back from Afghanistan. There's a debate in this town about what our presence looks like after the end of this year. Let's say the United States leaves a force of around 10,000 troops in Afghanistan. If that is, in fact, the decision of the Commander in Chief, how many total International Security Assistance Forces will remain? Can you answer that?

General WILLIAMSON. Sir, I can't really talk to that. I'm not trying to avoid an answer. If you'd just bear with me for a second.

Senator WICKER. I'll sure bear with you.

General WILLIAMSON. My role there was in making sure that the resources were available for us to support not only the coalition fight, but helping to build the Afghan police and the Afghan military. The only thing I would offer to you is that I can't specifically talk to the size of the force that should remain, but I could offer to you, though, that as I spent my time there and what I know is that we made a significant investment. I think you saw reflected in the last couple of days, that there is a tremendous amount of payoff when you look at just any metric like the election.

When you look at the reduced amount of violence, when you look at the performance of the security force, all of those things happened because of the investment we made. My concern—and this is personal, sir—would be to walk away and not leave enough structure to make sure that that's sustained over time.

Senator WICKER. That is precisely my concern, sir. The only difference is I haven't served there in the military and you have recently. But I think you and I both see it from the same standpoint. We went into Afghanistan after the terrorist attacks of September 11, and I would remind my fellow citizens and my colleagues, we went in virtually unanimously. As I recall, there was one dissenting vote in the House of Representatives, where I served. To my recollection, it was unanimous over in this body.

There seems to be a feeling out there among the American people that somewhere along the line we made a tragic mistake and that this somehow has become a disaster. I honestly, General

Williamson, don't feel that way. I think we have an opportunity to turn this into a defeat if we make that decision collectively as a body politic.

But as you've stated, we've made a great deal of sacrifice and investment, the taxpayers have, the all-volunteer troops that have been over there. It seems, based on the election, based on the loya jirga being a representative cross-section of all the tribes and ethnic groups, speaking virtually unanimously that they would like for us to continue as a partner and make sure this place is stable, that it just seems to me that we have an opportunity to leave this place stable, a place that will not be a haven for terrorists, and to walk away with some degree of success.

Can you tell us, this calendar year—you perhaps don't know precisely—but how many casualties have we had in the recent past in Afghanistan?

General WILLIAMSON. Sir, I can't speak to that precisely, but what I can tell you is that our casualty count has gone down substantially. In fact——

Senator WICKER. American casualties?

General WILLIAMSON. American casualties. But I would like to broaden that to talk about the coalition and the Afghans. Again, because of the training, because of the support that we've provided, because of the investment that we've made, the Afghans are able to provide even more defense, even more security. Even though their casualties are still there, I would tell you that those numbers are substantially down from when I arrived in the middle of last year, the early part of last year.

So I can't talk specific numbers, but I do know that those numbers have gone down.

Senator WICKER. Down substantially, even for the Afghans?

General WILLIAMSON. I believe so, Senator.

Senator WICKER. You've been involved in training the police. How are we doing there?

General WILLIAMSON. Sir, my involvement in training the police is really facilitating the trainers, those types of things. So, again, I can't talk to the actual training aspect. But on the effects side, there is obviously much more security. Again, I would tell you that the metric that I go by today is the security that was seen during the elections and leading up to the elections.

Senator WICKER. How are we doing in training the Afghan military?

General WILLIAMSON. Sir, I think my answer would be the same. During the time that I was there, what I had the opportunity to see was the Afghans planning and executing more of their missions, and that increased over time and during independent operations, with limited support from the coalition. So I would offer that I think you're seeing the effect of the training and the investment that's been made.

Senator WICKER. Thank you. I appreciate the fact that you're not here speaking for the Department of the Army in that respect. You're here to talk about modernization and you're certainly not an official of the DOS. I appreciate your letting me go a little further afield than the subject matter of this hearing.

Mr. Chairman, thank you for letting me depart a bit from our mission today. But I do believe that the testimony of this distinguished American who just got back is something that we should pay attention to. Thank you, sir.

Senator BLUMENTHAL. Thank you very much, Senator Wicker.

I think we're near the close of our hearing today, but I do have additional questions that we will submit for the record.

I just wanted to clarify, General Campbell. You mentioned 22.5 percent of Americans based on physical, background, and other requirements would be eligible and that's a reduction from, I think you said——

General CAMPBELL. It was about 33 percent a couple of years ago, sir. That 22.5, it's an approximate that I've seen as we've discussed it in personnel channels. So around 3 out of 10 Americans in the 17 to 24 age group could join and now it's less than 3, it's about 2.2. But again, sir, that's a combination of probably criminal records, it's a combination of obesity, it's a combination of physical issues, it's education, on and on.

That same percentage all the Services are going after, all the universities are going after, all the businesses are going after. So that population continues to come down.

The good thing is, I think, is that your Army continues to bring in the best and brightest. We have not had the issues of recruiting. I think across all of our components here in the last several years we've been able to provide for them, provide them training, provide them the resources, with Congress' help. So that's good.

But it's going to get tougher as we move forward and the fiscal environment we live in is going to make that tougher. Just a simple story, 2 or 3 years ago what we would provide in incentives or special pays was much greater than we do now. We've had to take down that to be able to provide in other areas.

Senator BLUMENTHAL. If I were to follow up on those numbers to get the exact years and maybe some more precision, what would the best way of doing it be? Should we do it through you, your office?

General CAMPBELL. Yes, sir, absolutely. I just saw a brief through our G–1 folks that showed pretty much where the percentage is, but also, even more important, I think, looks out the next 5 to 10 years on how that's going to continue to go down, and then what we can do to help out the American population to provide education, whether it's Junior Reserve Officers' Training Corps, whether it's—your Army provides more money to education than any other organization in the world, through Reserve Officers' Training Corps scholarships, through Junior Reserve Officers' Training Corps in the high schools, to provide young men and women opportunities to become better citizens, to help them maybe add to their potential to serve in any of our Services.

Sir, yes, you would get that information from our office.

Senator BLUMENTHAL. Thank you.

I might just second the general point that you're making, which is our Military Services are probably the most impactful or one of the most impactful forces in shaping our civilian society well beyond the readiness of defense and other services that you provide.

I might just say, one of the most gratifying and exciting parts of my job is to participate in nominating young men and women for our Service Academies. That's only a very small slice of the recruiting that's done by our military, but I can just say that they are extraordinary young men and women. I hope that they will continue to be interested, that our young men and women of talent and dedication will continue to have that sense of motivation, following the example that you three and others who serve with you have provided to them through your leadership by example.

I might just close by saying, I know that in your testimony, General Campbell, you made reference to the need—and I'm quoting here—of "pursuing enhanced weapons effects, next generation optics, night vision devices, advanced body armor, individual protection equipment." When I first came to this subcommittee and one of my own sons was deployed, I learned personally about some of the deficiencies in body armor at the time, and Deputy Secretary of Defense Ashton Carter worked with me in seeking to expedite that kind of equipment for our military serving in Afghanistan.

I know that the three of you—and I'm so glad that you made reference to this aspect of it—see the job of equipping and supporting our military through the eyes of the soldier who is out there doing the job of combat, as you three have done in your careers. I just want to emphasize that as much as we talk about all this sophisticated hardware, the helicopters, and the new technology that is developing, our greatest asset, as you said at the outset, is our men and women in uniform, and anything we can do to provide them with those basic kinds of equipment, I think, I'm certainly committed to doing. I know my colleagues, I believe my colleagues share that view as well.

So on that note, let me thank you for being here today, each of you, and thank you for your very valuable contribution to our consideration. Thanks so much.

The record here will remain open until 5 p.m. on Friday, April 11, for any additional questions that Senators may wish to submit, and we will hope for responses to our written questions as soon as you're able to do so. Thank you very much.

The hearing is adjourned.

[Whereupon, at 10:51 a.m., the subcommittee adjourned.]

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR RICHARD BLUMENTHAL

IMPROVED TURBINE ENGINE PROGRAM

1. Senator BLUMENTHAL. General Williamson, the Improved Turbine Engine Program (ITEP) is intended to provide a new engine for Apache and Black Hawk helicopters with significantly greater performance, reliability, and fuel efficiency. The fiscal year 2015 request includes $39.3 million for an initial Technology Maturation and Risk Reduction contract award for initial engine design and aircraft integration trade studies. This award, timed to follow a Milestone A decision, will be made to a single vendor. Currently, at least two vendors have been competing for Army funding and investing their own research money in designing, building, and testing prototype engines. What is the status of the development of competitive prototyping options?

General WILLIAMSON. The Aviation Applied Technology Directorate within the U.S. Army Aviation and Missile Research Development and Engineering Center manages the science and technology (S&T) phase of the Advanced Affordable Turbine Engine (AATE) program. AATE is a program established to demonstrate engine

technology that could provide sufficient power to our medium rotary wing assets in high and hot environments while increasing engine fuel efficiency and operational range. Two vendors each developed competitive engine prototypes during the AATE program which demonstrated technology maturity and engine capabilities sufficient to inform the ITEP's draft Key Performance Parameters within the draft Capability Development Document. The Program Office will seek competitive prototype waivers for vendors who have already developed competitive prototypes demonstrating technology maturity for critical technology elements.

2. Senator BLUMENTHAL. General Williamson, cost is widely reported as the main problem with carrying two engines through technology development on a competitive basis. What is the incremental increase in cost to carry a second engine through a technology development phase?

General WILLIAMSON. Based on program office estimates that included industry responses to a series of Request For Information, the incremental increase in cost to carry a second engine competitor through a technology development phase will vary between competitors and could range between $125 million to $300 million per vendor dependent upon the vendor's design approach and demonstrated technology. An Army cost estimate developed by the Office of the Deputy Assistant Secretary of the Army for Cost and Economics in support of the ITEP Analysis of Alternatives substantiates the incremental cost of approximately $300 million per vendor.

3. Senator BLUMENTHAL. General Williamson, one of the consistent criticisms of the Department of Defense acquisition is the early commitment to immature technologies that then do not progress as expected or promised. The emphasis on competitive prototyping is intended to mitigate this risk for the government. If the Army awards a contract to a single vendor as early as Milestone A, upon what will you base the decision?

General WILLIAMSON. If the Army awards a contract to a single vendor as early as Milestone A, a best value determination will be made based upon the proposed design approach and the substantiation of that approach including a clear assessment of the vendor's ability to manufacture and deliver the system technology to meet the specified requirements. The AATE S&T program at its inception was designed to help mitigate the risk of introducing immature technology in the ITEP and has been successful in this regard by demonstrating technology maturity on competitive prototype engines.

4. Senator BLUMENTHAL. General Williamson, what must competitors provide or demonstrate?

General WILLIAMSON. Competitors must provide their proposed design which includes a clear assessment of a vendor's ability. Substantiation data should include demonstrated technology maturity for attaining the stated requirements from either an S&T program or internal research and development efforts.

5. Senator BLUMENTHAL. General Williamson, if the Army awards a single contract at Milestone A, will the program provide for clear and objective criteria that establishes an off-ramp for the incumbent and on-ramps for potential alternatives?

General WILLIAMSON. Yes, the Army will provide for clear and objective criteria that establishes off-ramps prior to Milestone B, regardless of a single or multiple contract award at Milestone A. The Army is exploring the use of a series of contract options following significant technical reviews to ensure satisfactory progress is being made before continuing forward as well as considering potential on-ramps during the Technology Maturation and Risk Reduction phase and at Milestone B should the single contractor awarded at Milestone A fail to perform satisfactorily. By establishing successive options as on/off-ramps, the government avoids termination costs as well as defined on-ramp phases. All decisions will be weighed against program cost, schedule, performance, and risk to the government.