DEPARTMENT OF DEFENSE AUTHORIZATION OF APPROPRIATIONS FOR FISCAL YEAR 2014 AND THE FUTURE YEARS DEFENSE PROGRAM

WEDNESDAY, APRIL 24, 2013

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

TACTICAL AIRCRAFT PROGRAMS

The subcommittee met, pursuant to notice, at 3:04 p.m. in room SD–G50, Dirksen Senate Office Building, Senator Joe Manchin III (chairman of the subcommittee) presiding.

Committee members present: Senators Manchin, Blumenthal, McCain, and Wicker.

Committee staff member present: Leah C. Brewer, nominations and hearings clerk.

Majority staff members present: Creighton Greene, professional staff member; William K. Sutey, professional staff member; and Bradley S. Watson, special assistant for investigations.

Minority staff members present: Ambrose R. Hock, professional staff member; and Anthony J. Lazarski, professional staff member.

Staff assistant present: John L. Principato.

Committee members' assistants present: Mara Boggs, Patrick Hayes, and David LaPorte, assistants to Senator Manchin; Paul C. Hutton IV, assistant to Senator McCain; Todd Harmer, assistant to Senator Chambliss; and Joseph Lai, assistant to Senator Wicker.

OPENING STATEMENT OF SENATOR JOE MANCHIN III, CHAIRMAN

Senator MANCHIN. The subcommittee will come to order and thank you for being here. We want to apologize. Senator Wicker and I were both together at a briefing that we attended and we appreciate your understanding.

I want to extend a welcome to and thank each of our witnesses for appearing before this subcommittee today. This is my first hearing as a subcommittee chairman and, although he has served for a number of years on the Senate Armed Services Committee, this will be Senator Wicker's first hearing as the Airland Subcommittee ranking member. Senator Wicker, I am really looking forward to working with you on the subcommittee this year.

On behalf of the committee, I want to thank you each of you representing the men and women of our armed services for the wonderful jobs that they are performing in Afghanistan and around the world. We keep all those who are serving in our thoughts and prayers every day.

Every year we are challenged to make decisions balancing a number of competing demands of resources, including resources for current operations and investments in future modernization. In this case we will be assessing plans and programs regarding the current status and future prospects for tactical aviation programs. Complicating things this year is sequestration, which, if Congress does not act to change things, could lead to significant consequences for our current readiness and future modernization.

We meet today to talk about the F–35 Joint Strike Fighter (JSF) program and other tactical aviation programs. We all know that the JSF program is central to the long-term modernization plan for the Air Force, Navy, and Marine Corps for more than 15 years now. Given that fact, any change in cost, schedule, and performance of the JSF program really sends shock waves throughout the Department of Defense (DOD) and raises many questions of achieving that balance between the demands of maintaining readiness in the near-term 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 be approximately $5 billion. Today we will seek a better understanding of implementation of the corrective actions DOD has identified in the JSF program after the Nunn-McCurdy certification 3 years ago and what levels of risk remain in the development and fielding program.

General Bogdan, I know there were a couple of engine-related problems since last year and, while we are always concerned any time that we hear about engine problems during the research and development (R&D) stage, I understand that you have identified the problems and have mapped a way ahead to minimize the effect of the problems on the testing and development program. I hope you will discuss these programs and solutions during your testimony.

In addition to the more immediate acquisition issues, we also know there is significant concern about how much the F–35 is going to cost to operate during its life cycle. We do not have the new selected acquisition reports (SARs) for major defense acquisition programs yet this year, but last year DOD was predicting the F–35 life cycle cost over 50 years would be approximately $1 trillion. That is a large mountain of cost and I hope that we can gather some insight today on what DOD is doing to try to reduce those costs.

In addition, today we want to focus on a number of issues, but primarily we want to understand how DOD has been executing to the baseline for the F–35 program since last year, how the Services are refining their responses to the JSF delays that emerged 2 years ago, and what effects those delays may have on our forces.

Today we are going to hear from Lieutenant General Christopher C. Bogdan, USAF, the JSF Program Executive; Vice Admiral W. Mark Skinner, USN, Principal Military Deputy in the Office of the

Assistant Secretary of the Navy for Research, Development, and Acquisition; and Lieutenant General Charles R. Davis, USAF, the Military Deputy for the Office of the Assistant Secretary of the Air Force for Acquisition.

There are worrisome prospects for the future of tactical aviation programs, particularly in terms of having the numbers of aircraft that we need to keep from hollowing out our tactical aviation forces. We've been following your progress in trying to mitigate to close those gaps.

There are a number of other issues that we may discuss, but in the interest of time I will stop here. Again, I want to thank our witnesses. I look forward to hearing your testimony.

[The prepared statement of Senator Manchin follows:]

PREPARED STATEMENT BY SENATOR JOE MANCHIN III

The subcommittee will come to order. I want to extend a welcome and thank each our witnesses for appearing before this subcommittee today. I also appreciate your flexibility is delaying the hearing. This afternoon, we are having a committee meeting with the King of Jordan and two other subcommittee hearings beside this one.

This is my first hearing as subcommittee chairman and, although he has served elsewhere in the committee, this will be Senator Wicker's first hearing as Airland Subcommittee Ranking Member. Senator Wicker, I am really looking forward to working with you on the subcommittee this year.

On behalf of the committee, I want to thank each of you, representing the men and women of our Armed Forces, for the wonderful jobs they are performing in Afghanistan and elsewhere around the world. We keep all those who are serving right now in our thoughts and prayers, and also remember that both they and their families are serving and sacrificing every

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. Complicating things this year is sequestration, which, if Congress does not act to change things, could lead to significant consequences for our current readiness and future modernization.

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

Today, we will seek a better understanding of implementation of the corrective actions the Department identified in the JSF program after the Nunn-McCurdy certification 3 years ago, and what levels of risk remains in the development and fielding program. General Bogdan, I know that there were a couple of engine-related problems since last year, and while we are always concerned anytime we hear about engine problems during research and development, I understand that you have identified the problems and have mapped a way ahead to minimize the effect of the problems on the testing and development program. I hope you will discuss these problems and solutions during your testimony.

In addition to the more immediate acquisition issues, we also know there is significant concern about how much the F–35 is going to cost to operate during its life cycle. We do not have the new Selected Acquisition Reports for Major Defense Acquisition Programs yet this year, but last year, the Department was predicting the F–35 life cycle cost over 50 years would be approximately $1 trillion. That is a large mountain of cost. I hope we can gather some insight today into what the Department is doing to try to reduce those costs.

In addition today, we want to focus on a number of issues, but primarily, we want to understand how the Department has been executing to the baseline for the JSF program since last year, how the Services are refining their responses to the JSF

delays that emerged 2 years ago, and what effects those delays may have on our forces.

Today we will hear from:

- Lieutenant General Christopher C. Bogdan, USAF, Program Executive Officer, F–35 Lightning II Program
- Vice Admiral Walter M. Skinner, USN Principal Military Deputy Office of the Assistant Secretary of the Navy (Research, Development, and Acquisition)
- Lieutenant General Charles R. Davis, USAF, Military Deputy Office of the Assistant Secretary of the Air Force for Acquisition

There are worrisome prospects for the future of tactical aviation programs, particularly in terms of having the numbers of aircraft we need to keep from hollowing out our tactical aviation forces. We have been following your progress in trying to mitigate or close these gaps.

For example, the subcommittee has have been following the Department of the Navy's attempts to reduce the strike fighter 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 to 125 tactical fighters needed to outfit our 10 aircraft carrier air wings and 3 Marine Corps air wings. Three years ago, based on further analysis, the Navy was estimating that the maximum shortfall could be nearly twice that large, or roughly 250 aircraft. Within the past 2 years, the Navy has taken actions, such as reducing squadron size, conducting service life extensions on some aircraft, and reducing time aircraft spend in the depots, that could reduce the gap to as small as 18 aircraft.

Unfortunately, there has been a similar story regarding the Air Force. Previous Air Force witnesses at our aviation hearings have also projected a potential shortfall of Air Force tactical fighters in excess of 800 aircraft around 2025. Last year, the Air Force, as a part of the new Defense strategy, reduced fighter force structure. It is not clear to what extent this change in demand for tactical fighters has ameliorated the shortfall that the Air Force had been projecting, but we hope to hear more about that this afternoon.

Last year, the Air Force was also investigating ways to extend the service lives of its A–10, F–15, and F–16 aircraft to help mitigate the gap between requirements and aircraft that it foresees. We would like to get an update on where these various life extension efforts stand and the confidence with which we can pursue these efforts.

Although this is not necessarily a modernization issue yet, we would also like to get an update from General Davis on the full flight release of the F–22 aircraft after concerns about the F–22 life support system and hypoxia, including a brief description on what the Air Force has concluded and what actions you have taken to minimize the risk to F–22 crews.

There are a number of other issues that we may discuss, but in the interest of time, I will stop here. Again, I want to thank our witnesses. I look forward to hearing your testimony.

Senator MANCHIN. I would now like to recognize Senator Wicker, who will give his opening statement and ask questions.

Senator Wicker.

STATEMENT OF SENATOR ROGER F. WICKER

Senator WICKER. Thank you, Mr. Chairman. Thank you for holding the hearing. Thank you for your kind words of welcome to the subcommittee. Thank you to our three witnesses today for your selfless service to our Nation. I look forward to your testimony.

Senator Manchin, I also want to take a brief moment to congratulate you on your appointment as chair of the Airland Subcommittee. Our subcommittee responsibilities are immense. They include programmatic and budget oversight of most Army and Air Force programs, as well as oversight of the Navy and Marine Corps tactical aviation activities. As ranking member I look forward to working with you 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 remain deeply concerned about the fiscal year 2013 defense authorization conference committee decision, made behind closed doors and without consultation of all conferees, which enabled the Air Force to begin implementation of its total force plan (TFP). I am convinced that some elements of the TFP were 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 committee's bipartisan efforts last year, I look forward to working with the chair on initiatives to help ensure the Air Force makes its force structure decisions based on the best possible understanding of long-term global force requirements. These decisions should not be based solely on self-imposed resource constraints.

Now, as to tactical air superiority, our military has fought four major regional conflicts over the last 22 years—Kuwait, Bosnia, Afghanistan, and Iraq. America's security challenges continue to persist across the globe, from the defiance of a volatile and dangerous dictator in North Korea to the scourge of transnational terrorism that persists in sub-Saharan Africa. Effectively dealing with our current and potential adversaries means we must be prepared to act across the continuum of conflict, from lending humanitarian assistance in the wake of natural disasters to combating terrorism and cyber attacks, and we must be ready to fight and win a high-end conventional war against a nuclear-armed foe. 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 by an attack from enemy aircraft. That is a success story. 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 whether 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, in some cases well beyond 30 years. These extensions come at a price. Extending the lives of legacy aircraft means increased operation and maintenance (O&M) costs, as well as decreased technical superiority gaps.

America must continue to be able to deter or 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, and I hope we agree on that, Mr. Chairman.

Successfully modernizing means we must be cognizant of the negative impact of the overly expensive and slow acquisition process we currently have. We must find ways to deliver new and innovative systems on time and on budget. Changing the system will require the combined efforts of Congress, DOD, and industry.

Specifically, number one, DOD must get its acquisition process in order by defining program risks upfront, setting realistic requirements, adequately prioritizing R&D, and leveraging the power of competition.

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

Number three, Congress must uphold our 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.

Let me 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 or implement 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 taxpayer 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.

I hope our witnesses today will elaborate on their assessment of the long-term impact that reduced defense spending will have on our industrial base and our ability to acquire new tactical aircraft on time and on budget.

Thank you very much, Mr. Chairman.

[The prepared statement of Senator Wicker follows:]

PREPARED STATEMENT BY SENATOR ROGER F. WICKER

INTRODUCTION

Mr. Chairman, thank you for holding this hearing. I thank our witnesses for their attendance today and their selfless service to our Nation. I look forward to your testimony.

Senator Manchin, I also want to take a brief moment to congratulate you on your appointment as chairman of the Airland Subcommittee. Our subcommittee responsibilities are immense. They include programmatic and budget oversight of most Army and Air Force programs, as well as oversight of Navy and Marine Corps tactical aviation activities. As Ranking Member, I look forward to working with you to ensure that our Armed Forces remain the best-trained, best-equipped, and most professional fighting force in the world.

AIR FORCE TOTAL FORCE PLAN

Mr. Chairman, I would like to speak on a personal point of privilege before I provide some brief comments on the tactical aviation programs for the Air Force, Navy and Marine Corps.

I remain deeply concerned about the National Defense Authorization Act for Fiscal Year 2013 conference decision—made behind closed doors and without consultation of all conferees—that enabled the Air Force to begin implementation of its Total Force Plan (TFP).

I am convinced that some elements of the TFP were shortsighted. They may adversely impact our intra-theater airlift capability at a time when our Services are evolving towards a more rotational deployment model. Mr. Chairman, similar to our committee's bipartisan efforts last year, I look forward to working with you on initiatives to help ensure the Air Force makes its force structure decisions based on the best possible understanding of long-term global force requirements. These decisions should not be based solely on self-imposed resource constraints.

TACTICAL AIR SUPERIORITY

Our military has fought four major regional conflicts (Bosnia, Kuwait, Afghanistan, and Iraq) over the last 22 years. America's security challenges continue to persist across the globe, from the defiance of a petulant leader in North Korea, to the scourge of transnational terrorism that persists in Sub-Saharan Africa. Effectively dealing with our current and potential adversaries means we must be prepared to act across the continuum of conflict, from lending humanitarian assistance in the wake of natural disasters to combatting terrorism and cyber-attacks. We must be ready to fight and win a high-end conventional war against a nuclear armed foe.

Airpower will no doubt continue to play a central role in our national security. Many Americans may be surprised to learn that no U.S. ground personnel have been killed in an attack by an enemy aircraft since 1953. 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 two 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 costs as well as decreased technical superiority gaps.

MAINTAINING AIR DOMINANCE

America must continue to be able to deter or 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 continually 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 and innovative systems on time and on budget. Changing the system will require the combined efforts of Congress, the Department of Defense, and industry.

Specifically:

(1) DOD must 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;
(2) DOD's industry partners must submit realistic contract proposals and be held accountable to their contractual obligations; and
(3) 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.

CONCLUSION

Let me conclude by observing that national defense is a Federal responsibility that requires assistance from all levels of government and civilian industry. We need our States to maintain or implement 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 taxpayer by delivering products on time and on budget. Finally, we need better cooperation and honesty between the executive branch, the Defense Department, and Congress, in order to ensure all parties fully understand our national security challenges and the means our military leaders require to meet them.

As such, I hope our witnesses today will elaborate on their assessment of the long-term impact that reduced defense spending will have on our industrial base and our ability to acquire new tactical aircraft on time and on budget.

With that in mind, I look forward to the testimony of all the witnesses.

Senator MANCHIN. Thank you, Senator Wicker.

I think at this time, Senator Wicker, I know that you have to leave soon, we'll go back to regular order then, if we can. We'll start with brief comments from our three presenters today, if you will. General Bogdan, if you would like to start, we'd like to hear from you.

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

General BOGDAN. Thank you, sir. Chairman Manchin, Senator Wicker: Thank you for the opportunity to address this subcommittee regarding the F–35 Lightning.

I first came to the F–35 Joint Program Office (JPO) in August 2012, serving as the Deputy to the then-Program Executive Officer (PEO), Vice Admiral Dave Venlet. On December 6, 2012, I took over as the PEO from Admiral Venlet, who left me a program that was well on its way to getting its legs back underneath.

Despite a turbulent past, the F–35 program is making steady progress today. This progress may not be as fast as you and I may like, but the size and the complexity of the program do contribute to this inertia. I hope that I'll be able to leave you today with an understanding of where the F–35 program is, where it is headed in the future, and what we are doing to ensure its success.

Today, the program continues to make slow but steady progress and is moving forward in a disciplined manner. Let me highlight a few of the program's accomplishments in 2012. We conducted the first in-flight weapons releases from both the F–35 A and B last year. We stood up our first operational F–35B squadron at Yuma Marine Corps Air Station. Additionally, the program began edge-of-the-flight envelope testing to the aircraft's maximum speed and altitude, and we also began our high angle of attack testing, all of which to date has been very successful.

The program also successfully completed a U.S. Air Force operational evaluation, clearing the way for them to begin pilot and maintenance training at Eglin Air Force Base. Additionally, the cost of producing the F–35 continues to come down for each successive lot of airplanes. For example, Lot 5 airplanes cost 4 percent lower than the previous Lot 4 airplanes, and we expect such reductions to continue.

While the program has continued to progress, there are still challenges and risks ahead. The biggest technical concern on the program is the development of software. Although most of the basic coding of software is complete, the integration of this software, linking all the systems on the airplane together, still has a ways to go.

Over the past 2 years, the program office has implemented many changes in the way software is developed, tested, flight tested, measured, and controlled by the program office. These changes are beginning to have a positive effect, and as a result we are moderately confident that the program will successfully release our Block 2B and our Block 3I capabilities in 2015 and 2016. Our Block 2B capability is our initial combat capability, which we believe the U.S. Marine Corps will potentially use to declare initial operating capability in 2015.

However, there is more risk to the delivery of our final block, known as Block 3F, which is the Services' full warfighting capability. We intend on delivering that by the end of late 2017 and there is some risk there.

The program office will be conducting a Block 3 critical design review this summer and that, coupled with at least 6 months of

flight testing of the current 2B software, will allow DOD to assess the likelihood of meeting the Block 3F final capability requirements in 2017. I will have a better answer for this committee and for the enterprise by the end of the summer about how likely it is to meet that final block of capability.

Other technical risks we continue to monitor include the helmet-mounted display system, lightning protection, the tailhook, the fuel dump system, and the maturity of our autonomic logistics information system (ALIS). The program office has been working with the contractors and the Navy and the Air Force systems commands to arrive at solutions for all these issues.

Affordability remains DOD's and my number one priority. The program office must execute the development program with discipline to ensure it can be completed within the time and the money we have been given. DOD must also continue to drive the cost of producing F–35s down and continue to attack the long-term life cycle costs of the F–35 weapons system.

Let me tell you a few things DOD is doing today to ensure that in the long-run this aircraft is affordable. First, we've been studying all areas of sustainment to identify areas for cost reduction in what we call our business case analysis. We will continue this analysis through the summer and I will report those results when it is completed.

Second, the program office intends on injecting competition into various portions of the overall sustainment effort. We conducted an industry day in November 2012 to see if there were both domestic and foreign companies that had the capacity, the capability, and the desire to compete for various sustainment areas, including managing our global supply chain, producing support equipment, operating our training centers, and administering our ALIS.

Additionally, the program has instituted a robust reliability and maintainability program that is systematically identifying all the parts and systems on the aircraft that today require repairs all too frequently, and DOD is standing up its organic depots to improve the quality, throughput, and turnaround times for parts repairs. DOD is committed to doing everything it can to drive the cost of sustaining the F–35 down to a level that is considered affordable by all the Services, the partners, and foreign military sales (FMS) customers.

In summary, I believe the basic F–35 aircraft design is sound and the program office can deliver on our commitments. As in any complex development program, there are still challenges and risks ahead. I intend to continue to lead this program with discipline, transparency, and accountability and we will continue to drive costs out of this program.

Thank you again for the opportunity to discuss the F–35 and I look forward to answering your questions.

[The prepared statement of General Bogdan follows:]

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

Chairman Manchin, Ranking Member Wicker, and distinguished members of the subcommittee. Thank you for the opportunity to address this subcommittee regarding the F–35 Joint Strike Fighter.

The F–35 Joint Strike Fighter is the Department of Defense's 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 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 2014 budget includes $8.4 billion for continued system development, test and procurement of 29 F–35 aircraft.

It is our duty to produce the next generation fighter jet for the United States and our allies, understanding that we live in a resource constrained world. The current F–35 program is focused on completing System Design and Development 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 29 F–35s now deployed in operational and training squadrons at three 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 2012, such as the delivery of 30 aircraft, including the last System Development and Demonstration (SDD) aircraft (CF–5, delivered to Patuxent River) and jets delivered to training squadrons at Eglin Air Force Base and the stand up of the first USMC operational squadron at Yuma.

F–35s flew 1,984 sorties for a total of 3,118 hours last year, bringing the total hours flown by F–35s to 5,487. We conducted the first in-flight weapons releases from the F–35 A and B and enabled the first stand up of an operational F–35B squadron at Yuma Marine Corps Air Station. The F–35C has shown good progress in testing the modified tailhook, although we have more work to do. Additionally, the program began high angle of attack testing which has been successful to date, completed the Air Force's F–35A Operational Utility Evaluation, and enabled the start of pilot and maintenance training activities at Eglin Air Force Base for both the Air Force and U.S. Marine Corps. From a business perspective, the F–35 program successfully closed negotiations on the Lockheed Martin Low Rate Initial Production (LRIP) lot 5 and modified SDD contracts. Additionally, negotiations for the Pratt & Whitney engine contracts for LRIP lot 5 and modifications for the SDD contract were completed in February, 2013.

IMPACTS OF THE SEQUESTER

Sequestration, as well as congressionally directed reductions to the System Design and Development program in fiscal year 2013, has the potential to either stretch the development program out or reduce the capabilities we can deliver to the warfighter. My first priority is to preserve the development of Block 2B and 3I capabilities. Block 2B is important because it is the initial warfighting capability of the F–35 and potentially the capability that could be used to declare USMC Initial Operating Capability. I have moderate confidence that Block 2B and 3I will be delivered on time with all the capability we have promised. However, I am less optimistic about Block 3F, our final capability. Without some form of payback of the SDD money we will lose to Congressional cuts and sequestration, we will not be able to deliver 3F on time with full capability. Additionally, if the Department and the Services decide to take reductions to procurement funding, fewer aircraft may be ordered in LRIP Lot 7 (fiscal year 2013 budget) for Department of the Navy and the Air Force. While this would slightly lessen the cost burden imposed by concurrency, fewer aircraft in LRIP Lot 7 would increase the unit cost of the remaining aircraft in Lot 7. Our international partners are closely watching unit cost and are highly sensitive to cost increases. These increases may result in reduction of their aircraft quantities, which would in turn increase unit costs even more and cause them to relook their commitment to the program. Moreover, furloughing my government civilians will have immediate negative consequences. As one example, due to the reduction in personnel and base operating support, my test and evaluation program will be reduced from currently operating on a 6-day a week schedule with extended

hours to one that will likely be limited to 4 days a week and only 8 hours a day. I estimate that this could reduce the F–35 flight test program's productivity by nearly one-third, significantly slowing the program's forward momentum.

INTERNATIONAL PARTNERSHIP

The F–35 program continues to be the Department of Defense's largest cooperative program, with eight Partner countries participating under Memorandums of Understanding for System Development and Demonstration (SDD) and for Production, Sustainment and Follow-on Development (PSFD). The eight partner countries include the United Kingdom, Italy, the Netherlands, Turkey, Canada, Australia, Denmark, and Norway. The partners recently met and all expressed their continued commitment and support for the program. However, as stated above, they are all watching closely how the DOD deals with our budget cuts and the impact this has on the cost of the program.

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 in the summer of 2013.

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 concern in development is software. I am moderately confident that the program will successfully release the Block 2B and 3I capability by 2015 and 2016, respectively. However, I see more risk to the delivery of Block 3F, our full warfighting, capability by 2017. I will have better information to assess if we can meet our Block 3F promises after the Block 3 Critical Design Review and after at least 6 months of flight test on our 2B software, both of which are currently scheduled for early summer 2013.

In the past year, the F–35 program has implemented a major shift in the 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 automated tools and processes, has resulted in an almost 10-fold 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. 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. The Helmet Mounted Display System (HMDS) for the F–35 is a major technological advance and a design challenge. Issues faced by the program office over the past year relative to the HMDS were "green glow" or insufficient helmet display contrast, latency of the displayed information, "jitter" or lack of stability of the displayed symbology, night vision acuity and alignment. We executed a short flight test program from November 2012 to March 2013 dedicated solely to exploring and understanding the helmet problems using developmental and operational test pilots flying a number of operationally representative missions. As a result of this testing, the program now understands and has mitigated the effects of "green glow", latency, jitter and alignment. Additional work still needs to be done to ensure that the program has a night vision camera that is effective for operations as our testing indicated that the current night vision camera is unsuitable for operational use. As risk reduction, the program continues to fund development of a night vision goggle-based alter-

native helmet solution. The goggle-based helmet development will continue until we see demonstrated improvement in all of the risk areas of the original helmet and until the government has secured a price agreement with the prime contractor showing significant cost reduction in the original helmet.

During land-based ship suitability testing in 2011, the F–35C tailhook did not catch the arresting wire at a rate considered to be acceptable. A Critical Design Review was completed in February 2013 on a redesigned arresting hook system and modeling and simulation involving the redesigned hook showed a marked improvement in performance. Ground test of this newly redesigned hook is scheduled at Lakehurst, NJ in the fourth quarter of 2013, followed by aircraft carrier qualifications in third quarter of 2014. Although work remains to be done, I am confident this new hook will meet our needs.

Early Fuel Dump testing revealed that fuel was migrating within the wing during fuel dumping and the fuel was impinging on the underside of the wing. We have designed improved seals within the wing to mitigate the migration issue and selected a new design of the fuel pump port on the underside of the wing which appears from initial prototype testing to resolve the fuel impingement issue.

The Autonomic Logistics Information System (ALIS) provides maintenance, reliability, logistics, and training information to support sustainment of F–35 aircraft. Currently, ALIS is exhibiting a level of unreliable data tracking within its health management system. Additionally, the software for ALIS requires development and time to mature. I continue to closely watch the progress of ALIS and have put in place a new systems engineering rigor and a new leadership structure that has improved performance. The program is delivering incremental software fixes to address problems more quickly and I have put into place a plan for a complete end-to-end test to ensure the aircraft and ALIS can operate together seamlessly.

In 2012, the F–35 SDD Flight Test program exceeded the number of planned flights, but fell slightly behind in overall test points. The ITF achieved 1,167 test flights, a 17 percent increase from the total flights in 2011. The ITF also executed 9,319 test points, which was roughly 2 percent shy of what was planned. This shortfall was largely due to restrictions levied on the flight envelope due to problems with the weapons bay flipper doors, as well as challenges due to software maturity.

Pratt & Whitney SDD F135 engines have completed a total of 25,296 operating hours, 11,289 hours on flight-test engines, and a total of 4,566 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. Various engine "firsts" were also achieved including the completion of air-start testing and acceleration to the F–35's maximum speed of 1.6 Mach.

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 take-off 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.

PRODUCTION PROGRAM PERFORMANCE

Costs for production aircraft continue to come down for each successive lot put on contract. In 2012, Lockheed Martin delivered 30 aircraft, a 57 percent increase over 2011. Lockheed Martin in 2012 did not deliver all planned aircraft in large part due to a strike by the International Association of Machinist and Aerospace Workers that lasted from April 28th until all members went back to work on July 9th. Since the strike, performance has been fairly stable and the program has seen marked improvements in design stability, parts availability, workforce stability, shop floor discipline and a reduction in scrap, rework and repair. Overall, production performance is tracking to the definitized baseline, with factory assembly performance only 2 days behind plan. With the demonstrated improvements in all production areas leading to delivery, my level of confidence in the program's ability to produce high quality F–35s and our ability to eventually ramp up production is strong.

Pratt & Whitney has delivered 85 engines and 38 lift fans to date. For 2012, Pratt & Whitney has improved their delivery rate, increasing from two per month average in 2011 to four per month average in 2012. Pratt & Whitney product deliveries were interrupted on several occasions due to technical issues and quality escapes resulting in product delivery holds and material deficiencies. Lot 4 spare engine modules and spare parts are tracking behind contract delivery dates and will not be delivered within the contract period of performance, an issue my team is addressing.

In September 2012, LM Aero notified the F–35 program office of the discovery of a specialty metals noncompliance. The Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) approved a waiver to allow the program to accept lot 4 through 9 aircraft with noncompliant specialty metals (magnets) in the radar controller. USD(AT&L) subsequently approved an amendment to allow the acceptance of lot 4 aircraft with noncompliant specialty metals in the radar radio frequency isolators also. A subsequent amendment will extend the waiver to lot 5 aircraft. All lot 6 aircraft will have compliant radar radio frequency isolators. I also directed a top-to-bottom assessment of all companies within the F–35 supply chain. As a result, an additional part procured from a non-qualifying country was identified. The subsequent waiver for target assemblies (proximity magnets) approved by USD(AT&L) was sent to you and the other Defense Committees earlier this month. The program office, the contractor and the Defense Contract Management Agency have jointly developed a corrective action plan to assess supply chain compliance with all legal requirements.

CONCURRENCY

The Department of Defense established the F–35 program in 2001 with a planned measure of concurrent development and production that attempted to balance cost, risk, and the need for tactical aircraft modernization. Changes that must be made to the production aircraft due to problems found in testing are very real and affect schedule and cost in hardware, software, test and production. However, concurrency is a transient issue in which risks progressively decline through the end of SDD and the test program. Concurrency risk will progressively recede between now and 2015, when second-life fatigue testing should complete for all variants and flight test will be through 80 percent of the loads envelope.

Concurrency costs are primarily driven by span time for incorporating changes; the program office and Lockheed Martin have implemented a concurrency management system to control and expedite the number of changes cut into production or requiring retrofits. Since 2011 the program has reduced average span times by 5 months, from 18 months to 13 months, as measured from engineering drawing releases to new parts available for installation into production aircraft. The continual reduction in span time will significantly reduce the concurrency impact to the program.

Concurrency costs were originally estimated to be roughly 5 percent to 8 percent of recurring flyaway costs. Over the past year, the F–35 program has worked with Lockheed Martin to refine the estimate of concurrency costs based on actual F–35 discrete data results from qualification events. As a result of this approach, our concurrency estimate has decreased to 3 percent to 5 percent of recurring flyaway costs.

OPERATIONS AND SUSTAINMENT PERFORMANCE

2012 marked the first year of operational performance by F–35 A and B models in the Air Force and Marine Corps. 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 improving and the product support integrators are gradually resolving issues with spares and repair cycle times.

In 2012, the F–35 program began pilot and maintenance training for both F–35A and F–35B aircraft and as of today, has completed training for the transition of 37 pilots and 686 maintainers. 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 (OUE) 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 2013, the focus will be on delivering sustainment capability as we stand up new bases and squadrons at Edwards Air Force Base, Nellis Air Force Base and Luke Air Force Base. Additionally, the program will stand up depot activities for aircraft components at Jacksonville Naval Air Station, Naval Aviation Depot San Diego, and Warner-Robins Air Logistics Center, as well as modification lines at Cherry Point Marine Corps Air Station and Ogden Air Logistics Center.

F–35 Sustainment costs remain a concern across the Department and to me personally. While the F–35 Joint Program Office and the Services continued to make progress in 2012 toward reducing sustainment estimates, there is much more work to be done in this area, and it is one of my highest priorities. The Services and the Department will continue to support the F–35 Joint Program Office (JPO) in its disciplined approach to analyzing and reducing sustainment costs. The program office continues to pursue a sustainment Business Case Analysis to identify areas for reduction. We conducted an Industry Day to foster competition in several areas of the sustainment program, including elements of the supply chain, support equipment, training operations support and Autonomic Logistics Information System administration. The program has instituted a robust Reliability and Maintainability program that is systematically identifying cost drivers and optimizing the maintenance approach for those components while continuing to institute tighter contract standards for suppliers to drive down repair turn times. Additionally, the program has instituted a Targeted Affordability Program that provides an increased emphasis on operations and sustainment and total ownership costs. We continue to work with the prime contractors to achieve an efficient Performance Based Logistics environment at the overarching weapon system level. The ultimate goal of all of this work is to produce a mutually beneficial sustainment enterprise that—with relevant metrics and incentives—operates, manages and supports the global system, while meeting warfighter-defined readiness and cost objectives.

AIRFRAME AND PROPULSION CONTRACT ACTIONS

The fiscal year 2011 lot 5 airframe contract was definitized in December 2012 following a "Should Cost" review and negotiations that lasted nearly 14 months. This FPIF contract with Lockheed Martin is valued at $3.8 billion and procures 32 aircraft (22 F–35A, 3 F–35B, and 7 F–35C) and ancillary equipment. Although negotiations were lengthy, the parties reached a fair, well-reasoned settlement that caps the government's liability at a ceiling price of 112 percent, as compared to 120 percent of the target cost in the prior lot buy. In addition, for the first time on this program, the government's cost risk is being mitigated by transferring 50 percent of the cost responsibility for concurrency to 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 costs with no fee for the known concurrency changes. Negotiations concluded on the fiscal year 2011 FPIF engine contract in February 2013 at a value of $588 million for 32 engines and spares. This contract reflects a 0/100 overrun shareline with the contractor assuming all cost overrun risk and capping the government's liability at the negotiated value of the contract, another first for the program.

An Undefinitized Contract Action (UCA) for lot 6 was awarded on December 28, 2012 for the procurement of up to a total of 31 aircraft (18 F–35A, 6 F–35B and 7 F–35C). Proposal evaluation is underway for both the lot 6 (fiscal year 2012) and lot 7 (fiscal year 2013) airframe procurements. We believe we can have a negotiation settlement for lots 6 and 7 by the end of May 2013, followed by final contract award in June 2013. By negotiating both lots 6 and 7 together, the program is striving to get out of the business of doing UCAs and attempting to align contracting actions with our budget and the actual production of aircraft. Concurrency sharing and a 0/100 overrun share (contractor assumes all the risk) will also be part of these contracts. There is no UCA for the lot 6 (fiscal year 2012) engine procurement and negotiations are expected to commence this month (April) with closure planned for summer 2013. The engine fiscal year 2012 and fiscal year 2013 buys will similarly be combined to regain a more appropriate contracting cadence.

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

An effective Earned Value Management System (EVMS) is critical to monitoring performance and controlling costs. In 2007, a Defense Contract Management Agency (DCMA) review found the 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 (CAP) during 2012; actions include development of new tools and processes as well as modifications to core management

processes. This CAP was accepted by the DCMA in February 2013. After an 8–12 month timetable to complete elements of the CAP, DCMA will start its re-certification process. In accordance with DOD Federal Acquisition Regulations, the DCMA imposed a 5 percent withhold against progress payments for new F–35 contracts, starting with LRIP 5. This 5 percent withhold is a result of the disapproved status of LM Aero's EVMS. The withhold will remain in place until LM Aero's EVMS deficiencies are corrected and the EVMS is compliant with EVM guidelines.

CONCLUSION

My observations and assessments since my arrival on the program give me reason to believe the basic aircraft design is sound and we can deliver on our promises to you, the taxpayers and warfighters. While there is still risk in the program, I have confidence in the resilience of the plan to absorb expected further learning and discovery and stay on track, so long as it remains properly resourced.

Software development remains one of my key focus areas. I have observed past and current performance by industry on software that gives me concern about the ability to deliver full capability within the current schedule without improvement in software development and test performance. The changes implemented by the combined government/contractor team have improved this outlook, but more work still needs to be done. The previous PEO developed a solid program baseline, and I continue to refine the execution of this baseline. However, I need my industry partners to step up to the plate and execute at the high levels I know they are capable of.

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 management is rising to the challenges of managing this complex system with discipline, transparency and accountability. Our progress continues at a slow but steady pace. I intend on completing this program within the budget and schedule I have been given. I ask that you hold me, my team, our stakeholders and contractors accountable over the coming months and years to ensure that we develop and deliver the warfighting capability this country needs.

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

Senator MANCHIN. Thank you, General.

Now we'll hear from Admiral Skinner.

STATEMENT OF VADM W. MARK SKINNER, USN, PRINCIPAL MILITARY DEPUTY TO THE ASSISTANT SECRETARY OF THE NAVY FOR RESEARCH, DEVELOPMENT, AND ACQUISITION

Admiral SKINNER. Chairman Manchin, Senator Wicker: Thank you for the opportunity to appear today before your subcommittee to discuss the Department of the Navy's aviation programs. On behalf of the Department of the Navy, I thank you and all members for your steadfast support to our Navy and Marine Corps who are meeting the Nation's commitments around the world. I propose to provide a brief statement and submit a separate formal statement for the record.

The Navy-Marine Corps team is forward-deployed and forward-engaged performing missions around the globe. Today naval aviation components are in the skies of Afghanistan protecting troops and Afghan civilians on the ground, providing intelligence, surveillance, and reconnaissance (ISR) off the coast of Korea, over the Sea of Japan, the Persian Gulf, and the Horn of Africa, and they are providing maritime security along the world's vital sea lanes, and standing as a force of deterrence to those who would do harm to our Nation or our Nation's interests.

In support of the Defense Strategic Guidance, we are also developing and recapitalizing to support the President and the Secretary of Defense's strategic priorities to rebalance to the Pacific, to en-

sure we provide the capability and the capacity to maintain an important presence in this region today and for the foreseeable future. We continue to assess and reshape our naval aviation plan to reflect the priorities of this defense strategy, with the reality of fact-of-life top-line reductions consistent with the Budget Control Act (BCA) of 2011. As such, this year's aviation and strike weapons plan strikes a balance between capacity, capability, affordability, and maintainability of the industrial base.

To fulfill our Nation's commitments and strategic priorities, the Department of the Navy's 2014 aviation budget request includes funding for R&D and procurement of 165 aircraft and more than 2,400 strike weapons. We have important work to do to close out-year capability gaps and risks. In doing so, however, we are working to deliver the full capability and capacity that our warfighters need in an affordable manner.

For example, we are increasing implementation of new cost reduction initiatives, like competition and early standup of depot maintenance, striving to use multi-year procurement strategies and strengthening an acquisition workforce culture to ensure we provide the best return on investment and be the best possible stewards of the taxpayers' monies.

Ultimately, we recognize that as we balance requirements, manage the increasing pressure to our top line, and factor in industrial base considerations, it is ever more important that our naval aviation programs closely align with not only the priorities outlined in the new defense strategy, but that government and industry continues to work together to increase efficiencies and improve affordability to support our current forces and help us build the future force of naval aviation.

Mr. Chairman, thank you for the opportunity to appear before your subcommittee today and I look forward to answering your questions.

[The prepared statement of Admiral Skinner follows:]

PREPARED STATEMENT BY VADM W. MARK SKINNER, USN

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 2014 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." 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 2014 Naval Aviation Budget plan: fifth generation fighter/attack capability; persistent multi-role intelligence, surveillance, and reconnaissance; supporting capabilities such as electronic attack, maritime patrol, 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 legacy aircraft 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 legacy fleet. The F–35B will replace three Marine Corps legacy aircraft: F/A–18, EA–6B, and AV–8B. The F–35C will complement the capabilities of the F/A–18E/F Super Hornet and E/A–18G. We have maintained our F–35B and F–35C procurement profile achieving the program procurement stability in line with the improvements in program accountability, discipline and transparency. The overall F–35 development program is adequately resourced and has realistic schedule planning factors to complete System Development and Demonstration (SDD). Although challenges still remain, the Navy and Marine Corps are fully committed to the F–35B and F–35C variants as we believe this aircraft is on sound footing towards delivering full Block 3 capabilities.

The F/A–18E/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, leveraging other service capacity where able, but valuing the unique contribution of maritime ISR. Unmanned systems have experienced high growth in the past decade and have proved to be invaluable assets for the joint force commanders. Because of their increasing presence, importance, and integration on the maritime and littoral battlefields, the roadmaps for the unmanned air systems are now included alongside the manned aircraft platforms in the mission categories they serve. The Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS) air system will provide a persistent aircraft carrier-based reconnaissance and strike capability to support carrier air-wing operations beginning by the end of the decade. MQ–4C Triton will provide persistent land-based maritime surveillance and complement our P–8 Multi-Mission Maritime Aircraft; MQ–8 Vertical Takeoff and Landing Tactical Unmanned Aerial Vehicle (VTUAV) 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 Unmanned Aerial System (UAS) will provide the shorter duration, line-of-sight reconnaissance capability essential for the unit level.

The fiscal year 2014 budget request enables Naval Aviation to continue recapitalization of our aging fleets of airborne early warning, maritime patrol, electronic attack, 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 emerging air and cruise missile threats in support of Integrated Air and Missile Defense. We continue efforts to replace our aged fleet of P–3C maritime patrol aircraft with a modern P–8A equipped with a sensor suite that provides persistent undersea and anti-surface warfare capabilities. Electronic attack capabilities, both carrier-based and expeditionary, continue to mature with plans to field 16 EA–18G squadrons, 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. Currently, the Department continues to modernize vertical lift capability and capacity with procurement of MH–60R/S, AH–1Z, UH–1Y, CH–53K, MV–22B, and the fleet of Presidential Helicopters (VXX program).

Finally, within our fiscal year 2014 budget request, the Department is continuing investments in the strike weapons programs that enable any deterrence or combat operation to ultimately succeed. Strike weapons investments include the Air Intercept

Missile/AIM–9X Block 2; Small Diameter Bomb II (SDB II); the Joint Standoff Weapon (JSOW C–1); Tactical Tomahawk Cruise Missiles (TACTOM/BLK IV); and the Advanced Anti-Radiation Guided Missile (AARGM). These capabilities ensure our Navy and Marine Corps warfighters can and will dominate in the air, on the world's oceans, seas and littorals, and in any land-combat operation.

TACTICAL AVIATION (TACAIR)

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 immediate and long-range Navy and Marine Corps aviation strategy and the Nation's se-

curity. F–35 will supplant the Navy's aging TACAIR fleet by replacing the Navy and Marine Corps legacy F/A–18 A–D Hornet 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.

The Marine Corps will leverage the F–35B's capabilities to ensure our TACAIR is able to provide the fifth-generation benefits to our ground warriors. The concept is one aircraft, capable of multiple missions, providing the MAGTF with flexible expeditionary basing and superior technology to dominate the fight. Our requirement for expeditionary tactical aircraft has been demonstrated repeatedly since the inception of Marine aviation almost 100 years ago today. From the expeditionary airfields and agile jeep carriers, to close air support, to forward basing on cratered runways and taxiways throughout Iraq, and strikes from the sea in Libya to today's fight in Afghanistan, our ability to tactically base fixed-wing aircraft has been instrumental to our success on the battlefield. 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. It is the interoperability catalyst that optimizes our TACAIR effectiveness and will generate unprecedented strategic and operational agility within our MAGTF's to counter a broad spectrum of threats and win in operational scenarios that cannot be addressed by current legacy aircraft. Similarly, in the Carrier Battle Group, the F–35C complements the F/A–18E/F Block II and EA–18G in providing survivable, long-range strike capability and persistence in an access-denied environment. F–35C will provide the Carrier Strike Group Commanders greater tactical agility and strategic flexibility to counter a broad spectrum of threats and win in operational scenarios that cannot be addressed by current legacy aircraft.

With the resources applied to the F–35 program at the March 2012 Milestone B recertification and reflected in fiscal year 2014 President's budget request, the overall F–35 development program is adequately resourced with realistic schedule planning factors to complete SDD. The SDD contract renegotiation has been completed and includes these updated planning factors. Although challenges still remain, this plan has strong support within the Department of the Navy as we believe it places the development program on sound footing towards delivering full Block 3 capabilities.

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. Over the past year, the F–35 program has worked with 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.

F–35 sustainment costs remain a concern. The Navy continues to support the F–35 Joint Program Office (JPO) in its disciplined approach to analyzing and reducing sustainment costs. While the JPO and the Services made progress this past year identifying approximately $30 billion (callendar year 2012 money) in projected lifecycle savings, there is more work to do in this area and the focus remains. The Navy, working in concert with the JPO, will analyze options outside of the Program Executive Office's (PEO) span of control to reduce operating cost such as reviewing basing options and sequencing, unit level manpower/squadron size, and discrete sustainment requirements. Through these combined efforts, the Department believes the PEO can increase convergence on an affordable F–35 sustainment strategy that both meets the required level of Service/Partner performance and lowers the total life cycle cost of the overall program.

The fiscal year 2014 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 $2.9 billion in Aircraft Procurement, Navy (APN) for 10 F–35 aircraft (6 F–35B and 4 F–35C) with associated aircraft hardware, modification requirements, and spares. The request includes funding for Block 4 for systems engineering and planning to achieve follow on capabilities for emerging and evolving threats. Maintaining procurement rate, and an eventual optimum production ramp rate, is critical towards achieving F–35 affordability goals and preventing excessive expenditures on aircraft with limited service-life and decreasing operational relevance.

The Navy is aware of the many challenges that remain on the F–35 program, but the program is improving and showing accountability, discipline, and transparency. The F–35 is an essential future Navy/Marine Corps Aviation capability 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 development, production, and sustainment to ensure that this capability is obtained at the lowest cost, at the earliest date possible, to meet our national security obligations.

F/A–18 Overview

The F/A–18 Hornets have consistently met readiness and operational commitments. There are 24 Navy Super Hornet squadrons with 506 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 squadrons with 621 legacy A–D Hornets. While the F/A–18 A–Ds transition to the F/A–18E/F and F–35, the current inventory of F/A–18 A–Ds will comprise more than half of the Navy's strike fighter inventory well into 2013. Super Hornets and legacy Hornets have conducted more than 189,000 combat missions since September 11, 2001. Over the last 12 years of combat operations, deployed ashore and aboard our aircraft carriers at sea, Department of the Navy F/A–18s have provided vital over watch and direct support to our troops in combat, on the ground, and in multiple theaters of operation, brought significant precision ordnance and laser-guided munitions to the fight, and have employed thousands of rounds of 20-millimeter ammunition supporting forces during strafing runs.

Both the legacy Hornet and the Super Hornet were procured with an objective of 20 years' time in service. The average legacy Hornet has exceeded that goal (73 percent of legacy aircraft exceed 20 years of age) and the Super Hornet is already at almost 30 percent of its expected 20-year life. Based on current trends we anticipate that most aircraft will substantially exceed 20 years in service.

F/A–18 A/B/C/D (Legacy) Hornet

The fiscal year 2014 President's budget requests $59.5 million in APN is for the continuation of a Service Life Extension Program (SLEP) and system upgrades and obsolescence programs for the inventory of 621 legacy F/A–18 Hornets. Funds requested will procure and install SLEP kits required to extend the service life of select candidate F/A–18 A–D aircraft to 10,000 flight hours. The High Flight Hour (HFH) inspections and SLEP modifications can extend the F/A–18 A–D service life beyond 8,000 flight hours. Continued investment in program related engineering and program related logistics funds within the Operation and Maintenance, Navy accounts is critical for sustaining the combat relevancy of the Navy's legacy platforms through the TACAIR transition.

The F/A–18 A–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. Naval Aviation has been successful in achieving 8,000 flight hours per aircraft and is pursuing a strategy to go as far as 10,000 flight hours on select aircraft. Ongoing service life management initiatives continue to demonstrate excellent return on investment against the effort to close the strike fighter shortfall gap.

Flying aircraft outside their design life is not without risk and comes with less predictability and more variability. In order to mitigate this risk, engineering analysis will continue to ensure our ability to address these discoveries, lesson burden on the operating forces, and ensure needed aircraft availability. Fleet Readiness Centers have the capacity to execute the required number of HFH inspections and SLEP modifications.

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), 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–18 A–D aircraft.

The continued outstanding efforts of the Navy/Marine Corps team will further define necessary actions required to manage aging F/A–18 A–D aircraft, address discovery of potentially greater than expected fatigue and corrosion, and ensure required availability of aircraft until JSF fleet introduction.

F/A–18E/F Super Hornet

The fiscal year 2014 President's budget requests $206.5 million in APN for tasks common to F/A–18E/F and EA–18G production; $491.9 million in APN to implement aircraft commonality programs to maintain capabilities and improve reliability/structural safety of the Super Hornet fleet; and $21.9 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 legacy Hornets. The production program continues to deliver on-cost and on-schedule.

There are no F/A–18E/F aircraft programmed in fiscal year 2014; only the 21 EA–18Gs. fiscal year 2013 is the final planned procurement year to complete the program of record (POR) of 552 F/A–18E/F aircraft. The congressional add of 11 F/A–18E/F in 2013 changes the total number of aircraft to 563 which will be incorporated into the POR with the next budget submission. A multiyear procurement (MYP) contract for 124 F/A–18E/F

Super Hornets and EA–18G Growlers (fiscal years 2010 through 2013) was signed on September 24, 2010. In December 2010, the Secretary of Defense added 41 F/A–18E/F aircraft to the fiscal year 2012 President's budget request in fiscal years 2012 through 2014.

All Lot 30 (fiscal year 2006) and beyond F/A–18E/Fs and EA–18Gs have the APG–79 Active Electronically Scanned Array (AESA) Radar system installed in production, and a retrofit program exists to modify 133 Lot 26–29 Block II aircraft with the AESA Radar. More than 300 APG–79 AESA Radars have been produced to date. The Navy plans to equip all 415 Block II Super Hornets with AESA Radars, providing the Super Hornet a significant increase in detection range, lethality and survivability over the legacy Hornets. Successfully deployed since 2007, AESA Radar equipped squadrons are highly valued by fleet commanders because of their ability to share tactical battle space management data with the non-AESA Radar Tactical Aircraft in the carrier battle group. The F/A–18E/F and EA–18G with the APG–79 are force multipliers.

Production engineering support (PES) and integrated logistics support (ILS) funded efforts common to both F/A–18E/F and EA–18G aircraft are included in the F/A–18E/F budget lines independent of whether F/A–18E/F aircraft are being procured. These two support cost elements are not proportional to the number of aircraft being procured and are not duplicative to the funding in PES and ILS of the EA–18G budget.

The $491.9 million in APN implements commonality efforts to maintain capabilities and improve reliability/structural safety of the Super Hornet fleet. The Super Hornet uses an incremental development/commonality approach to incorporate new technologies and capabilities, to include: Digital Communication System Radio, MIDS, Joint Tactical Radio System, JHMCS, ATFLIR with shared real-time video, Accurate Navigation, Digital Memory Device, Distributing Targeting System, Infrared Search and Track and continued advancement of the APG–79 AESA Radar.

The $21.9 million RDT&E,N request supports the F/A–18E/F SLAP requirement. Currently, the F/A–18E/F fleet has flown approximately 30 percent of the available 6,000 total flight hours. The remaining service-life will not be adequate to meet operational commitments through 2035. In 2008, the Navy commenced a three phased F/A–18E/F SLAP to analyze actual usage versus structural test data and identify the feasibility of extending F/A–18E/F service life from 6,000 to 9,000 flight hours via a follow-on SLEP. The F/A–18E/F SLAP will identify the necessary inspections and modifications required to achieve 9,000 flight hours and increase total and arrested landings, and catapults beyond currently defined life limits and is currently assessed as low risk. The SLMP philosophy has been applied to the F/A–18E/F fleet at an earlier point in its lifecycle than the F/A–18 A–D. This will optimize fatigue life expended, flight hours, and total landings aligning aircraft service life with fleet requirements.

TACAIR Inventory Management

The Navy and Marine Corps continue to carefully monitor strike fighter inventory requirements and projected availability. The fiscal year 2013 President's budget shortfall of 56 was assessed as manageable. The strike fighter shortfall is currently predicted to peak at 18 in 2023. The shortfall continues to fall primarily as a result of decreased F/A–18E/F utilization rates and flight extensions for F/A–18 A–D aircraft after successful completion of the HFH inspections and repair. The shortfall is based on the following assumptions: The Navy will maintain its current tactical fixed-wing force structure; utilization rates will not increase; the delivery rate of F–35B/C does not slip further to the right; and SLEP efforts on legacy Hornets will allow most of them to fly past 8,000 flight hours to an extended authorization of 9,000 hours after completing the HFH inspections with a subset of those aircraft attaining 10,000 flight hours with SLEP modifications.

The Marine Corps has been driven to evaluate inventory availability amongst its Harrier and Hornet fleet in the later years and adjust its transition priorities and timing. The last active Marine F/A–18 squadron is currently scheduled to transition

in 2026, and the current F/A–18 Reserve squadron does not receive its F–35s until the year 2030. Additional pressures are felt with an increase of F/A–18 A–D aircraft reaching 8,000 flight hours and requiring extensive depot time to inspect, repair, and extend service-life. The Harriers were expected to complete their transitions in 2022 in the fiscal year 2011 President's budget, and then 2026 in fiscal year 2012 President's budget. The Harriers are now planned to remain in service until 2030 due to reduced F–35 ramp rates and the fact that they have more flight hour life remaining than the Hornets.

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

Additionally, the AV–8B is operating with an 18 aircraft shortfall. One AV–8B squadron will be retired at the end of fiscal year 2013 to meet Marine Corps manpower reductions, allowing the remaining squadrons to operate with a two aircraft shortfall. In fiscal year 2014, the Navy will transition two additional squadrons from F/A–18C to F/A–18E and then redistribute those F/A–18C aircraft amongst the Navy requirements.

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

Airborne Electronic Attack/EA–6B Prowler

The fiscal year 2014 President's budget request includes $19.7 million in RDT&E,N for electronic warfare (EW) counter response; $10.1 million RDT&E,N for MAGTF EW, $48.5 million in APN for common airborne electronic attack (AEA) systems; $18.6 million in APN for all EA–6B series aircraft; and $14.4 million APN for MAGTF EW.

Currently, 57 EA–6Bs in the Navy and Marine Corps support 51 operational aircraft in 10 Active squadrons, 1 Reserve squadron, and 2 test squadrons. This includes 24 Navy and Marine Corps Improved Capability (ICAP) II aircraft and 27 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. In development are the ALQ–231 Intrepid Tiger II communications jammer, UAS EW payloads, a software reprogrammable payload, and an EW services architecture to facilitate collaborative networked electronic warfare battle management.

The Intrepid Tiger II is currently carried on the AV–8B in U.S. Central Command's (CENTCOM) area of responsibility (AOR) and the 15th Marine Expeditionary Unit (MEU). Intrepid Tiger II and similar electronic warfare capabilities will eventually be fielded on unmanned, fixed-wing, and rotary-wing platforms to provide direct AEA support to the MAGTF. 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.

Airborne Electronic Attack/EA–18G Growler

The fiscal year 2014 President's budget request is $2.0 billion in APN for procurement of 21 EA–18G aircraft; $11.1 million in RDT&E,N for integration of jamming techniques optimization improvements and evolutionary software development; and $257.7 million RDT&E,N for NGJ.

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 sup-

port of Operation New Dawn (OND) and Operation Unified Protector (OUP). Since the initial deployment, Growlers have flown more than 2,300 combat missions. The EA–18G received accolades from both CENTCOM and Supreme Headquarters Allied Powers Europe for its enabling combat capability contributions to the battlespace.

In 2009, the Navy began transition from EA–6Bs to EA–18Gs. The first carrier-based EA–18G squadron deployed in May 2011. All three active component Navy expeditionary squadrons and four of the 10 carrier based squadrons have completed transition to the EA–18G. The 10 carrier based EA–18G squadrons will fulfill Navy requirements for AEAs; 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 POR is for 135 EA–18G aircraft, of which 114 have been procured to date. The final procurement of EA–18Gs is planned for 2014. The EA–18G fleet has flown 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 replaces the 40-year old ALQ–99 system. It is designed to provide modified escort power in support of joint and coalition air, land, and sea tactical strike missions. NGJ is critical to the Navy's vision for the future of AEA strike warfare. Funding is vital to maintain schedule, allowing the program to transition to the technology development phase and ensure timely start of the EA–18G long lead integration activities.

E–2D Advanced Hawkeye

The fiscal year 2014 President's budget requests $152.0 million in RDT&E,N for continuation of SDD and added capabilities to include In-Flight Refueling, Tactical Targeting Network Technology, Secret Internet Protocol Router Chat, and the Advanced Mid-Term Interoperability Improvement Program, and $1,264 million in APN for five Full Rate Production (FRP) Lot 2 aircraft and advance procurement (AP) for fiscal year 2015 FRP Lot 3 aircraft and EOQ funding for the proposed MYP for fiscal years 2016, 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 surface combatants equipped with the Aegis combat system to detect, track and defeat air and cruise missile threats at extended range and provide Battle Group Commanders required reaction time.

The E–2D AHE program is in FRP. On March 1, 2013, the Acquisition Decision Memorandum was signed and the Secretary of Defense certification for the fiscal year 2014–2018 MYP was sent to Congress. Initial operational capability (IOC) is on track for first quarter fiscal year 2015.

AV–8B Harrier

The fiscal year 2014 President's budget requests $41.6 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 AV–8B F402–RR–408 engine safety and operational changes.

The fiscal year 2014 President's budget requests $35.8 million in RDTE,N funds to continue design, development, integration and test of various platform improvements such as: Engine Life Management Program, escape systems, Joint Mission Planning System, and block upgrades to various mission systems, communications systems, navigation equipment, weapons carriage and countermeasures, and the Obsolescence Replacement (OR)/Readiness Management Plan (RMP).

The AV–8B continues to be deployed heavily in support of operational contingencies. Each MEU deploys with embarked AV–8Bs. The AV–8B, equipped with precision weapons, Litening targeting pods with a video downlink to Rover ground stations, 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. By the end of 2013, the AV–8B will receive the H6.1 Operational Flight Program enabling full integration of the Generation 4 Litening Targeting pod. Based on current F–35B transition plans, the Harrier out-of-service date has been extended from 2022 to 2030. As a result, the AV–8B program must focus on

sustainment efforts to mitigate significant legacy inventory shortfalls, maintain airframe sustainment, and address reliability and obsolescence issues of avionics and subsystems. Additionally, this aircraft must be funded to maintain combat relevance to include tactical datalink and sensor improvements in order provide continued operation in support of operational contingencies and transition qualified aircrew to the F–35. The current digital aided close air support technology installed on the AV–8B is obsolete.

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

ASSAULT SUPPORT AIRCRAFT

MV–22

The fiscal year 2014 President's budget requests $ 43.1 million in RDT&E,N for continued product improvements and $1.49 billion in APN for procurement and delivery of 18 MV–22s (Lot 18). fiscal year 2014 will be the second year of the follow-on V–22 MYP contract covering fiscal years 2013–2017. The funds requested in the fiscal year 2014 President's budget request fully fund Lot 18, procure long lead items for Lot 19 and provide the balance of required economic order quantity funding for the MYP. The Marine Corps continues to field and transition aircraft on time. The APN request includes $160.8 million to support the ongoing Operations and Safety Improvement Programs (OSIP), including correction of deficiencies and readiness.

The follow-on MYP, which begins in fiscal year 2013, will procure at least 91 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 better 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. These improvements continue to have a clear effect on increasing aircraft availability and decreasing flight hour costs. At the close of fiscal year 2012, the mission capability rate of the MV–22 increased 8 percent over fiscal year 2011 and the cost per flight hour decreased 6 percent in the same period. To keep these improvements on track, a readiness OSIP was introduced into the fiscal year 2012 President's budget. This OSIP provides a stable source of crucial modification funding as the Ospreys continue to improve readiness and reduce operating cost.

CH–53K Heavy Lift Replacement Program

The fiscal year 2014 President's budget requests $503.2 million RDT&E,N to continue engineering and manufacturing development (EMD) of the CH–53K. Since completing its critical design review in July 2010, the CH–53K program commenced system capability and manufacturing process demonstration, and started fabrication of the first five test aircraft (one ground test aircraft, four flight test aircraft). During fiscal year 2014, the program will assemble and check-out the first of these test articles needed to support developmental test activities and flight test of the CH–53K.

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 CH–53E aircraft currently in service continue to meet unprecedented operational demand but are approaching 30 years of service and growing ever more challenging to maintain. To keep the "Echo" viable until the "Kilo" enters service, the fiscal year 2014 President's budget requests $67.7 million APN for both near and mid-term enhancements. These modifications include condition-based maintenance software upgrades, T–64 engine reliability improvement program kits, critical survivability upgrade, smart multifunctional color display and sustainment efforts such as Kapton wiring replacement and improved engine nacelles.

ATTACK AND UTILITY AIRCRAFT

UH–1Y/ /AH–1Z

The fiscal year 2014 President's budget requests $47.1 million in RDT&E,N for continued product improvements and $821.0 million in APN for 25 H–1 Upgrade aircraft: 15 UH–1Y and 10 AH–1Z aircraft. The program is a key modernization effort designed to resolve existing safety deficiencies, enhance operational effectiveness, and extend the service-life of both aircraft. The 85 percent commonality between the UH–1Y and AH–1Z will significantly reduce lifecycle 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 remanufacturing.

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 tie these airframes, their sensors, and their weapons systems together with ground combat forces and capable DOD aircraft. Low-cost weapons such as the Advanced Precision Kill Weapon System II (APKWS II) will increase lethality while reducing collateral damage.

The UH–1Y 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 March 30, 2013, 104 aircraft (74 UH–1Ys and 30 AH–1Zs) have been delivered to the Fleet Marine Force; an additional 77 aircraft are on contract and in production. Lots 1–6 aircraft deliveries are complete. The last two aircraft from Lot 7 (the first two AH–1Z build new (ZBN) aircraft) will deliver in fiscal year 2014. Lot 8 deliveries are progressing on or ahead of schedule. All aircraft deliveries since Lot 3 have been completed ahead of the contracted schedule date by an average of 33 days.

In December 2011, to address existing attack helicopter shortfalls, the Marine Corps decided to pursue an all 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 POR. The previous mix of 131 remanufactured AH–1Z and 58 ZBN aircraft has been revised to delivery of 37 remanufactured AH–1Z and 152 ZBN aircraft. The total aircraft procurement numbers remain the same at 160 UH–1Ys and 189 AH–1Zs for a total of 349 aircraft.

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 Department is working closely with HMX–1 and industry to sustain these aircraft until a presidential replacement platform is fielded. The fiscal year 2014 President's budget requests an investment of $85.7 million to continue programs that will ensure the in-service presidential fleet remains a safe and reliable platform. Ongoing efforts include the Cockpit Upgrade Program for the VH–60N, Communications Suite Upgrade, Structural Enhancement Program and the Obsolescence Management Program. The VH–3D Cockpit Upgrade Program, a fiscal year 2012 new start program, will provide a common cockpit with the VH–60N and address a number of obsolescence issues. Continued investments in the in-service fleet will ensure continued safe and reliable execution of the execu-

tive 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 2014 President's budget request includes $94.2 million for continuing efforts on VXX, the follow-on program for Presidential helicopters.

Significant progress has been made in the past year and the program requirements and acquisition strategy have now been approved. The acquisition approach includes full and open competition for 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. Contractor proposals are expected this summer for the EMD effort, along with priced options for production. 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 2014 President's budget requests $166.7 million for procurement of one KC–130J's included in the first year of the MYP request and continued product improvements of $47.6 million. Targeted improvements include air-to-air refueling hose reel reliability, 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. Continuously forward deployed in support of Operations Iraqi Freedom and Enduring Freedom (OIF/OEF) since 2005, the KC–130J continues to deliver marines, fuel and cargo whenever and wherever needed. In 2012 the KC–130J remained 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 Afghanistan, and deployed MEUs.

Continuously 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 close air support required by Marine forces in Afghanistan. Three mission kits have been fielded to date, with three more kits on contract to deliver in fiscal year 2014. Funding included in the fiscal year 2014 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 procured 48 KC–130Js, 31 aircraft short of the 79 aircraft POR. The 3 aircraft included in the fiscal year 2013 budget will complete the Active component (AC) requirement of 51 aircraft. The Marine Corps will use the AC backup aircraft to accelerate the Reserve component (RC) transition from the legacy KC–130T aircraft to the more capable, more efficient, KC–130J beginning in fiscal year 2015. Aircraft requested in the fiscal year 2014 President's budget request will further accelerate the RC transition. 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 2014 President's budget requests $317 million in RDT&E,N for integrated development and associated testing and $3.503 billion for procurement of 16 FRP P–8A Poseidon aircraft which are scheduled to begin delivery in May 2016. APN funding supports advanced procurement (AP) 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 and avionics that enables integration of modern sensors and robust communications. The program is on track for IOC in late 2013 when the first squadron will have completed transition and is ready to deploy. The P–8A program is meeting all cost, schedule, and performance parameters in accordance with the approved Acquisition Program Baseline.

In August 2010, the P–8A program obtained Milestone C approval, authorizing the Navy to proceed with procurement of LRIP Lots 1, 2, and 3 for six aircraft in fiscal year 2010, seven aircraft in fiscal year 2011, and eleven aircraft in fiscal year 2012. The Navy has awarded contracts for all LRIP aircraft. All six LRIP Lot 1 aircraft have been delivered to Patrol Squadron 30 at Naval Air Station, Jacksonville, FL, and LRIP Lot 2 deliveries are now commencing. The first Fleet squadron (VP–

16) has completed P–3C to P–8A transition training, and the second squadron transition (VP–5) is underway and on-track. Patrol Squadron 16 continues preparations for the first operational P–8A deployment in December 2013. The P–8A SDD effort has completed initial operational test and evaluation (IOT&E), delivered software updates to address previously identified deficiencies, and initiated testing of these software updates in preparation for a first quarter fiscal year 2014 follow-on test and evaluation period. Results of operational testing are being analyzed in preparation for release of the Beyond LRIP report and subsequent FRP decision review. The production configuration has been shown to be mature and stable throughout the integrated test and IOT&E phases. The program has completed proposal evaluations and expects to complete contract negotiations in time to award the fourth production lot in June 2013. As fleet deliveries of the Increment 1 configuration accelerate, integration and testing of P–8A Increment 2 capability upgrades continue. In particular, Phase I of Increment 2 multi-static active coherent ASW capability is on-track for flight testing in fiscal year 2014. fiscal year 2013 began 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 2014, $37.4 million is requested for P–3C airframe and mission systems sustainment. Over two-thirds ($26.7 million) is for wing modifications to support the Chief of Naval Operation (CNO) "P–3 Fleet Response Plan", as well as supporting EP–3E requirements, which are executed within the P–3 Airframe Sustainment Program. 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 2018.

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, 174 aircraft grounding bulletins have impacted 131 P–3 aircraft. In December 2007, the Navy's ongoing RDT&E funded P–3 Fatigue Life Management Program determined that in addition to existing structural fatigue issues associated with the forward lower wing section (Zones 2–4), the lower aft wing surface (Zone 5) of the P–3 aircraft showed fatigue damage beyond acceptable risk resulting in the grounding of 39 P–3 aircraft. As of February 2013, a total of 88 aircraft have been grounded for Zone 5 fatigue. P–3 groundings due to known material fatigue will continue for the remainder of the P–3 program, and unknown fatigue issues will continue to present persistent risk until P–8A transition is complete. A return to pre-December 2007 aircraft availability numbers was achieved in December 2010 and 85 P–3C mission aircraft are available today. Preserving funding for Zone 5 and outer wing installations is critical to sustaining the minimum number of P–3Cs until replaced by the P–8A. The Navy will continue to closely manage the service life of the P–3C through transition to the P–8A Poseidon.

EP–3 Aries Replacement/Sustainment

In fiscal year 2014, the President's budget request is $55.9 million in APN for EP–3 Aries replacement/sustainment. The APN request supports the procurement and installation 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 airborne intelligence, surveillance, reconnaissance, and targeting (AISR&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 surge efforts, are fielding a robust multi-intelligence capability inside the Future Years Defense Program. Multi-intelligence sensors, robust communication, and data links employed by the flexible and dependable P–3 air vehicle help ensure effective AISR&T support to conventional and non-conventional warfare across the current range of military operations. Operating around the globe, the EP–3E continues to satisfy critical joint, combatant commander, and Service airborne ISR priorities and requirements.

The Navy is in the process of developing the AISR&T family of systems construct to recapitalize the EP–3 AISR&T capabilities within existing POR platforms: MQ–4C Triton, VTUAV, P–8A, H–60, and E–2D. The strategy has been further refined to focus on module systems and payloads required for the Navy to conduct AISR&T on a variety of vehicles, providing combatant commanders with scalable capability

and capacity. The inclusive full-spectrum approach of the Navy's sea and shore-based manned and unmanned platforms aligns with the CNO's priorities.

UNMANNED AERIAL SYSTEMS

MQ–4C Triton Unmanned Aerial System

The fiscal year 2014 President's budget postpones the MQ–4C Triton (formerly known as BAMS for Broad Area Maritime Surveillance) LRIP until fiscal year 2015. The fiscal year 2014 President's budget requests $375.2 million in RDT&E,N to continue Triton SDD; $52.0 million APN for procurement of long-lead materials for the first lot of LRIP aircraft; and $79.2 million in MILCON to refurbish a maintenance hangar at NAS Point Mugu, CA, as well as a forward operating base and hangar for Pacific operations at Andersen AFB, Guam. Though LRIP is delayed 1 year, Triton will start establishing five globally-distributed, persistent maritime ISR orbits by providing operational ISR beginning in fiscal year 2016. The program is scheduled to perform First Flight this quarter, commencing a rigorous integrated flight test program, to support Milestone C planned for fiscal year 2015. 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 procured two Air Force Global Hawk Block 10 UASs in fiscal year 2004 for demonstration purposes and to perform risk reduction activities for the Triton UAS Program. In April 2011, Navy accepted three additional Block 10 aircraft from the Air Force to be utilized as spare parts assets. These aircraft, known as BAMS-Demonstrators, have been deployed to CENTCOM's AOR for over 4 years. These demonstration assets are adequate to cover all Navy needs through the transition to Triton in fiscal year 2016.

MQ–8B Vertical Takeoff and Landing Unmanned Aerial Vehicle and Associated Rapid Deployment Capability (RDC) Efforts

The MQ–8 Fire Scout is an autonomous VTUAV designed to operate from all air-capable ships, carry modular mission payloads, and operate using the Tactical Control System and line-of-sight tactical common data link. The fiscal year 2014 President's budget requests $48.7 million of RDT&E,N to continue development of an endurance upgrade (MQ–8C), to continue payload and LCS integration with the MQ–8B, and integrate radar on the MQ–8B. The request includes $76.6 million of APN for the production of one Fire Scout MQ–8C aircraft, multiple ship control stations, and initial spares to support the MQ–8C rapid deployment capability. Procurement of ship-based control stations is aligned to both the LCS schedule and the outfitting of other ships to support Special Operations Forces (SOF) missions. Commonality of avionics, software, and payloads between the MQ–8B and MQ–8C has been maximized. The MQ–8B and MQ–8C use the same ship-based control station and other ship ancillary equipment.

Fire Scout was deployed to Afghanistan in April 2011, and has amassed more than 4,300 dedicated ISR flight hours in support of U.S. and coalition forces. Successful deployments aboard USS *Simpson*, USS *Klakring*, USS *Bradley*, and USS *Samuel B. Roberts* have supported SOF and Navy operations since 2012. Fire Scout has flown more than 1,500 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.

These unforeseen early deployments and high operational temp, combined with previously undiscovered and corrected reliability issues with the MQ–8B, have caused delays in IOT&E. Acquisition planning, which leverages investments in VTUAV rapid deployment capabilities, is in work to ensure Fire Scout will continue to support the LCS mission packages.

Unmanned Combat Air System Carrier Demonstration (UCAS–D)

The fiscal year 2014 President's budget requests $21 million in RDT&E,N to complete the Navy UCAS–D efforts to research a tactical jet-sized, carrier-suitable, low-observable-relevant, unmanned aircraft system. The fiscal year 2014 budget request is to complete the autonomous aerial refueling (AAR) demonstration with surrogate aircraft, the Navy UCAS capstone artifacts to capture all lessons learned, disposition of test articles, test beds, intellectual properties, and contract close-out efforts. The UCAS–D program will demonstrate UAS carrier operations and autonomous AAR, and mature required technologies to Technology Readiness Level-six (TRL–6) in support of potential follow on unmanned acquisition programs. The aviation/ship integration portion of the program is meeting all technical objectives, with surrogate aircraft flights in the vicinity of aircraft carriers completed in 2009 and 2010. Since then, the X–47B has completed envelope expansion testing, land-based carrier con-

trol area and catapult testing, and is now completing the land-based approach and trap build-up to conduct carrier qualification testing, to include catapult and arrested landings, in the summer 2013. The latest AAR testing period was completed in January 2012 utilizing a manned surrogate aircraft, and AAR development and testing will continue throughout 2013. The program is constrained by Navy CVN schedules and planning. Currently the program is working closely with Navy leadership to reduce risk and align program and CVN operational schedules to best accommodate demonstration objectives.

Unmanned Carrier Launched Airborne Surveillance and Strike System

The fiscal year 2014 President's budget requests $146.7 million in RDT&E,N for UCLASS System efforts. The UCLASS system will enhance carrier capability and versatility for the Joint Forces commander through integration of a persistent and mission flexible unmanned aircraft into the carrier air wing no later than fiscal year 2020. The Joint Requirements Oversight Council issued a memorandum in December of 2013, reconfirming the need for an affordable, adaptable carrier-based ISR platform with precision strike capability. The UCLASS system will provide persistent ISR with precision strike capabilities for missions ranging from permissive counterterrorism operations, to missions in low-end contested environments. The UCLASS system will also provide enabling capabilities for high-end denied operations from the carrier strike group. It will be sustainable onboard an aircraft carrier, as well as ashore, and will be designed to minimize the logistics footprint of the current carrier air wing. The UCLASS system will have the ability to pass command and control information along with sensor data to other aircraft, naval vessels, and ground forces. Sensor data will be transmitted, in either raw or processed forms, at appropriate classification levels, to exploitation nodes afloat and ashore. Interfaces will be provided with existing ship and land-based command and control systems, including ISR tasking, as well as processing, exploitation, and dissemination systems. The UCLASS system will achieve these capabilities through the use of a carrier-suitable, semi-autonomous, unmanned air segment, a control system and connectivity segment, and a carrier segment.

Tactical Control Station

The fiscal year 2014 President's budget requests $8.4 million in RDT&E,N for the Tactical Control Station (TCS). TCS provides a standards compliant, open architecture, with scalable command and control capabilities for the VTUAV system. In fiscal year 2014, TCS will continue to transition to the Linux operating system software to a technology refreshed control station, enhance the VTUAV Ocean Surveillance Initiative for ships automatic identification system and sensor track generation, and develop an interface to an ISR process exploit dissemination system. 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 station.

Cargo Unmanned Aerial System

The fiscal year 2014 President's budget is requesting funding for continued Cargo Unmanned Aerial System (CUAS) deployment in fiscal year 2014. CUAS operations started in November 2011, and have delivered over three million pounds of cargo in 1,300 flight hours to date. The CUAS is meeting rapid development capability goals and is also supporting the development of UAS concept of operations (CONOPs).

The purpose of the Cargo UAS capability is to develop CONOPs to "get trucks off the roads" in combat zones, minimizing the improvised explosive device threat to logistics convoys. The CUAS provides a low risk, persistent, 24-hour capability for dispersed forces on the battlefield. This capability mitigates the requirement for manned ground vehicles to resupply forces in remote locations. The CUAS also augments manned aviation assault support assets and airdrop methods when the weather, terrain, and enemy pose an unsuitable level of risk. CONOPs expansion in 2012 included autonomous cargo delivery to a way point and cargo retrograde from spokes back to the main base.

RQ–21A Small Tactical Unmanned Aircraft System

The fiscal year 2014 President's budget requests $16.1 million in RDT&E,N ($5.0 million Navy, $11.1 million Marine Corps) and $66.6 million in PMC for 5 RQ–21A systems which include 25 air vehicles that will address Marine Corps ISR capability shortfalls currently supported by service contracts. This Group 3 UAS will provide persistent ship and land-based ISR support for tactical-level maneuver decisions and unit level force defense and force protection missions. Milestone B and contract

award occurred in July 2010. Milestone C and LRIP decisions are scheduled for the third quarter of fiscal year 2013. RQ–21A will enter into IOT&E no later than the fourth quarter of fiscal year 2014.

RQ–7B Marine Corps Tactical Unmanned Aircraft System

The fiscal year 2014 President's budget requests $0.7 million in RDT&E,N to continue development efforts and government engineering support and $26.4 million in APN to support the continuation of congressionally-mandated tactical control data link retrofits for RQ–7B Shadow units. Marine Corps Shadow squadrons have seen continuous service in Iraq and Afghanistan since 2007. The Marine Corps received its 13th RQ–7B Shadow system in first quarter fiscal year 2012, completing baseline fielding for four squadrons. The Marine Corps Shadow systems are identical to Army Shadow systems, bringing interoperability and commonality between Army and Marine Corps unmanned aircraft units operating side-by-side in Afghanistan. An 18-month initiative to weaponize two Marine Corps RQ–7B systems with a laser-guided projectile was started in the first quarter of fiscal year 2012.

STRIKE WEAPONS PROGRAMS

Tactical Tomahawk BLK IV Cruise Missile Program

The fiscal year 2014 President's budget requests $312.5 million in Weapons Procurement, Navy (WPN) for procurement of an additional 196 BLK IV weapons and associated support, $26.1 million in OPN for the Tactical Tomahawk Weapon Control System (TTWCS), and $4.5 million in RDT&E for capability updates of the weapon system. WPN resources will be for the continued procurement of this versatile, combat-proven, deep-strike weapon system in order to meet surface and subsurface ship-fill load-outs and combat requirements. OPN resources will address the resolution of TTWCS obsolescence and interoperability mandates. RDT&E will be used to initiate engineering efforts for image navigation, which provides an upgrade to reduce mission planning timelines and reduce reliance upon GPS navigation.

Tomahawk Theater Mission Planning Center

Tomahawk Theater Mission Planning Center (TMPC) is the mission planning segment of the Tomahawk Weapon System. Under the umbrella of TMPC, 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. 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 2014 President's budget requests $7.9 million in RDT&E and $45.5 million OPN for continued TMPC system upgrades and support. These planned upgrades support integration, modernization and interoperability efforts necessary to keep pace with changes, retain capability and exploit capabilities of the Tomahawk missile and external organizations to include providing an alternate GPS denied navigation system (ImageNav), 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: cruise missile support activities, Tomahawk Strike and Mission Planning Cells (5th, 6th, 7th Fleet), carrier strike groups, command and control nodes, surface and subsurface firing units and labs/training classrooms.

Sidewinder Air-Intercept Missile (AIM–9X)

The fiscal year 2014 President's budget requests $39.2 million in RDT&E and $117.2 million in WPN for this joint Navy and Air Force program. RDT&E will be applied toward AIM–9X/BLK II developmental/operational tests and requirements definition for Joint Staff directed insensitive munitions requirements, as well as initial AIM–9X/Block III development activities. WPN will be for production of a combined 225 all-up-rounds and captive air training missiles and missile-related hardware. The AIM–9X/BLK 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 2014 President's budget requests $2.6 million in RDT&E and $95.4 million in WPN for production of 54 tactical missiles and missile-related hardware. Advanced Medium-Range Air-to-Air Missile (AMRAAM) is a joint Navy and Air Force missile that counters existing aircraft and cruise-missile threats. It uses advanced electronic attack capabilities at both high and low altitudes, and can engage from beyond visual range as well as within visual range. AMRAAM provides an air-to-air first look, first shot, first kill capability, while working within a networked environment in support of the Navy's theater air and missile defense mission area. Prior missile production delays due to rocket-motor anomalies are being addressed. We now anticipate AIM–120D production will recover for both the Air Force and the Navy in the mid-2014 timeframe.

Small Diameter Bomb II

The fiscal year 2014 President's budget requests $46 million in RDT&E for the continued development of this joint Navy and 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 the Navy (F–35C) and Marine Corps (F–35B) variants of the JSF. The Joint Miniature Munitions Bomb Rack Unit (JMM BRU) BRU–61A/A is being developed to meet the operational and environmental integration requirements for internal bay carriage of the SDB II in the F–35B and F–35C. SDB II entered Milestone B in August 2010 and successfully completed its Critical Design Review in January 2011. JMM BRU will enter technology development in July 2013.

Joint Standoff Weapon

The fiscal year 2014 President's budget requests $0.4 million in RDT&E for continued JSOW–C–1 test activity and $136.8 million in WPN for production of 328 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 data-link and guidance software improvements.

Advanced Anti-Radiation Guided Missile

The fiscal year 2014 President's budget requests $12.2 million of RDT&E for the development of telemetry and flight termination sections and the Block 1 follow-on development and test program and $111.9 million of WPN for production of 143 all-up-rounds and captive training missiles. The AARGM cooperative program with Italy transforms the legacy High-Speed Anti-Radiation Missile (HARM) into an affordable, lethal, and flexible time-sensitive strike weapon system for conducting destruction of enemy air defense missions. AARGM adds multi-spectral targeting capability and targeting geospecificity to its supersonic fly-out to destroy sophisticated enemy air defenses and expand upon the HARM target set. Initial operational capability (IOC) on the F/A–18C/D aircraft was reached in July 2012 and forward deployed to U.S. Pacific Command. The program was approved for FRP on August 20, 2012, and the first FRP contract was awarded on September 10, 2012.

Hellfire Weapon System

The fiscal year 2014 President's budget requests $33.9 million in WPN for 363 Hellfire all-up-rounds and training assets, to provide maximum operational flexibility to our warfighters. The Hellfire is an Army led program. The Navy continues to support legacy Hellfire weapons as well as procure and support technology enhancements that will provide the warfighter the flexibility to prosecute new and emerging threats. The Hellfire missile continues to be a priority weapon for current military operations as it enables our warfighters to prosecute military operations on urban terrain and other high valued targets of opportunity.

Advanced Precision Kill Weapon System II

The fiscal year 2014 President's budget requests $32.722 million in PAN&MC, for procurement of 1,103 APKWS II precision guidance kits. Milestone C was achieved in April 2010. IOT&E was successfully completed in January 2012; declaring IOC in March 2012. The program received a favorable FRP decision in March 2012 and the FRP contract was awarded in July 2012. APKWS II provides an unprecedented precision guidance capability to Navy unguided rocket inventories improving accu-

racy and minimizing collateral damage. Program production is on schedule to meet the needs of our warfighters in today's theaters of operations.

Joint Air-to-Ground Missile

The fiscal year 2014 President's budget requests $5.5 million in RDT&E for continued extended technology development (TD) of Joint Air-to-Ground Missile (JAGM). JAGM is a joint department of the Army/Department of the Navy premajor defense acquisition program with the Army designated as the lead service. The Government utilized full and open competition to initiate the TD phase of the JAGM program. In the TD Phase, the two contractors completed a preliminary design review, wind tunnel and ground testing, and flight testing in support of initial Navy platform integration activities. The originally planned 27-month TD phase is complete, the Under Secretary of Defense (Acquisition, Technology, and Logistics) provided approval to extend the JAGM TD Phase, and the Joint Chiefs of Staff validated the Department of the Navy's AH–1Z Cobra aircraft as a threshold platform for the JAGM program. The Services recognize that Hellfire capability and inventory issues need to be addressed and the requirement for JAGM remains valid. The extended TD Phase addresses affordability concerns with the JAGM missile, and discussions continue between the Navy, the Army, and the Office of the Secretary of Defense on the path forward.

Senator MANCHIN. Thank you, Admiral Skinner.

Now we'll hear from 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 Manchin, Senator Wicker, distinguished members of this subcommittee: I do appreciate the opportunity. I know your time's precious here and I really look forward to being able to give you a quick update on Air Force combat aviation programs.

Today, your Air Force proudly provides this Nation the ability to surveil and, if required, strike any spot on this planet, while defending our borders and protecting our allies. It is in this environment of fiscal uncertainty our focus remains on our five core missions of: air and space superiority; ISR; rapid global mobility; global strike; and command and control, and that's by which we deliver global reach, global power, and global vigilance.

I will remind everyone that just a short time ago we put B–2s over the bellicose nation of Korea and it was interesting to consider how they were probably sitting in their homes feeling that they had absolutely not a thing they could do about it during that period of time. That's the type of capability we want to be able to continue to deliver with your U.S. Air Force.

In 2012, though, however, Air Force global precision attack aircraft flew over 28,000 sorties and 41,000 hours in support of overseas contingency operations. In support of these operations, our ISR airmen provided intelligence that shaped combat plans for 33 named operations, enabled the removal of 700 enemy combatants from the fight, and built awareness for coalition forces in over 250 troops and contact engagements. Air Force Special Operations personnel executed over 1,600 strike missions and 7,700 specialized mobility missions.

On the home front, Air Force fighter, air refueling, and early warning aircraft have flown almost 64,000 total sorties supporting Operation Noble Eagle since September 11, 2001. As a testament to our total force, the Air National Guard and Air Force Reserve have flown more than 65 percent of these Operation Noble Eagle

sorties and the Air National Guard today currently operates 17 of 18 air space control alert sites across the United States.

The fiscal year 2014 budget attempts to retain this critical force structure and maintains the Air Force ability to rapidly respond to global mission demands. It evolved from a concerted effort to balance risk, modernization, and force structure reductions with a commitment to readiness and taking care of our people. Yet there is still considerable uncertainty in the fiscal year 2014 Air Force top-line level.

The 2014 budget will not reverse the damage done by the fiscal year 2013 sequestration. Recovering the warfighting capability that we lost and improving readiness will certainly require some reduction in operations tempo and-or additional resources. Reduced flying hours will cause some units to cease flying operations, resulting in severe, rapid, and long-term combat readiness degradation. Today, for the first time I can remember, we have 12 squadrons, bombers and fighters, that will not fly for the rest of the fiscal year. It's about 18 percent of our flying hour, a 200,000-hour flying cut, by the end of the year.

Cuts to the Air Force modernization programs will over time cost the taxpayer more money. Sequestration will not save the Air Force money. The resulting program inefficiencies and lost quantities will raise remaining unit costs and delay delivery of validated capabilities across our forces.

Yet, despite some of these ongoing budget concerns, many of our fighters and weapons programs do have enhancements planned for 2014. These include the A–10, F–15, F–16, F–22, and Advanced Medium-Ranged Air-to-Missile weapons systems. For example, we will modernize a portion of our legacy F–15 and F–16 fleet with advanced radars, countermeasures, and additional situation awareness systems.

But I have to caution you on how we use the context "modernize" in this discussion. These new systems and enhancements really only bring capabilities and technologies that have been in existence for years and in some cases fielded to our legacy fleet.

More troubling to me is that half of our so-called "modernization" budget really goes just to maintain current capability in the light of decreasing performance of these systems and adds really no new capability. We are in a situation today where primarily we are reacting to threats outside of our Nation to try to keep our systems at least on par with those. We are doing very little to bring new systems on right now to be able to stay in front of that threat and make the threat react to us. As an airman and a student of air power, I realize very plainly that the last thing we want somebody that conducts air space and air power to be is predictable, because if you become predictable you just become a target.

So we have to be very careful as we navigate this uncertain way ahead to mitigate risk in critical areas like readiness, force structure, and modernization. We will continue to work with you and all the congressional committees to develop executable options. But personally I worry that our end result budget issues will threaten our ability to recapitalize our aging fighter and bomber fleets.

We must be mindful of the fact that one nation that plays prominently in our defense strategy recently flew two brand-new ad-

vanced prototype aircraft within just a 22-month period. In times of robust budget, this took us about 9 years.

Nonetheless, our objectives are to remain as ready as possible today, set a course for full-spectrum readiness, preserve a highly responsible and scaleable force, and overcome force structure and modernization challenges to provide the Nation with the world's most capable Air Force now and in the future.

Thank you for these minutes and 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 requirements and executing our national strategy.

In this environment of fiscal uncertainty our focus remains on our five core missions of air and space superiority, intelligence, surveillance, and reconnaissance, rapid global mobility, global strike, and command and control by which we deliver global reach, global power, and global vigilance. It is more important than ever to balance near-term budget realities with modernization efforts for the mid- and long-term. Today's discussion is focused on air and space superiority and global strike but covers all five core missions.

Our force structure meets most combatant commander requirements, but the current fiscal environment will necessitate that we stand down 13 fighter and bomber squadrons in fiscal year 2013. Multiple investment programs will be negatively impacted resulting in unit cost increases, terminations and schedule delays. Sequestration impacts are already occurring, and the fiscal year 2014 President's budget does not assume the costs of recovering the readiness impacts from even a partial year of sequestration. However the President's budget includes balanced deficit reduction proposals that would allow Congress to replace and repeal sequestration in fiscal year 2013 and the associated cap reductions in fiscal years 2014–2021. If sequestration is not replaced the Air Force will have to rebuild degraded unit readiness, accept further delays to modernization, absorb the backlog in depot maintenance inductions, and invest additional funding to restore infrastructure.

As we work together through these difficult times, our objectives are: to remain as ready as possible today, set a course toward full-spectrum readiness, preserve a highly responsive and scalable force, and overcome force structure and modernization challenges to provide the Nation with the world's most capable combat Air Force now and in the future.

II. CURRENT ENVIRONMENT AND OPERATIONS UPDATE

Today, the Air Force flies and fights in air, space, and cyberspace—globally and reliably—as a valued member of our Joint and coalition teams. Over 28,000 airmen are deployed across the globe, including over 22,000 in the U.S. Central Command area of responsibility, with another 138,000 committed in place. to defend the homeland, command and control our nuclear forces, operate remotely piloted aircraft, and support other combatant commander requirements. The Air Force is an active partner in 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 soldiers, sailors, airmen, and marines who deploy in support of our global commitments with an Air Force that is capable, agile, flexible, ready, and technologically advanced.

In 2012, Air Force global precision attack aircraft flew over 28,000 sorties and 41,000 hours in support of overseas contingency operations. In support of these operations, our intelligence, surveillance, and reconnaissance airmen provided intelligence that shaped combat plans for 33 named operations, enabled the removal of 700 enemy combatants from the fight and built awareness for coalition forces in over 250 "troops-in-contact" engagements. Air Force Special Operations personnel executed over 1,600 strike missions and 7,700 specialized mobility missions. On the

home front, Air Force fighter, air refueling, and early warning aircraft have flown almost 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 Operation Noble Eagle sorties with the Air National Guard currently operating 17 of 18 aerospace control alert sites across the United States.

Aviation is not without risk. In fiscal year 2012, there were 20 Class A aviation mishaps, including ten destroyed aircraft and nine fatalities. This was an increase from the fiscal year 2011 numbers of 15 Class A, 8 aircraft destroyed, and 2 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 24 Class B aviation mishaps in fiscal year 2012, significantly down from 53 in fiscal year 2011. Similarly, Class C mishaps dropped to 443 from 482 the year prior. Additionally, fiscal year 2012 unmanned aerial system mishaps decreased across the board in Class A, B, and C mishaps from fiscal year 2011. Class A mishaps dropped from 15 to 13, Class B mishaps from 8 to 4 and Class C from 18 to 17.

As we undergo further updates to Defense Strategy, we must carefully balance our force between the Active and Reserve components. To get a better understanding of our Total Force mixture, we launched the Total Force Task Force, a team led by general officers from the active Duty, Guard and Reserve components. The Total Force Task Force is conducting a comprehensive review of Total Force requirements and will develop strategic options to ensure that the Air Force correctly balances the strengths of each component to sustain the capabilities required in the years ahead. The team is scheduled to present their findings by October 1, 2013.

Additionally, the National Commission on the Structure of the Air Force, which is required by the National Defense Authorization Act for Fiscal Year 2013, will undertake a comprehensive study of the structure of the Air Force to determine whether, and how, the structure should be modified to best fulfill current and anticipated mission requirements in a manner consistent with available resources. The panel is scheduled to complete their report not later than February 1, 2014.

The fiscal year 2014 budget request retains critical force structure and maintains the Air Force's ability to rapidly respond to global mission demands. It evolved from a concerted effort to balance risk, modernization and force structure reductions with a commitment to readiness and taking care of our people.

However, sequestration forced the Air Force to implement immediate actions to mitigate a fiscal year 2013 topline reduction. A major impact of sequestration will be a marked decrease in readiness at the beginning of fiscal year 2014. Reductions in flying hours will cause unit stand downs, which will result in severe, rapid, and long-term unit combat readiness degradation. Within 60 days of a stand down, affected units will be unable to meet emergent or operations plans requirements. Depot delays will require the grounding of some of the affected aircraft. The deferments will result in idled production shops, a degradation of workforce proficiency and productivity, and corresponding future volatility and operational costs. Additionally, sequestration cuts to Air Force modernization will impact every one of our investment programs. These program disruptions will, over time, cost more taxpayer dollars to rectify contract restructures and program inefficiencies, raise unit costs, and delay delivery of validated capabilities to warfighters in the field. The impact to modernization programs reduces our Air Force's competitive advantage and decreases the probability of mission success in contested environments. The fiscal year 2014 budget request however, includes balanced deficit reduction proposals that would allow Congress to replace and repeal sequestration in fiscal year 2013 and the associated cap reductions in fiscal year 2014–2021.

III. FORCE STRUCTURE AND MODERNIZATION

Fighters

Air Force fighter force structure is dependent on both fighter aircraft and rated manning. Two 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 National Military Strategy with increased operational risk. Last year, due to new strategic guidance 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 Air Force's fighter fleet is over 20 years old on average—the oldest in our history. Without service life extensions and capability upgrades, it will not be pos-

sible 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. It is absolutely critical that 4th Generation sustainment and modernization efforts continue as programmed, the F–22 continues to modernize, and the F–35 matures and begins full rate production.

In the fiscal year 2013 budget, the Air Force accepted risk in our Combat Air Forces by retiring or reclassifying aircraft from seven squadrons: five A–10 squadrons, one F–16 squadron, and one training/support coded F–15 aggressor squadron. After reductions, we retained sufficient combat-coded fighter squadrons to maintain the capabilities and capacity required to meet the requirements of new strategic guidance at increased risk while providing a bridge to the fifth generation F–35.

Manning these aircraft is a challenge we are aggressively working. Air Force mission success is dependent on fighter force structure manning. The Air Force is currently 200 fighter pilots short of the total manning requirement. Our projections indicate this deficit growing to approximately 900 by 2022, excluding any additional negative impact on flying training driven by sequestration. The shortfall evolved from force structure reductions that cut active duty fighter squadrons to a number that cannot sustain billet requirements. As a result, the Air Force is currently unable to produce and absorb the required number of fighter pilots across the total force. The Air Force is prioritizing available manpower at significant risk to institutional requirements. Projected impacts include reductions in air-operations expertise during the development of war plans and a limited ability to train and maintain combat readiness. Recent programming and policy actions raised production and absorption capacity by fiscal year 2028; however, even with these changes, the Air Force will only be able to sustain a fighter pilot inventory capable of meeting 82 percent of our overall requirement for fighter pilot expertise.

A–10

The A–10 provides our Joint Force Commanders responsive, lethal, precise, and persistent firepower for close air support and combat search and rescue. It has been a steady, stellar performer in all recent conflicts. Notably, the A–10's very high operations tempo and advanced age present substantial sustainment challenges. Most notably, the wings on the aging aircraft must be replaced in order to keep the fleet flying through 2035 and beyond.

Beginning in fiscal year 2013, the Air Force will retire 61 of the oldest A–10s. This will leave a fleet of 283 A–10s through 2035. The fiscal year 2014 budget request reflects our commitment to fund A–10 modernization, sustainment, and life extension programs. Installation of the Helmet Mounted Cueing System, now underway, will provide increased situational awareness to the pilot. Operational flight program upgrades will provide the A–10 with new combat capabilities to employ a variety of smart weapons, improve situational awareness, and enhance target identification and designation capability. Production and installation of the new replacement wings are moving ahead at full-rate production levels. Other critical updates include an upgrade to the A–10's transponder, allowing for secure, military-only identify friend or foe modes, and an improved engine turbine and aircraft monitoring system used to identify and monitor structural fatigues and stresses. Emphasis on the continued health and upgrade of the A–10 will ensure the aircraft continues to excel in the close air support role for the next 2 decades.

F–16

Our primary multi-role aircraft, the F–16 comprises 50 percent of the current fighter fleet. The fiscal year 2014 budget request invests approximately $1.32 billion across the Future Years Defense Program (FYDP) for F–16 modernization, life extension, and continued sustainment to meet critical warfighter needs to 2025 and beyond. The majority of the efforts to accomplish this across the FYDP will focus on the Legacy Service Life Extension Program (SLEP) and Combat Avionics Programmed Extension Suites (CAPES) modernization program for 300 aircraft. We believe we will have to SLEP and modernize more.

Legacy SLEP will extend airframe structural service life by approximately 25 percent from the current 8,000 hours to 10,000+ hours, adding about 6 to 8 years. The fiscal year 2014 budget request adds $18 million to continue design and development of structural modification kits for the Block 40–52 fleet to be responsive to the Air Force's total fighter requirement. Additionally, the Falcon Structural Augmentation Roadmap program, which replaces known life-limited structural components

and maintains the original design airframe life of 8,000 actual flight hours, has been rephased to complete in fiscal year 2014.

The fiscal year 2014 budget request adds $44 million in development, with a total of $489 million in development and procurement funding laid in across the FYDP for F–16 CAPES. This will allow for the development of capabilities for Active Electronically Scanned Array (AESA) radar, a new center cockpit display unit, data link enhancements and an improved electronic warfare defensive suite. These avionics upgrades must be done to keep the F–16 Block 40–52s relevant in a contested environment until replaced by the F–35 Joint Strike Fighter.

F–15 C/D

The fiscal year 2014 budget request invests approximately $1.9 billion across the FYDP on modernization and sustainment programs for the F–15C/D fleet. We project the F–15C/D fleet will remain viable until 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). We expect these efforts to enable 175 F–15C/D aircraft to operate safely and effectively through at least 2035 as determined by the full-scale fatigue test.

F–15E

The fiscal year 2014 budget request invests approximately $2.5 billion across the FYDP for F–15E modernization and sustainment programs. This includes integrating the latest precision weapons to hit targets accurately and reduce collateral damage, and adding a helmet mounted cueing system for all front seat cockpits that will reduce the F–15Es time to engage a target. Finally, we are adding a state-of-the-art AESA radar system that advances capabilities to identify and engage targets, a more capable aircraft mission computer, and a new self-protection electronic warfare system (EPAWSS). 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 an anti-access and area denial 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 fielded U.S. fighter capable of operating in anti-access and area denial 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 Department of Defense Strategic Guidance 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 2014 budget request for F–22 modernization investment includes $459.6 million in RDT&E in addition to $460.3 million in procurement in fiscal year 2014. 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 (SAR) ground mapping, threat geolocation, and Small Diameter Bomb (SDB) carriage. Increments 3.2A/B remain on track for fielding in 2014/2018 respectively, and will deliver advanced electronic protection and combat identification, AIM–120D and AIM–9X missiles, and significantly-improved ground threat geolocation.

The Air Force Scientific Advisory Board Aviation Oxygen Generation System Study made 8 near-term and 14 long-term recommendations for corrective and mitigating actions to prevent hypoxia-like events that led to the fleet stand-down in May–September 2011. The Air Force completed all eight near-term actions to include replacement of the emergency oxygen system activation handle; modification

of the pilot upper pressure garment and installation of an independent oxygen sensor and helmet-mounted pulse oximeter. Additionally, 9 of 14 longer-term recommendations were implemented, with the remaining 5 expected to be complete by November 2014. Most notably, the retrofit of the Automatic Back-up Oxygen System is on track for completion by 2015. The first 16 Raptors at Elmendorf Air Force Base are expected to be complete by mid-April. The F–22 is operating safely worldwide, and flew over 38,000 hours since return to flight in September 2011. It has been over 12 months since the last unknown-cause hypoxia-like event occurred.

F–35

During fiscal year 2014, the Air Force will continue the balanced approach 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 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 2014 budget request includes $4.5 billion for continued development and procurement of 19 F–35A, conventional take-off and landing (CTOL) aircraft. Aggressive risk management resulted in considerable concurrency cost reductions of approximately $1.7 billion. The program has made significant strides overcoming software development delays and technical issues.

During calendar year 2012, the F–35 program team achieved a number of significant milestones, including: Milestone B approval, Low Rate Initial Production Lot 5 contract definitization, Lot 6 undefinitized contract action, an Operational Utility Evaluation, a ready for training declaration; the start of pilot training at Eglin Air Force Base, completion of over 1,100 test flights, first weapon separation test on an F–35A CTOL, and the delivery of 30 production aircraft to the Air Force and Marine Corps. These early production deliveries to our operational test and training fleet allows the Air Force to begin the necessary operational test and validation efforts of the (F–35) this year, while also building our initial cadre of instructors to train our future generations of combat-ready pilots and maintainers.

In fiscal year 2013, the Air Force planned to procure 19 F–35A CTOL aircraft. As a result of sequestration, the Air Force will have to reduce the procurement quantity by at least three and potentially as many as five aircraft.

The progress made so far and the steps we take today are crucial in our efforts for declaring F–35 initial operational capability (IOC). After last year's program rebaseline and Milestone B recertification, the joint services were tasked to provide Congress our updated IOC criteria and timeline estimates by June 1, 2013. The Air Force fully expects to have our IOC position to you by this suspense.

One last area of F–35 development to address is the Autonomic Logistics Information System (ALIS). 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, operation and maintenance training, debrief, tech and flight manuals, prognostic health management, and supply chain management into one seamless information system. Early flight operations at Eglin Air Force Base demonstrated ALIS initial capability to support training, flight, and maintenance efforts. Although there were deficiencies identified and addressed during these early flight operations, and significant challenges remain through development, the Air Force remains cautiously optimistic continued ALIS development will deliver the required F–35 sustainment elements.

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 an anti-access and area denial environment and their shortage could increase friendly force attrition and drive 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 munitions shortages drive the use of non-preferred munitions that decrease effectiveness and result in increased time and Air Force attrition accomplishing combatant commander objectives.

Joint Air-to-Surface Standoff Missile and Joint Air-to-Surface Standoff Missile-Extended Range

JASSM and JASSM-Extended Range (ER) are currently the Nation's only stealthy, conventional, precision, launch-and-leave, stand-off missile capable of fighter and bomber aircraft employment. It is capable of penetrating next generation enemy air defenses to strike high value, hardened, fixed, or mobile targets.

Currently, JASSM is in Lot 11 production with over 1,000 missiles delivered and JASSM–ER is in Lot 2 production. The fiscal year 2014 procurement plans are to buy 182 missiles: 102 JASSMs and 80 JASSM–ERs. fiscal year 2014 also funds reliability efforts and the JASSM Weapon System Evaluation Program for flight testing of inventory assets. The Air Force is ramping-up the JASSM production to the most efficient rate (360 per year) by buying 224 missiles in fiscal year 2015 and 360 in fiscal year 2016 and beyond. While the range of JASSM is more than 200 nautical miles, JASSM–ER's range is over twice that (over 500 nautical miles). JASSM–ER completed initial operational test and evaluation in January 2013 with 20 successful flight test shots out of 21, a success rate of over 95 percent. The Full Rate Production decision for JASSM–ER is December 2013, with a plan to transition to JASSM–ER only production in fiscal year 2017 and beyond at the maximum production rate of 360 missiles per year.

Air-to-Air Weapons

AIM–120D AMRAAM

The AIM–120 Advanced Medium Range Air-to-Air Missile (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, and F/A–18 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 Acquisition Category 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. fiscal year 2014 plans are to complete dedicated operational testing, to include captive carry and free flight, and fielding on F/A–18 E/F and F–15 C/D aircraft. Force procurement for fiscal year 2014 is 199 units; along with a purchase of 54 units by the 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.

Updates Requested by Congress

CV–22

Air Force Special Operations Command (AFSOC) uses the CV–22 Osprey's unique long range, speed, and vertical take-off and landing (VTOL) characteristics to provide special operations warfighters with specialized air mobility. In 2012, CV–22s completed 1,022 Operation Enduring Freedom sorties, hauling over 135,000 pounds of cargo and extracting 299 detainees. In 2013, we will station aircraft at RAF Mildenhall, UK, the CV–22's first overseas squadron.

The current CV–22 fleet stands at 32 aircraft with the final buy scheduled in fiscal year 2014 as part of the program's second multi-year procurement. Current funding levels support the procurement of four fiscal year 2013 aircraft and the final three aircraft in fiscal year 2014. Declaration of full operational capability is scheduled following the delivery of the last CV–22 in fiscal year 2016, for a total of 49 operational AFSOC aircraft.

The Joint V–22 Program Office is increasing CV–22's capabilities while executing an aggressive improvement program, which continues to make significant progress. Since fiscal year 2010, aircraft availability rates are up over 20 percent. Particular emphasis is being placed on improving CV–22 engine time-on-wing, which has already seen a 62 percent increase since fiscal year 2010. These trends have continued in the first half of fiscal year 2013. In fiscal year 2014, we will start development of an improved engine inlet solution to address sand ingestion problems that severely degrade engine performance and necessitate costly engine removals and repairs due to operating and training in austere desert environments.

Improvements to the CV–22 are being made in block increments and each block includes a number of modification upgrades installed as they become available. Retrofit modifications continue to bring the oldest CV–22s to the most current configu-

ration. Sequestration reductions will delay installation of Block 20/C improvements on fielded aircraft. Future modifications and improvements to the CV–22 will make the aircraft even more reliable, productive, and cost-effective; thus ensuring the AFSOC's long range VTOL capability is available and will provide specialized air mobility wherever and whenever required.

Combat Rescue Helicopter

The Air Force is the only Service with a dedicated force that is organized, trained, and equipped to execute personnel recovery. Advanced helicopter capabilities, high-end tactically trained aircrews, and Battlefield airmen who are trained in advanced battlefield trauma medicine allow these forces to provide lifesaving measures at the point of injury, anywhere in the world. These highly trained airmen support Air Force, joint, coalition and Special Operations Forces in a wide variety of mission areas. In addition to overseas contingency deployments, these airmen also serve as first responders during disaster relief and humanitarian assistance operations, making them some of the most highly stressed career fields in the U.S. military. Since 2001, our combat rescue forces saved over 7,000 lives and in 2012 alone, they flew 4,500 missions saving 1,128 coalition, joint, and partner nation lives in some of the harshest environments in the world.

The Air Force will continue to modify existing HH–60G helicopters to keep them viable until we can fully recapitalize the fleet with the combat rescue helicopter (CRH). This effort includes an operational loss replacement program that returns the HH–60G fleet to numbers capable of meeting our operational requirements. The operational loss replacement program is only a temporary bridge to allow us to meet operational demands until the entire fleet is recapitalized through CRH.

The CRH will conduct day and night marginal weather combat search and rescue in order to recover downed aircrew and isolated personnel in hostile environments. The program replaces the legacy fleet of aging HH–60G Pave Hawks. CRH is in source selection for 112 in-production helicopters and training systems configured by the original equipment manufacturer to meet the warfighter requirement. Our fiscal year 2014 budget supports contract award.

Command and Control

Command and Control (C2), as a core function, is fundamental for all Air Force core functions. The C2 vision is to provide sufficiently robust, scalable, flexible, and rapidly deployable C2 capabilities, enabling commanders to fully exploit air, space and cyberspace capabilities. Underpinning the proper employment of Airpower is the Air Operations Center (AOC)—the senior element of the theater air control system (TACS) which serves as the focal point for planning, directing, and assessing air, space, and cyberspace operations to meet Joint Force Air Component Commander operational objectives and guidance.

The C2 emphasis in the fiscal year 2013 budget complies with the Department of Defense's budget reduction goals while maintaining an adequate C2 capability. The fiscal year 2014 budget request supports the AOC, E–8C Joint Surveillance Target Attack Radar System (JSTARS), E–3 Airborne Early Warning and Control System (AWACS), and Three-Dimensional Expeditionary Long-Range Radar (3DELRR) programs.

Investments in JSTARS will sustain the fleet pending decisions from the airborne SAR/moving target indicator (MTI)/JSTARS Mission Area Analysis of Alternatives (AOA), while the E–3 AWACS will continue the Block 40/45 upgrades with the 3DELRR program pressing towards source selection for a new ground based sensor.

Air Operations Center

The AOC provides operational-level C2 of air, space, and cyberspace operations. The AOC coordinates closely with superior and subordinate C2 nodes, as well as the headquarters of other functional and service component commands to integrate the numerous aspects of air, space, and cyberspace operations and accomplish its mission. To effectively integrate the TACS elements, the AOC develops and establishes theater-wide C2 guidance of regular and irregular warfare, providing overarching direction to all the TACS elements. The baseline AOC Weapons System (Increment 10.1) requires modernization to enable collaboration, improve information accuracy, and provide enhanced system security against known and projected cyber threats. The sustainment of AOC Weapon System 10.1, and the continued development and successful fielding of AOC Weapon System 10.2 is critical to maintain joint interoperability and provide operational-level C2 to assigned and apportioned forces.

E–8C JSTARS

The E–8C JSTARS is the world's premier airborne Command, Control, Intelligence, Surveillance, and Reconnaissance platform for air-to-ground battle manage-

ment operations. It provides long-endurance, all-weather, surveillance and targeting of moving and stationary targets via GMTI and SAR technology.

The Air Force completed the airborne SAR/MTI JSTARS mission area AOA in 2011, which concluded that the optimum choice for the future of Air Force MTI was to use a business jet class aircraft with an advanced radar and on-board battle management command and control (BMC2) suite. The AOA also concluded that upgrading the current E–8C fleet with an advanced radar and new BMC2 suite would be the next best solution, but has significantly high lifecycle costs. In the current fiscal environment, there is a lack of funding for a JSTARS replacement surveillance aircraft. The Air Force continues to fund the operations and support of the JSTARS platform to meet warfighter requirements. Critical near term diminishing manufacturing sources (DMS) issues have been addressed through the multifunctional information distribution system joint tactical radio system and prime mission equipment DMS efforts. It is currently estimated that DMS issues will not cause grounding of any JSTARS platforms until 2025+. These modernization efforts keep JSTARS viable to support the National Military Strategy.

The JSTARS weapons system has been in continuous surge operations since 2004 and this level of tasking is expected to continue as combatant commander requirements for ground and maritime moving target surveillance continue to escalate. Current Global Force Management Allocation Plan (GFMAP) taskings and projected E–8C GFMAP allocations for fiscal years 2014–2015 will require continued deployment at these rates, limiting E–8C worldwide availability in support of emerging contingency responses.

E–3 Airborne Early Warning and Control System

The 31 aircraft E–3 AWACS fleet is the Department of Defense's premier airborne surveillance and BMC2 weapon system. AWACS is a key airborne element of TACS and delivers combat effects of BMC2, battlespace awareness and decision superiority. As a rapidly deployable system, the E–3 is often the first surveillance and BMC2 capability in theater.

The E–3 fleet has struggled to consistently meet Air Combat Command's mission capable requirement. Additionally, the depot is seeing increased corrosion in the fuselage and wings leading to expectations for increased aging aircraft issues in the next programmed depot maintenance cycles. System mission capable rates will likely deteriorate further when considering recent reductions to operations and sustainment budgets.

AWACS, with its current modernization programs, is adequate for executing the National Military Strategy. Current modernization efforts focus on upgrading battle management mission systems through the 40/45 upgrade, as well as cockpit avionics to provide the AWACS with the computing and communications architecture to participate in a net-enabled battlespace, and avionics that are free from DMS issues to meet worldwide airspace navigation requirements.

AWACS requires these future efforts to address adversary threats and effectively participate in coalition and joint networked battlespace. Future efforts include BMC2 enhancements and wide-band communications to allow for net centric operations and data exchange with other weapon systems and elements of the enterprise as well as sensor upgrades to detect low/very low radar cross section air target sets and improve operations in an electronic attack environment. Future capability enhancements will depend on the priority and phasing relative to other Department efforts and difficult choices may be required to live within funding constraints.

Three-Dimensional Expeditionary Long-Range Radar

Fundamental to the Air Force's ability to provide unparalleled, expert, and sustained BMC2 is the ground-based Control and Reporting Center (CRC) weapon system, is the replacement of its 1970s-era technology primary sensor that is becoming unsupportable. The mission of the CRC is to provide persistent tactical level BMC2 to joint and combined air, land, and sea power assets in support of the Joint/Combined Forces air component commander's objectives. The Three-Dimensional Expeditionary Long-Range Radar is planned to be the principal Air Force long-range, ground-based sensor to detect, identify, track, and report aerial targets in support of theater commanders, with the full operational capability for 35 radars scheduled for 2025. Extensive operational analyses have resulted in well-defined requirements based on current and future threats and scenarios. After a $252 million cut to the program in the fiscal year 2013 budget, the Air Force identified cost/performance trades to enable the program to move forward.

IV. CONCLUSION

The Air Force is still assessing the exact impacts of sequestration on Air Force total obligation authority in fiscal year 2014 and beyond. Any further reductions to our fiscal year 2014 budget request will drive additional risks to our readiness, force structure, and ability to modernize an aging aircraft inventory. In addition, the outcome of the strategic choices and management review may drive profound changes across the Department of Defense.

As we navigate the uncertain way ahead, to mitigate risk in critical areas like readiness, force structure and modernization, we will continue to work with Congress to develop executable force shaping options, and ask support for another BRAC round to reduce excess infrastructure as a means to meet sizable budget reduction goals.

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

Senator MANCHIN. I want to thank all three of you for your presentation, and without objection all prepared statements will be made a part of the record.

With that, I will turn it over to Senator Wicker for his questions.

Senator WICKER. Thank you very much.

General Bogdan, let's start by talking about U.S. defense exports to our allies. I've been a big supporter of this. I believe robust defense trade increases interoperability with our allies and reduces unit costs and it helps support U.S. defense industrial base. I think it's a fact that we have 10 partner countries that are slated to receive the F–35 deliveries in the coming years: the United Kingdom, Turkey, Australia, Italy, the Netherlands, Canada, Norway, Japan, Denmark, and Israel.

To what extent, General, have you kept our foreign partners informed and engaged as to the JSF program status and schedule?

General BOGDAN. Sir, our partners and our FMS customers are a vital part of the program, as you said, not only from the aspect of reducing costs to the U.S. Government, but the synergistic effect of having our allies flying the same airplane with us in the future with the same tactics and the same capabilities, that's priceless in some ways.

It is difficult sometimes to ensure that information flow through the JSF program gets to everybody in an equal manner. It is difficult. What we do today in our program office is we have—each of the eight partner countries has a deputy national director who is located in the program office and they are part of our everyday operating procedures in the program office. We meet every day at 8:15 a.m., all of us, the leadership team, and they're included.

Our FMS partners today, which are Japan and Israel, they have personnel who are located in Crystal City, VA, near where the JPO is, and once a week we meet with them to have discussions with them also.

Probably the greatest challenge, however, sir, with our partners and something that is going to require a lot of effort in the future is, as we begin to produce and deliver airplanes to them, they need the information about the airplane that we in the United States have, and transferring a lot of that information to our partners is

difficult because at times some of our ITAR restrictions prevent us from getting that information to them.

Senator WICKER. For the record, tell us what "ITAR" means?

General BOGDAN. International Trafficking in Arms Regulation. Generally, the State Department has the purview over what can and can't be released, especially relative to industry.

But as I was saying, probably the most difficult thing on the program right now having to do with the partners—and I think if they were here they would tell you—that access to information about the airplane and about the weapons system, because previously it had been marked United States-only, when it probably should have been marked differently, is an impediment to the program today.

Senator WICKER. That decision to mark it as such was made by the State Department?

General BOGDAN. In most instances no, sir. The internal paperwork on the program was initially marked based on what Lockheed believed to be the appropriate rules for marking that paperwork. As we move forward in the program, we have recognized that I think both the JPO and Lockheed were being overly conservative, because there is information that we have to release to our partners now. We are systematically going back and fixing that.

Senator WICKER. It's obvious you're working with our partners. Let me ask you about three. Canada, Italy, and the Netherlands have reduced their projected buys, am I correct?

General BOGDAN. That's correct, sir.

Senator WICKER. What was the issue there? Assuming that we can get no new buyers, how much would the cancellation of say one foreign sale of an F–35 affect the unit cost for our government?

General BOGDAN. We'll take Italy for an example, sir. Italy was originally planning on buying somewhere upwards of 140 airplanes. After the U.S. Department of Defense decided to flatten out our ramp rate over the last 3 years and remove 149 of our airplanes from the forward portion of the buy to the back end, Italy reduced their buy from 140 down to 90 airplanes.

That has an impact on the unit cost of each and every airplane that we all buy, whether it's Italy or the Netherlands or the three Services. So the partners play an important role in keeping the production level of this program up.

The Canadians similarly are relooking at the process that they used to determine whether they should have selected the F–35. It's not so much that they are disputing whether the airplane is good for them or not. It's the process in which they came to that conclusion.

But more to your point, sir, it is vital for us to keep the partners in this program. Without their support and without them buying airplanes—and our partners without the FMS customers are going to buy somewhere on the order of 660 airplanes. Any one of those partners pulling out of the program will have a negative effect on how much it costs the Services to buy airplanes, and then there's the potential for what we call the death spiral, where you want to buy airplanes but someone drops out and the price goes up, so you can't buy as many, so now because you can't buy as many the price goes up again, and you continue on that spiral until you get to a point where you can't buy nearly as many airplanes as you wanted.

Senator WICKER. Why don't we say this: You'll take for the record my sub-question about the unit cost——

General BOGDAN. Yes, sir.

Senator WICKER.—about each sale affecting the unit cost.

General BOGDAN. I can get you that information.

[The information referred to follows:]

Unit cost is sensitive to the total quantity procured. Savings in the cost of the aircraft can be realized through bulk purchases and other economies of scale. The actual cost of an individual aircraft in any given Low Rate Initial Production (LRIP) lot is largely influenced by how many aircraft are being purchased, and how much production line learning has been achieved to that point. Additional purchases take advantage of economies of scale, but also provide additional learning opportunities, which in turn drive down costs even further. Likewise, aircraft reductions in any given LRIP lot would have the opposite effect.

Senator WICKER. How are things going with Singapore, General?

General BOGDAN. Singapore has shown tremendous interest. Every time I see anyone from the Singaporean Air Force, I can tell you that they are quite enthused about the airplane. I believe by this summer we will hear if Singapore is in the program.

Senator WICKER. And South Korea, sir?

General BOGDAN. South Korea should make their decision by June of this year. They were originally scheduled to make their decision on three different airplanes that they were looking at in December. They extended that for 6 more months and we would expect by June to hear about what their decision is. We're cautiously optimistic.

Senator WICKER. General Davis, that country you referred to, that's China, wasn't it?

General DAVIS. Yes, sir, it was.

Senator WICKER. Okay.

Now, on the cutback of 18 percent of our training flights, that is a function of 9 percent being jammed into 6 months, am I correct?

General DAVIS. Sir, that was 18 percent of our total flying hours, not just training hours.

Senator WICKER. Total flying hours.

General DAVIS. That was the direct result of the sequestration 9 percent cuts.

Senator WICKER. Thank you for clearing that up.

When we get to next year, is spreading it across 12 months going to ease that up a bit for us?

General DAVIS. Sir, our 2014 President's budget is roughly flat compared to 2013.

Senator WICKER. But in terms of the flying hours?

General DAVIS. Sir, that's what I'm trying to get at. Because some of our investment programs start to grow in 2014, we will have to continue within the Air Force to figure out how we balance modernization with readiness. If we assume that that budget stays intact with no effect of the current Budget Control Act, we will be able to buy back a lot of those flying hours because we'll not have to pay that bill. So a lot of those training hours, a lot of those lost sorties, a lot of those combat squadrons that are no longer mission capable will come back. So we'll have to just assume to be able to get there that we get the full President's budget request for 2014.

If we have to deal with anything else in 2014, we'll have to work that on a real-time basis.

Senator WICKER. Let me squeeze in, General Bogdan, the hacking of our U.S. computer networks by the Chinese. How confident are we going forward about our ability to secure classified and sensitive data within these programs?

General BOGDAN. Sir, I will tell you within DOD and within the JSF program, I think over the last few years we have implemented some fairly robust procedures to keep F–35 data within the confines of DOD. I am a little less confident about our industry partners, to be quite honest with you.

I can tell you from our partners' standpoint, they recognize the huge responsibility that they have with the fifth generation technology that we're giving them, and each and every partner I know is taking security to the same level that DOD is. So I would tell you on the partner side and on the U.S. Services side I'm pretty confident that we have a robust layered system in place to prevent that. I would tell you I'm not that confident outside DOD.

Senator WICKER. Tell us what you need to help you work with industry on this, and thank you for your service.

General BOGDAN. I will take that for the record, sir.

[The information referred to follows:]

The F–35 program continues to work aggressively with our industry partners to ensure that F–35 data is appropriately protected in all data mediums. I appreciate the critical role that Congress plays in influencing the direction of our cyber security efforts. The continued emphasis on cyber security issues related to the Department of Defense by congressional members during interactions with industry further emphasizes the importance of this key issue area. In addition, industry can further support acquisition programs by applying industry best cyber security practices and methods across all acquisition programs without explicit direction from the Government.

Senator MANCHIN. Thank you, Senator.

At this time we'll hear from Senator Blumenthal.

Senator BLUMENTHAL. Thank you all for being here today and thank you for your extraordinary service to our country in an area that is critical to our national security.

If I may, General Davis, I think if I have it correctly you outlined that the Air Force is about 200 fighter pilots short of your total manning requirement. Am I correct in that recollection?

General DAVIS. Sir, that number is correct.

Senator BLUMENTHAL. Could you explain to us what you view as the primary causes for that shortfall, if I may refer to it that way, whether it's recruiting and retention or funding for training or where you see the causes are?

General DAVIS. Sir, in short it is the direct result of drawing down force structure. Now let me explain. The airmen in your Air Force bring a wide variety of expertise, not only in flying fighters and bombers, but also in command and control of the air in defense of everything. So we have very specific billets all throughout the Air Force that requires that expertise that a fighter pilot either learned from operational deployments, brought from weapons school as our premier instructors, or something.

So we depend on their expertise to do a lot of fairly important jobs throughout the Air Force: running air operations centers, helping command and control battles. So as we draw down force structure and cockpits become less available, we have no ability to absorb these individuals out of pilot training, put them into a fighter

squadron, get them some experience so that they are now useful in an air operations center over in the Middle East. So as a result, it perpetuates itself. If we can't bring them in, we can't fill the slots and the shortfall continues to grow.

So again, it goes back to what we're able to fly and how many cockpits we're able and how much training opportunity we're able to give these individuals.

Senator BLUMENTHAL. So if I can put it in terms that might be understandable to the average American, not that your explanation hasn't been absolutely clear, but if I were giving it to the Rotary Club, we're not providing enough aircraft for training, enough slots where our pilots coming out of schools can have the kind of useful experience that gives them the ability to be sufficiently expert in the air to have them fly for us?

General DAVIS. Senator, that's exactly right. It's a matter of getting them expertise so they can contribute to the battle.

Senator BLUMENTHAL. I heard what you said about that other country, which we now know is China, and I wonder if you could expand on that a little bit? What exactly have they done within this short period of time that you cited?

General DAVIS. Sir, within about 22 months they flew variants—and we can all debate the relevancy of those two airplanes—the J–20 and the J–31, which were essentially, if you look at them, they look very much like a version of the F–35 and very much a version of the F–22. You asked General Bogdan about hacking networks. There's no doubt that a large amount of our unclassified data probably made it into those designs in some shape, form, or fashion.

The fact that that country could find the resources and the engineers to build two prototypes, two flying high performance aircraft prototypes, in 22 months—and if you look a little bit further within the intelligence, it wasn't just those two airplanes. They flew a variety of airplanes in about a 3-year period, to include an airlifter which looked very much like our C–17, a helicopter, and other training aircraft.

So they have shown that they have acquired the beginnings of a little bit of agility within the acquisition system that we need to be mindful of, because, while we may think we're comfortable and able to do things as we please, we're seeing that other countries that we didn't care too much about in how they produced weapons are starting to show that they have capabilities. That's why I brought that up.

Senator BLUMENTHAL. I appreciate your raising it with us, and I find it somewhat alarming that the keystone to our air superiority for the next decades can be so easily, in effect, reproduced, which is probably a polite way of putting it, by the Chinese in so short a period of time. Should I not be reacting that way to what you've just said?

General DAVIS. Sir, I think we all need to be mindful of the fact that they can go produce airplanes of a fighter, if you will, variation in a short period of time. I would caution the fact that probably the underpinnings behind that shell that you see flying around may not be anywhere near the capabilities that General Bogdan will bring with the F–35 or what we have with the F–22 or the F–18E/F.

Just the fact they can produce and deliver prototypes. There was a period in our time where we had nine different X-plane variants sitting on the ramp at Edwards Air Force Base at the same time. We produced 30-something X variants between 1947 and 1987 roughly. So now we've kind of set back on our laurels and built some very exquisite, very capable designs that are going to dominate the air, I have no doubt. But we now have another country that I think we need to pay attention to a little bit differently than we have in the past.

Senator BLUMENTHAL. So they right now, they have reengineered or managed to in effect reproduce the shell at least, but we don't know whether the flying capabilities and the attack abilities are commensurate with what we would regard the F–35?

General DAVIS. Sir, that would be my personal opinion of how I'd characterize that.

Senator BLUMENTHAL. Thank you.

Thank you, Mr. Chairman.

Senator MANCHIN. Thank you, Senator.

I just have a few questions and then Senator McCain has joined us.

I'd like to ask each of the witnesses how will implementing the reductions from sequestration affect each of your programs? I think we've heard an overture on both of that. I might ask, how would you be able to manage these adjustments if you had flexibility? That's a big word we're all using on both sides of the aisle, Democrats and Republicans. But basically still meeting the goals of the cuts that have to be made, but doing them with some discretion that you might have and flexibility, if that would help you? If anybody can speak to that, whoever wants to start? General Bogdan?

General BOGDAN. Yes, sir. Flexibility would be a wonderful gift for the F–35 program. If the sequestration were to take place precisely as it was defined across the board, my program would have problems. I would lose money in development and that means that I may not be able to deliver the capability that the warfighter needs on time. I would lose money in production, which means we will lose airplanes in fiscal year 2013, which has an effect on all the remaining airplane prices in 2013 and possibly 2014 and beyond. I lose some part of my money that I use for spares and sustaining and maintaining airplanes in the field, which means today my operations at Eglin, where I'm training pilots and I'm training maintainers, would also have to slow down.

So without flexibility each of those pots of money will take a hit and the program will be degraded in those areas. With flexibility, the Services can decide how much money from each of those pots do they really need to take, and at least we can keep the program balanced. We may not be able to keep it all at the same level, but at least in those different areas we can keep it balanced. So from my point of view it would be a great gift to have.

Senator MANCHIN. We're talking about still the $42.5 billion that needs to be reduced from defense and non-defense between now and the end of September.

General BOGDAN. That's correct, sir.

Senator MANCHIN. But with that flexibility, you, DOD, would make the adjustments accordingly of whether are high priorities or

lower hanging fruit would be priorities. You don't have that discretion today.

General BOGDAN. I do not have as much discretion as I would like, sir.

Senator MANCHIN. I got you, sir.

Admiral?

Admiral SKINNER. Senator, thanks for the question. As my Chief of Naval Operations (CNO) and the Secretary have testified before, we lost about $6 billion out of our investment accounts, another $4 billion out of readiness. We have some authority that came in with the Public Law 113–6 that allowed us some authorities. Those authorities were allocated by DOD. But the flexibility beyond those authorities to move money to handle our more pressing needs would be, as General Bogdan said, a great gift.

The ability to go in and selectively fix our investment programs that required fixing on a priority basis, the ability to move money out of our investment accounts and handle our more pressing readiness needs, for example our depot inductions of airframes and engines, and in this case for the Navy's ship maintenance—when we have those types of maintenance events, if we miss them they're missed forever, until the next time around we come in with the cycle. So the ability to handle that would be a great gift.

Senator MANCHIN. General Davis?

General DAVIS. If we had the ability to put those cuts in the areas that we thought we could most handle the risk and take the force structure adjustments that we needed to, I think that would be certainly a benefit to anything we want to do in the Air Force.

When the public law was passed and the bill was passed, certain key programs that we worried very much about were made whole, notably the KC–46 tanker. That was one that was on a fixed price contract we were worried greatly about about whether we would have the ability to move the money in. But even with that one being fixed, we have no doubt that with the money we've lost out of the Air Force F–35 production lines, we will lose some number of airplanes yet to be determined. Since we have no ability to put that money back in and fix that, we know that every other airplane—where Senator Wicker was going—every other airplane everybody else buys will go up by some small amount. So again, there the inefficiency starts to grow.

So we would like to be able to have some flexibility to pick the right spots. We had enough, I would say, engineering change dollars and other money that we were trying to work through simply because of the fact we had slowed down spending across all Air Force programs in the continuing resolution. So when we finally had to take the cut with the 2013 numbers, I'll tell you the results were probably not as drastic, certainly in investments. They were terrible in O&M, as I've talked about the lost flying hours.

Just say this happens to continue and the Budget Control Act continues through 2014. None of that flexibility exists. So every single program will feel it very painfully in a very deliberate fashion. So the flexibility would help on that.

Senator MANCHIN. Thank you all.

General Bogdan, in 2010 Secretary of Defense Gates at that time withheld $614 million of Lockheed Martin's performance fees on

the JSF after performance targets were missed. Secretary Gates said: "I will withhold $614 million in performance fees from the lead contractor since the taxpayers should not have to bear the entire burden of getting the JSF program back on track."

So I would ask, what has happened to the $614 million fee? How much has Lockheed earned back and how much did they lose, and how much is there left for the company to earn?

General BOGDAN. Yes, sir. I'll try and go through this and try and avoid doing math in public here. But you are right, there was $614 million of fee left post-Nunn-McCurdy breach when we rebaselined the program. Immediately as we came out of the Nunn-McCurdy breach, the Secretary of Defense took $190 million of that money and just took it away and said: Lockheed, you will never have the opportunity to earn that money again. So right off the bat he took $190 million.

Over the next 3 years from 2010 to 2012, there was award fee in the total of about $101 million that Lockheed could have earned. They only earned $34 million of that. So if you do the math, the $190 million we took away, the $101 million they could have earned over the last 3 years, what's left today is $337 million.

When we came out of the Nunn-McCurdy breach, all of the fee on this program for the development was in what we call award fee. Award fee is a subjective fee, meaning that I, as the PEO, take a look at Lockheed's performance and get to decide how much they're going to get.

We transitioned the contract from award fee in 2012 to what we call incentive fee. So every bit of that $337 million now is in what we call incentive fee and there is very little subjectivity. It's things that Lockheed has to do and has to perform over the next 4 years to earn that money.

Let me give you an example. There's $100 million of that $337 million that's broken up. If they deliver the 2B capability on time, they get $40 million. If they deliver the 3I capability on time with all the capability, they'll earn $25 million. If they deliver the 3F capability on time with all the capability, they'll earn $35 million. That's $100 million of the remaining $337 million.

I've taken the last $237 million that's left over, I put it at the end of the contract, and I've said to Lockheed Martin: You must deliver me a weapons system that meets each and every one of the system spec requirements. You must do that on time, and you must do it within the budget I have remaining on the development program. If you don't meet those criteria, you will not earn a penny of that $237 million. That's where we have it today, sir.

Senator MANCHIN. Thank you, sir.

At this time I want to turn it over to Senator McCain.

Senator MCCAIN. I thank the witnesses.

General Bogdan, about I guess it was a couple months ago you wrote, made some statements that were, I felt, rather interesting, where basically you questioned the commitment of Lockheed Martin to seeing this program through without profit being the sole motive. I don't know if that's an awkward description of your statement, but I thought it was a very strong one and I was impressed by it. Would you care to explain to the committee what you were saying there?

General BOGDAN. Yes, sir. My comments were directed at Lockheed Martin and Pratt & Whitney, and my intention was to put them on notice that I needed to make sure that they were committed in the long term to reducing costs on this program. At the time when I made that comment, I was not so sure. Doing business with both companies has been difficult. It is getting better. I was seeing behaviors in which I thought over the next 30 or 40 years were not sustainable for a relationship between us and either one of those industry partners. So fundamentally this was a shot across the bow to them, letting them know that I was watching and I was waiting for behavior changes.

Now, having said that, there are some things that I can tell you, not necessarily directly related to my comments, but over the past 9 months have seemed to taken hold on the program which I am appreciative of. First and foremost, there have been significant leadership changes in Lockheed Martin over the last few months all the way up and down the F–35 chain. The deputy program manager, the program manager, the president of Lockheed Martin Aero, and the CEO have all changed out. I would tell you that those four individuals in those positions now have a different culture and a different attitude than when I first walked in on this program 9 months ago. That is a good thing.

The other thing I have noticed, and whether it was as a result of my comments or not doesn't matter because it's good for the government anyway, Lockheed Martin and Pratt & Whitney are beginning to share in the risks of this program. For example, the last contract we negotiated in Low Rate Initial Production (LRIP) 5, Lockheed Martin has to pay for half of all our concurrency costs.

Senator MCCAIN. Could I point out that part of that was finally congressional mandate.

General BOGDAN. Yes, sir. I was going to get to that part. The concurrency part was a cost share. The part about the overruns on the price of the production was clearly a congressional mandate for us to start forcing the contractors to take some responsibility for production cost overruns, and we appreciate that. We do.

So there have been signs that Lockheed and Pratt & Whitney do indeed want to sell us 3,164 airplanes and almost 4,000 engines. But the jury is still out. There's a long way to go. There's two-thirds of the testing to go. There's only 10 percent of the production is done. So I will be continuing to monitor this.

Senator MCCAIN. GAO gives you pretty favorable marks for your latest activities and that is encouraging. But you know, I look at the sustainment costs. GAO reports that procurement would average $12.6 billion a year through 2037. The DOD Cost Assessment Program Evaluation Office estimates that JSF operating and sustainment costs would exceed $18 billion a year. That's $30 billion a year for this one program. Is that affordable?

General BOGDAN. I guess I can't answer the affordability question. I'll look to my service brethren to answer that. But more to your point, sir, you are exactly right. For our partners, for the Services, for our FMS customers, if we don't start today in reducing the overall operating and sustaining costs of this airplane, it could spend—it could become very, very expensive.

Senator MCCAIN. Maybe I could ask our other two witnesses if they have a view, and maybe not. I would point out in this GAO report in 2001 it was going to be $69 million per aircraft and now in March 2012 it's $137 million per aircraft. That's pretty remarkable.

Admiral and General, do you have any comments?

Admiral SKINNER. Senator, it's in the best interests of the Department of the Navy and I think of DOD to drive the production cost of this aircraft down. We're encouraged by the——

Senator MCCAIN. Have you seen any signs of that?

Admiral SKINNER. Yes, sir, we have. We've seen signs that the production costs over the LRIP lots negotiated to date and projected to be negotiated in the future are coming down the learning curve and are getting more affordable.

But to your point, the numbers that you quoted earlier in your question, they're a little hard to swallow. So what we need to do is we need to do everything in our power to cooperate with the program office and to drive the production costs down, and then conversely the sustainment costs of our jets and how we operate them.

General DAVIS. Senator, along with what Admiral Skinner said, we've shown in the Air Force that on budget issues you can make any program unaffordable as you decrease quantities. So there's a component here. The cost needs to go down——

Senator MCCAIN. I think we learned that lesson from the F–22.

General DAVIS. Sir, we learned it from the F–22 and also from the B–2, I think. As we tool up for a much larger program and we start to have issues that are somewhat related to this and we have budget issues that drive down the quantities, each one goes up.

As I mentioned, the three to five airplanes we are possibly to use out of our buy for fiscal year 2013, $3, $4, $5, $7 million impact to every other airplane not bought, simply because quantity has changed. So there is that aspect of it.

The other aspect of it I will say is that we're all concerned about what the hourly flying cost of the airplane will be as it's computed now. But as we've learned over time on F–18s and certainly in the Air Force on F–16s and F–15s, for a lot of reasons if we end up constraining that flying hour cost to whatever our budget is none of our legacy fighters right now would be funded to 100 percent of their availability or 100 percent of their spares requirement. So we deal with that——

Senator MCCAIN. Sooner or later, that gets into the efficiency of the pilots.

General DAVIS. Yes, sir, it most certainly does. We fully fund the airplanes and the pilots that are in contact in the AOR and the folks back home will suffer for that a little bit. We would like that suffering to be minimal, but——

Senator MCCAIN. Not to mention the effect of sequestration, obviously.

Thank you. Thank you, General.

The program, General Bogdan, is two-thirds only—it still needs two-thirds of its developmental testing. Isn't that a significant risk, particularly in the area of software development? I notice in your statement that you were, "moderately"—you had "moderate confidence." None of us around here seem to like the word "moderate."

General BOGDAN. Yes, sir, so let me explain. Software is the number one challenge on the program. When I use the word "moderately confident," what I am speaking about is I am moderately confident that the initial warfighting capability of the airplane that we intend to deliver to the U.S. Marine Corps in 2015 will be there with the full capability in 2015.

I am less confident that the final capability of the airplane, which is due to be delivered at the end of 2017, will happen in 2017 with the full capability. So the tough years for us are 2016, 2017, and the beginning of 2018 for the software.

What I see today for 2013, 2014, and then 2015 for the 2B capability, the initial capability, is a software process that is improving. We have lots of metrics that we can show you, and that in part is what causes me to say I'm moderately confident up to 2015. I can honestly tell you, beyond 2015 I don't have a great answer right now because there's a lot of things that have to happen between now and 2015 to give me more confidence in 2017, not the least of which is I have to finish the flight test on this initial 2B software, as we call it.

Senator MCCAIN. My time has expired, but let me just say, we appreciate what all three of you have done. General Bogdan, I think you've gotten a hold of this program in a way that certainly the GAO is satisfied with the progress that's being made. But the three of you together represent many years of experience in the business, and the thing that bothers us the most—well, let me say the thing that bothers me the most is the whole acquisition system where we have so many years and so many cost overruns, and we don't seem to have lessons learned.

General Davis was just mentioning the B–2 and the F–22 and the cost overruns associated with that. Now, I understand the tanker is doing pretty well. Is that right, General Davis?

General DAVIS. Yes, sir, it is.

Senator MCCAIN. So what are we doing with the tanker, which I understand is a much simpler—it's a flying gas station and I understand it's much simpler than a tactical fighter weapons system. But somewhere along the line we have to have people like you tell us the lessons learned so we don't keep repeating them, so we don't keep seeing this movie over and over again.

I would argue that there are some of us that have a long record of being staunch defenders of national defense and spending what it takes and believe we live in a dangerous world, but we have to be able to go back to our constituents and say: They're doing a lot better than they did in the F–22 and the F–35 and the sensing devices along the Mexico border, where Boeing blew about $787 million. These cost overruns, the American people make it hard for us to have credibility when we speak for a strong national defense.

So maybe at some time we ought to have a hearing, Mr. Chairman, on the lessons learned in these failures. I don't know if legislation is necessary. We passed an acquisition reform bill that Senator Levin and I authored and we have placed restrictions on cost overruns. But at least in the eye of our constituents, we aren't doing nearly the job that we should.

So I don't know if you have any comment on that or not, but I hope that you'll understand from our side of the dais it's a greater

and greater challenge for us to continue to support these weapons systems when we are having the cost overruns that we have.

Thank you, Mr. Chairman, for allowing me this time.

Senator MANCHIN. Absolutely. While the Senator is still here, I'd like to follow up because when these programs—I'm understanding when these programs are coming to life there is a competitive process you go through, like the so-called fly-off. The companies that are competing have to build prototypes and I'm sure that's where they got their cost estimate thinking it would be a $69 million project per unit.

I think, to follow up on what the Senator was asking, how did we let the control—how did we lose control of that cost? They had a plane, they built a plane, they basically demonstrated it. You picked one over the other, I'm sure, however that process goes. You had pretty much a flying prototype, and they could have figured out what their cost was to get that prototype flying on that one unit, and then they would estimate over the life if there's going to be 3,000 or more where that cost, the competitive cost, could be.

That's usually a business—that's the way businesses in the real world operate. But I think what we're doing—and the Senator was being quite kind in saying, how come the military doesn't use that same process? If it was your pocket and you were paying, or your stockholders, that you were investing their money, you wouldn't operate that way. We're not blaming any of you directly. We're saying we would have—and I think the Senator's suggestion about having a hearing strictly on the process of how we got here—I heard him. I've been here 2½ years and I look to Senator McCain as being a champion in leading not only the defense of our Nation, but also just the common sense of getting the bang for your buck. It's hard to look the taxpayers in the eye and say we've done it.

He's a staunch defender, but it's going to be pretty hard to say let's keep pouring the money to it when they're saying it was $69 million, now you're $137 million. How did you double the cost and nobody had to pay the penalty for that and they're still doing business, if you will.

I'm not saying that for any other reason, but I think that we will call a hearing on that and we would like for you to be prepared to show us the turn of events so that it basically has a template, because if it happened with the B–2, if it's happened with the F–22, it's happened with the Strike Fighter, and the only thing that's come in relative to the cost has been the tanker, I mean, pretty soon——

Admiral SKINNER. We've had good luck with the F–18, sir.

Senator MANCHIN. You've had good luck with that?

Admiral SKINNER. Yes, sir.

Senator MANCHIN. With that being said, how are we going to maintain this aircraft, this F–35? We look at it from the standpoint—let me just—we'll come back to that.

If the Chinese Government can produce in 22 months a competitive aircraft, there had to be piracy or espionage, had to be.

Senator MCCAIN. Both.

Senator MANCHIN. Both. Are we doing anything on that line? I mean, if they're going to go ahead and copy what we have, they

ought to at least help pay a little bit for it. That's all. That's a fair request, don't you think, Senator?

Have we pinpointed it? Has their government been put to the task of—it's very obvious what they've done. I don't know if you have any comment on that or if you could comment on that.

Admiral SKINNER. We'll take that one for the record, Senator.

[The information referred to follows:]

With regard to the question of whether we, the Department of Defense (DOD), are investigating and prosecuting persons involved in the illicit acquisition and transfer of protected research and critical technologies by the People's Republic of China, the following information is provided by the Naval Criminal Investigative Service (NCIS).

DOD counterintelligence, led by the military department counterintelligence organizations, aggressively and collaboratively engage in detecting, identifying, mitigating and defeating efforts by foreign intelligence elements (FIE), including the People's Republic of China (PRC), to illicitly acquire or exploit protected research and critical technologies. Working closely with the Federal Bureau of Investigations (FBI), Commerce, and other U.S. Government elements, the Department of the Navy aggressively investigates and prosecutes individuals or entities, foreign and domestic, involved in attempts to compromise critical research, development, and acquisition, and fielded sensitive technologies. Some recent examples of successful investigations involving the PRC include:

Stolen U.S. Military night vision & optics to China and England—On November 4, 2011, Phillip Andro Jamison, a former Gunner's Mate Petty Officer First Class in the U.S. Navy stationed aboard Naval Amphibious Base Coronado, was sentenced to serve 30 months in prison for violating the Arms Export Control Act. Jamison pleaded guilty on April 28, 2011. On September 9, 2010, he was indicted for trafficking in stolen government property, interstate transportation of stolen goods and exporting defense articles without a license. The indictment alleged that Jamison, while assigned to work at his unit's armory, stole more than 280 items from the U.S. Navy between October 2008 and September 2009 and then sold these items to customers via eBay, an Internet auction and shopping website. The indictment further alleged that Jamison illegally exported to Hong Kong and England combat-grade night vision devices, riflescopes and laser aiming devices without first obtaining the required export licenses from the State Department. Jamison admitted stealing the items and illegally exporting some of the technology to Hong Kong. The investigation was conducted by ICE and NCIS.

Telecommunications equipment from China to Iraq—On April 10, 2007, Andrew Huang, the owner of MacAndrew's, Inc, an international export company, pleaded guilty in the District of Connecticut to one count of making false statements to the FBI. Huang was charged in 2006 with operating as a representative for the Chinese Electronic System Engineering Corporation, the technology procurement arm of the Government of China. According to court documents, Huang allegedly helped broker the illegal sale and transfer of millions of dollars worth of telecommunications equipment from China to Iraq between 1999 and 2001. Huang was sentenced to 2 years probation and a $5,000 fine. The investigation was conducted by the FBI, U.S. Immigration and Customs Enforcement, NCIS, Internal Revenue Service, and BIS.

In addition to the above, NCIS is currently engaged in a number of classified investigative and operational efforts to identify, prosecute, or otherwise frustrate FIE efforts, including those involving the PRC, to illicitly acquire protected information or technologies. NCIS can provide additional, more specific information at the appropriate classification should the committee so desire.

Despite these efforts, the United States remains a primary and lucrative target for FIE engaged in the collection of such information and technologies. Successful efforts by FIE results in significant loss to the U.S. economic and military global advantage. In addition to losses through fraud and theft, we contend with a wide array of other techniques such as skilled elicitation efforts directed against our scientists and engineers; exfiltration of sensitive or proprietary data through cyber penetrations; espionage using insiders; and loss of critical information through carelessness. Additionally, NCIS employs an aggressive counterintelligence functional services effort to include briefings, debriefings, insider threat awareness and counterintelligence defensive awareness training.

Senator MANCHIN. Do you know if there's any proceedings on anybody because of these programs that you've seen being able to

accelerate to the point they have? Are we investigating? Have we prosecuted anybody? Are we on the tail of anybody?

Admiral SKINNER. Sir, not to my knowledge at least. I won't speak for General Bogdan or for General Davis, but not to my knowledge. We have concentrated mainly in the Department of the Navy on protecting our data and providing information assurance for our data within our own lifelines in the government and then subsequently with the contractors that we work with to develop and produce these weapons systems.

Senator MANCHIN. This amazing speed of 22 months, would it be part of the hacking system that we've been able to monitor and watch what is going on? Probably.

Admiral SKINNER. Yes, sir.

Senator MANCHIN. I just have just one more. Senator, thank you.

We mentioned the statement, I think, that—all of you have mentioned, we talked about the F–35 life cycle over 50 years would be approximately $1 trillion. General Bogdan, you said we must start today to tackle long-term cycle costs of that weapon. Can you describe what concrete steps that you're taking other than what you've already just testified to? Is there anything that you might have missed or that you'd like to add to the testimony?

General BOGDAN. Yes, sir. One of the first things we've done is we've taken a look at the overall sustainment costs and broken it down into different elements. We're trying to identify areas where the JPO and the contractors can actually work to reduce costs, and I'll talk about those. But there are areas of the long-term operations and support costs that fall within the Services' purview to deal with. For example, how much flying time do you give each pilot relative to how much time is used in the simulator? That ratio can greatly change how costly your airplane is over the life of the airplane.

So the first thing we're doing is we're trying to separate out those things that the JPO and industry can work on and those things that the Services can take a look at and work on, so that we cannot work at cross-purposes.

The second thing we're doing in the JPO today is we're injecting competition into those long-term sustainment activities. I learned a very good lesson as the PEO for the KC–46 program that we just spoke about, what good competition can bring. It is a good. So we are—there are various areas like the supply chain, like the Avionics Lostitics Interaction System administration, like developing and delivering support equipment, like running our training centers for our pilots and our maintainers, those are things that industry, not just Lockheed Martin and Pratt & Whitney, have great capability and capacity to do for us. There's no reason in the world why we should not open that up and find the best companies that can give the government the best value to do those things, and we're doing that today, and we should start seeing over the next few years some of those competitions come about and we should see some of the estimated costs of doing that come down.

The last thing we're doing on the program today is, we have about 6,000 hours of flying total on the fleet today. We are starting to gather real information about the reliability and the maintainability of the airplane and what parts on the airplane are failing

at a greater rate than we expected, which parts are coming off the airplane and taking too long to repair. We call that a reliability maintainability program and we have a robust one going on in the JSF right now to identify those cost drivers and then to do something about it. Either we redesign a part or we qualify a second source to make that part for us or we figure out the best way to repair that part quicker and cheaper. Maybe it's organic standup of that repair capability.

Those steps over the next 4 or 5 years ought to make at least a dent in that huge $1.1 trillion number that we hear about. So I'm committed to do everything I can for the partners—they watch this every day—the Services—they watch it every day. Our FMS customers watch it every day, and they're all worried, and I think they should be and I'm working on it.

Admiral SKINNER. Senator, if I may, from a Service perspective we've made great progress over the course of the last 3 years. We have a process in place led by the JPO that allows us to generate those numbers. We have common definitions. We have common cost allocation strategies across the Services that we've all agreed to.

I know the Navy and the Marine Corps are doing exactly referred to in his first point, which is we're going through exactly how we fly our aircraft today and how we train our pilots. We look at the capabilities of the F–35B and C. We take a look at the high-fidelity simulation that is being provided by the program. We determine how many weapons that each one of our pilots need to drop a year to maintain proficiency, how many air-to-air missiles they have to shoot, how many landings they have to make per sortie.

All of that information needs to be fed into General Bogdan's model in order to come up with an accurate sustainment number. We're in the process of going through that information in great detail and providing that data to his databases over the course of the next few months.

So already we've noticed some discrepancies in our initial data that we submitted to the program and what we think we would be doing in the future. So we should see some progress in that area from a Service perspective, at least the Department of the Navy Service perspective.

General DAVIS. Sir, the lesson we have to learn through this is that the F–35 is not an F–16, it's not an F–18. Unfortunately, a lot of the models we use, a lot of the decisions we make about what the cost per flying hour, is still modeled very much on how we fly F–16s and F–18s. We've learning from the F–22 that very little beneficial training is accomplished in open air because the airplane is just, it's just too smart. It sees everything, it knows everything. It's an easy flight in the cockpit. The F–35 is going to be the same way.

So you're going to have to train differently in a different fashion, notably, as has been mentioned a couple times, with some very high-fidelity sims, which would be a lot cheaper to use than the airplane and get a lot higher quality training out of that. I think we, all Services, are just coming to grips that this is going to be a different animal when we get it fielded and get it operational.

The same way we've put personnel on the flight line, the same way we've managed and ordered spares, the same way we've practiced weapons deliveries and weapons employment is just not going to work for this airplane, and we're going to have to come to grips with that. But we won't be able to until we get enough of our operational guys out there flying it and enough of our operational maintainers out there telling us how to do it.

Every airplane I've seen fielded in the Air Force has been fielded with an idea of how it's software was going to be used, until you turned it over to the lieutenant or a captain that had had some experience in a true situation, and basically every operational concept of our airplanes, or at least the software and the weapons systems on it was significantly revised after it was put in an operational context. So we'll see how that goes and what that does for us.

Senator MANCHIN. Let me thank all of you for your testimonies today and I appreciate so much your cooperation and helping us and working with us on this subcommittee. I tell you, we will be a very active subcommittee. I want to make sure you all know you have our full support. But we want to learn also and try to be constructive in the support that we have, not destructive. I know that happens an awful lot in this political toxic atmosphere we have from time to time. But we have a good subcommittee here and I think it really supports what you do. We just want to make sure that the citizens are getting the investments and getting return on investments.

I've always said there's two things we can do through tax dollars. We can spend it or invest it. We've done a good job of spending a lot of money and we just have to start investing it a little bit wiser now. So you can help us, I think, make sure our investments are better spent.

We will keep the hearing record open for 5 days to allow members to submit additional questions. If there is no further questions, I want to thank you all again. This hearing stands adjourned.

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR JOE MANCHIN III

TACTICAL AIRCRAFT PROGRAMS

1. Senator MANCHIN. General Bogdan, the F–35 is scheduled to enter Initial Operational Test and Evaluation (IOT&E) in January 2018. This is the key phase during which the aircraft must demonstrate it is operationally effective. What key technical and performance issues must the aircraft demonstrate in the next 4 years before you'd be willing to enter the aircraft into this phase?

General BOGDAN. The operational test and evaluation (OT&E) for Block 2 is scheduled to be held in 2015. This OT&E will validate the requirements for the U.S. Marine Corps and Air Force Initial Operating Capability (IOC) which require the aircraft to perform the following missions:

USMC: Air Interdiction (Strike), Close Air Support, Offensive Counter Air, Defensive Counter Air, and Armed Reconnaissance/Assault Support Escort

USAF: Limited Strategic Suppression of Enemy Air Defenses (SEAD)/Destruction of Enemy Air Defenses (DEAD), Limited Tactical SEAD/DEAD, Air Interdiction (Strike) and Close Air Support.

In order to perform these missions, the aircraft should demonstrate the following operational capabilities:

Basic and combat air maneuvers,
Stealth,
Full combat range,

Full multi spectral sensor/multi ship fusion,
AIM–120, GBU–12, JDAM employment
Electronic protection/electronic attack/combat identification
High resolution synthetic aperture radar maps
Ground moving target indicator/tracker
Electronic support measures
Limited countermeasures
Full infrared distributed aperture system
Limited air-to-ground infrared targeting and air-to-air infrared search and track
Variable message format, Link 16 and multifunction advanced data link

The OT&E for Block 3 is scheduled for 2017–2018 and will validate the requirements for Navy IOC which require the aircraft to be able to perform the following missions: strategic SEAD/DEAD, Tactical SEAD/DEAD, Air Interdiction (Strike), close air support, offensive counter air, defensive counter air, anti-surface warfare and combat search and rescue.

In order to perform these missions, the aircraft should demonstrate the following operational capabilities:

Basic and combat air maneuvers,
Stealth,
Full combat range,
Full multi spectral sensor/multi ship fusion,
AIM–120, AIM–9X, GBU–12, JDAM, JSOW employment
Electronic protection/electronic attack/combat identification
High resolution synthetic aperture radar maps
Ground moving target indicator/tracker
Electronic support measures
Advanced automated countermeasures
Full infrared distributed aperture system
Limited air-to-ground infrared targeting
Air-to-air infrared search and track
Variable message format, Link 16 and multifunction advanced data link

In addition, the Block 3 OT&E will fully validate the following F–35 Program Key Performance Parameters: combat radius, F–35C recovery speed, F–35B performance (short takeoff distance on a flat deck carrier and on a United Kingdom carrier equipped with a ski jump and vertical landing bring back weight), net readiness, radio frequency signature, force protection, mission reliability, sortie generation rate, and logistics footprint (C–17 loads, volume and weight).

2. Senator MANCHIN. General Bogdan, what is your current thinking on whether the Joint Program Office (JPO) must buy a new helmet?

General BOGDAN. To mitigate F–35 Helmet Mounted Display System risk, an alternate helmet (BAE) is being pursued in case the primary helmet (Rockwell Collins) does not meet the performance required for the F–35 missions or proves to be unaffordable. Currently, both helmets are being developed with a planned fly-off in 2014. Down-select is planned after the fly-off, but the selection may be made earlier based upon risk reduction efforts underway.

3. Senator MANCHIN. General Bogdan, what is the test plan for this year as the JPO pursues its dual path of developing a second helmet?

General BOGDAN. The Rockwell Collins helmet that is currently integrated on the F–35 has completed a dedicated test period consisting of over 45 flights. Testing will continue throughout the year on this helmet consisting of weapons work, expanded envelope work, and night operations. The next generation of the Rockwell Collins helmet will begin integration/qualification work later this year with a planned first F–35 flight in early 2014. The BAE helmet is not as far along in its development and will continue with qualification this year with its first F–35 flight planned for the spring of 2014.

4. Senator MANCHIN. General Bogdan, of all the issues the F–35 must overcome, is a helmet among the top three?

General BOGDAN. Yes, I would consider the helmet to be among the top three of all of the F–35 issues. My other two priorities are long-term affordability and software development.

QUESTIONS SUBMITTED BY SENATOR ROGER F. WICKER

UH–1 REPLACEMENT PROGRAM

5. Senator WICKER. General Davis, the Air Force has long stated its need to replace its 40-plus-year-old UH–1N fleet, yet you recently cancelled its replacement program, the Common Vertical Lift Support Platform (CVLSP). As I understand, the UH–1N aircraft provides support for the nuclear missile security mission as well as myriad utility missions. However, the Air Force cancelled the CVLSP program when it was deemed unaffordable. As the committee understands, the Air Force target unit price for that program was $20 million per copy. It has recently been reported that one of the Air Force UH–1N user commands, Air Force Global Strike Command, is looking at the new Combat Rescue Helicopter (CRH) program as a possible option to replace the UH–1N. Yet, the CRH platform is in the same category as what was previously deemed unaffordable for the CVLSP requirement. Could you please help me understand the requirements for the current UH–1N missions, not only for the support provided to Air Force Global Strike Command but for all of the mission sets supported by the UH–1N?

General DAVIS. Air Force Global Strike Command is not attempting UH–1N fleet replacement via the CRH program. Instead, Air Force Global Strike Command will continue to sustain the existing UH–1N fleet for the foreseeable future and look for opportunities to acquire excess aircraft from other DOD organizations at low/no cost to the Air Force.

The Air Force's UH–1N is flown by five major commands, which include multiple unique mission sets: Air Force Global Strike's intercontinental ballistic missile (ICBM) helicopter security support, the Air Force District of Washington's National Capital Region mass passenger transport, Pacific Air Forces' Operational Support Airlift, Air Education and Training Command's Air Force Survival School and UH–1N Formal Training Support and Air Force Material Command's flight test support. In addition to the UH–1N's military-specific mission sets, the UH–1N also supports the Department of Homeland Security National Response Plan and the National Search and Rescue Plan.

The current requirements for the various missions of the UH–1N are documented in the Joint Requirements Oversight Council's approved CVLSP Capability Development Document. Although these requirements are no longer tied to a specific acquisition program (i.e., the CVLSP), the requirements for the UH–1N mission set remain valid.

6. Senator WICKER. General Davis, have the Air Force requirements been reviewed and validated since the cancellation of the CVLSP?

General DAVIS. No, the CVLSP requirements were last formally reviewed and validated before cancellation of the program by the Joint Requirements Oversight Council's approval of the CVSLP's Capability Development Document in February 2010.

7. Senator WICKER. General Davis, what basis did the Air Force use to determine that the CVLSP program was unaffordable when deciding to terminate the program?

General DAVIS. Since issuance of new Defense Strategic Guidance in January 2012, the Air Force has sought to differentiate between those investments that need to be made today and those that can be deferred. The CVLSP program was terminated in fiscal year 2013 after a cost-benefit analysis determined that upgrading helicopter security was deferrable, with additional risk. Ongoing modifications at ICBM launch facilities, including the installation of remote visual assessment cameras, reinforced concrete headworks, and faster maintenance access hatches adequately address the risk of emerging threat technologies and methods. Air Force Global Strike Command, the field expert, assessed the priorities of the nuclear enterprise and offered to restructure or terminate CVLSP. The Air Force chose termination and acceptance of additional security risk. The termination provided the Air Force with $134 million in savings in fiscal year 2013 and $950 million over the Future Years Defense Program to use for other more immediate priorities.

8. Senator WICKER. General Davis, I understand that the Air Force issued its recent request for information (RFI) in part because of lingering concerns over the sustainability of the UH–1N fleet. It is my sense that it is potentially less costly and certainly less risky to replace the UH–1N with a new modern aircraft than to do one, two, or a series of modifications to a 40-plue-year-old airframe. Please detail the findings and recommendations of the Air Force's RFI on UH–1N Modernization.

Specifically, please address the cost of UH–1N modification versus replacement cost. In doing so, please consider those items outlined in the RFI including, but not limited to, speed, range, endurance, survivability, and sustainability.

General DAVIS. In the case of the UH–1N, as stated in the original RFI, "in terms of mission capability rates the UH–1 remains one of the most reliable platforms within the USAF inventory." The purpose of the Air Force's RFI on UH–1N Modernization was to determine the feasibility of sustaining and making modest modernization enhancements to the platform via low cost options. The industry day presentations reaffirmed that the robust helicopter industry and the large number of UH–1's operating globally will enable the Air Force to effectively sustain the UH–1N until such a time that it can be replaced with an aircraft that provides all required capabilities.

Air Force Global Strike Command has determined that the most cost effective way ahead includes safety and simulator modifications totaling just over $500,000 per aircraft in the near term. Follow-on improvements to the forward looking infrared radar and secure communications at $100,000–$200,000 per aircraft yield a total cost of less than $1 million per aircraft over a 10-year period. Compared to the previously assessed cost of the CVLSP program, or any other new helicopter acquisition, this approach is far more cost effective for the Air Force.

9. Senator WICKER. General Davis, the Air Force recently acquired 26 legacy UH–1 platforms from the Marine Corps to help mitigate their sustainment issues with the UH–1N fleet. When the Army and the Marine Corps faced similar issues with their UH–1 fleets, they opted for new replacement aircraft, the UH–72 and the UH–1Y, respectively. By our accounting, that leaves the Air Force as the only remaining Department of Defense (DOD) operator of the UH–1N with a concerning path for sustainment. Could you please discuss the current operational availability of the UH–1N fleet and discuss any risk you foresee to maintaining adequate readiness levels?

General DAVIS. The rationale for acquiring 26 excess Marine Corps helicopters was to replace 3 crash-damaged aircraft and for Air Force District of Washington's 1st Helicopter Squadron's approved fleet growth of 8 additional aircraft. The remaining excess Marine Corps aircraft will be held in storage to allow flexibility for future operations replacement or sustainment needs. The current UH–1N aircraft availability is 73.7, meeting the Air Force Global Strike Command-established standard of 73.7. The future aircraft availability rate is projected to continue to meet or exceed the 73.7 percent requirement. We expect to maintain adequate readiness levels for the foreseeable future.

10. Senator WICKER. General Davis, could you elaborate on the effectiveness of the current UH–1N training and supply chains?

General DAVIS. UH–1N initial and upgrade training is performed by Air Education and Training Command, at Kirtland AFB, NM. UH–1N crewmember production is meeting or exceeding requirements for fiscal year 2013. However, resource reductions, as a consequence of sequestration, could reduce UH–1N crewmember production below requirements in the future

The UH–1N supply response time has averaged 7.7 percent for the past 36 months, beating the Air Force Global Strike Command standard of 10 percent. We expect to maintain adequate supply response time levels for the foreseeable future.

11. Senator WICKER. General Davis, the committee has some knowledge of approaches the other Services have taken to remedy similar issues with the UH–1 fleet. The Army in particular operates the UH–72 which to my understanding is the lowest cost and most reliable helicopter in DOD production and has significantly greater mission performance capability than the UH–1N. At under $6 million per copy it would seem that the UH–72 or a similar alternative could provide a very low-cost solution for the Air Force. Has the Air Force evaluated the UH–72 or other potential replacement aircraft for any of the missions performed by the UH–1N? If so, I would be interested in the Air Force's findings. If not, when will you consider such alternatives?

General DAVIS. The USAF informally evaluated the UH–72 as a candidate for the CVLSP program, which was intended to be a replacement for the UH–1N fleet. UH–72 capabilities fall short of the stated mission requirements for the UH–1N replacement, and the UH–72 manufacturer did not indicate any interest in proposing the UH–72 as a candidate for the CVLSP program. The CVLSP program was canceled in the fiscal year 2013 President's budget.

FLYING COSTS

12. Senator WICKER. General Bogdan, a year ago, DOD's Cost Assessment Program Evaluation (CAPE) office said it would cost more than $1 trillion to operate and support F–35s over the next 50 years. The cost estimate includes categories such as engine spares, contractor manpower, depot maintenance, component repair, indirect base support, mission personnel, and fuel. The costs are then projected out 50 years using inflation to come up with then-year dollars. I believe this is the first big aircraft program that DOD has tried to project costs for over a 50-year period. What is the current estimated 50-year operation and support costs of the F–35?

General BOGDAN. The operational and support (O&S) cost estimate for the 2012 Selected Acquisition Report (SAR) remained the same as the 2011 SAR [$1.1 trillion in then-year dollars (TY$).] However, the Department will update the estimate for the annual Defense Acquisition Board (DAB) review of the F–35 program in the fall of 2013.

The current F–35 JPO O&S estimate is $857 billion (TY$).

The O&S estimate supports three aircraft type/model/series for 3 U.S. Services (Air Force/Marine Corps/Navy), 2,443 aircraft total, over a 55 year span of operations.

13. Senator WICKER. General Bogdan, do you believe this is a good number or a bad number?

General BOGDAN. The current O&S cost estimate was based on the knowledge available to the program and the CAPE at the time it was developed nearly 2 years ago. We have learned much about the aircraft since then (7,000+ hours, 5,000+ flights) and the Services have also learned much about how to operate the aircraft. The previous cost estimate did not factor in this new knowledge. Additionally, significant work has been done by the program to refine and reduce this estimate and make the F–35 O&S cost more affordable. That said, significant effort remains to continue to find cost efficiencies and reduce this number even further. Affordability remains my number one priority, and I expect these cost estimates to continue to go down over the next several years as the program matures.

14. Senator WICKER. General Bogdan, how does that number compare to the F–16, F–18, F–15, and A–10?

General BOGDAN. The F–35 program is the first program to attempt to calculate costs out for 55 years. It is also the first to attempt to estimate a total life cycle cost for a fleet of over 2,400 aircraft. These alone make the program estimate significantly different from legacy aircraft. Significant work is being done by the F–35 program office, the CAPE and the Services to normalize the cost estimates across a number of areas so that a better comparison can be made between the F–35 and other aircraft.

15. Senator WICKER. General Bogdan and General Davis, Air Force Secretary Donley said on April 23 that the F–35A will cost more per hour to fly than the F–16 it replaces. Secretary Donley then said the Air Force and the other fast jet-flying Services are trying to normalize how they project the F–35's costs. Will it cost more to fly the F–35 than the F–16? And if so, why?

General BOGDAN. Despite ongoing cost reduction initiatives, it is reasonable that the F–35 costs more to operate and sustain than certain legacy aircraft given the significant increase in capability.

The F–16C/D costs were developed by the Air Force Cost Analysis Agency and have been normalized for comparison to the F–35 cost estimate. The 2012 SAR cost per flying hour (CPFH) for the F–16C/D is $24,899. The F–35A CPFH was not updated for SAR 2012; therefore it remains at $31,923. Significant work is being done by the F–35 program office and the Services to reduce the F–35A CPFH.

General DAVIS. Yes, it will cost more to fly the F–35 than the F–16. As stated in the 2012 SAR, the projected, steady-state F–35A CPFH is approximately $31,923 and the actual F–16 C/D CPFH is $24,899. The CPFH includes costs associated with unit level manpower, unit operations, maintenance, sustaining support and continuing system improvements.

The F–35A CPFH is 28 percent higher than the F–16 because we estimate higher F–35A costs for fuel, consumables, depot level repairables, contractor support and modifications. The F–35, however, offers a significant capability improvement over legacy aircraft. Compared to the legacy fleet, the F–35 offers unmatched levels of survivability and lethality required to maintain the advantage against new and evolving threats. Our legacy fleet offers little margin in capability advantage over

current and future adversaries and is rapidly approaching the point where further modification cannot increase capability enough.

16. Senator WICKER. General Bogdan and General Davis, do you believe we have an accurate estimate of the future flying costs of the F–35?

General BOGDAN. I believe we are getting closer to an accurate estimate of the future flying costs of the F–35A, but the work is not yet done. As we field and operate more aircraft, we will be able to collect greater amounts of actual data that will allow us to refine our cost estimates.

General DAVIS. The F–35A CPFH contained in the SAR is our best estimate given all available information. In the 2012 SAR, the projected, steady-state F–35A CPFH is approximately $31,923. As the program progresses, we will collect actual operational data which we will use to refine the CPFH estimate.

SEQUESTRATION AND TACTICAL AIRCRAFT PROGRAMS

17. Senator WICKER. Admiral Skinner and General Davis, our fleet of strike fighter aircraft continues to age along with the cost to operate and maintain those aircraft. Sequestration will impact our ability to maintain our aircraft as well as procure new weapons and weapons systems. I see a growing readiness and acquisition bow wave that will degrade the combat capabilities of our Services, negatively impacting our national security. In 2011, the Air Force established a 2,000-aircraft strike fighter requirement to execute the National Military Strategy with increased operational risk. Last year, the Air Force reduced the requirement by 100 aircraft with higher risk. This year, because of sequestration, the Air Force will ground 12 combat-coded squadrons to include F–22s from the 1st Fighter Wing that are deployed to the Pacific right now. What is the impact of sequestration on our tactical aircraft programs?

Admiral SKINNER. Sequestration will have a large negative impact on the DON TACAIR fleet. Reduction of funding will potentially preclude capability upgrades or existing DON tactical aircraft, reduce sustainment and support for our existing DON TACAIR fleet, and reduce DON F–35 procurement. The aging fleet of DON TACAIR aircraft is already experiencing increased "out of service" time due to increased depot maintenance backlog and increased depot turnaround times that will be exacerbated by sequestration. Adequate funding is necessary to allow DON TACAIR aircraft to maintain a tactical advantage in the current and projected threat environment.

General DAVIS. As of July 3, 2013, the following combat coded squadrons are stood down: 6.5 combat-coded fighter squadrons, 2 combat-coded AWACS squadrons, 2.66 combat-coded bomber squadrons, and 18 training squadrons. Additionally, two fighter squadrons are flying at a reduced rate and are qualified for basic aircraft proficiency, but not for tactical employment. As we enter fiscal year 2014, we will focus on returning units that have been stood down to operational levels of readiness to prevent further erosion in their capabilities. However, if we do not receive sufficient funding in fiscal year 2014, we may have to rotationally stand down units, or fly them at a reduced rate, similar to the actions we've taken in fiscal year 2013.

Reductions in flying training are leaving immediate and lasting impacts on our readiness. Response times and preparedness for going into harm's way are negatively impacted.

Additionally, while the Air Force remains committed to our highest priority major acquisition programs (i.e. F–35, KC–46, and Long-Range Strike Bomber), we are assessing our overall priorities to meet national strategy missions within the constraints of the current fiscal environment. In general fiscal year 2013 sequestration has delayed capability delivery due to extended schedules which will likely result in increased life cycle costs. Continued sequestration in fiscal year 2014 and beyond will further increase these impacts.

Ultimately, without increased funding and decreased operations tempo, sequestration reductions will lead to a hollow force. This increases risk to both the warfighter and any civilian population we should be protecting.

IMPACTS OF SEQUESTRATION

18. Senator WICKER. Admiral Skinner and General Davis, does the fiscal year 2014 budget include additional funding to make up for the fiscal year 2013 impacts of sequestration?

Admiral SKINNER. The 2014 presidential budget submission does not contain additional funding to make up for the impacts of the 2013 Sequestration.

General DAVIS. The fiscal year 2014 request does not fix the fiscal year 2013 bow wave. The Air Force requests full support of the fiscal year 2014 PB to fund the requirements to execute the Air Force mission and the flexibility to reprogram or realign funds to fix mission critical requirement as a result of the bow wave from fiscal year 2013.

While we will have unfunded requirements in fiscal year 2014 as a result of deferred workload and training necessitated caused by the implementation of sequestration in fiscal year 2013, the full impact is still being assessed. The Air Force has made every effort to minimize impacts to readiness and people, but the bow wave of reductions, deferments and cancelations challenge the strategic choices made in the fiscal year 2014 request. It is clear that more reductions will drive additional risks to our readiness, force structure, and ability to modernize our aging aircraft inventory.

19. Admiral Skinner and General Davis, the fiscal year 2014 budget does not include sequestration. Have you looked at the impact of fiscal year 2014 sequestration on these programs?

Admiral SKINNER. The fiscal year 2014 President's budget submission has not been assessed for impacts of a fiscal year 2014 sequestration. Navy is working with the Office of the Secretary of Defense in the Strategic Choices and Management Review (SCMR) to inform the major decision that must be made in the decade ahead to preserve and adapt our defense strategy, our force, and our institutions under a range of future budgetary scenarios. In the event sequestration is allowed to occur in 2014, we will work with the Department to make the necessary adjustments to continue to provide combatant commanders with ready and capable naval forces while, to the extent practicable, protecting our research base and ensuring that our people are properly resourced.

General DAVIS. Funding at the level submitted in the fiscal year 2014 President's budget is necessary to fund the most mission critical requirements. This level of funding combined with additional flexibilities will allow us to address bow wave requirements due to sequestration in fiscal year 2013. Given the continuing uncertainty of the fiscal year 2014 fiscal outlook, we have initiated a review to look at a range of options under various budget scenarios that we could face in fiscal year 2014.

20. Senator WICKER. Admiral Skinner and General Davis, what is the impact of furloughs on these programs?

Admiral SKINNER. Navy civilians play a critical role in our Nation's efforts in war and peace. Furloughs will have adverse effects on the livelihood, morale, and productivity of our civilians and may adversely impact the Navy's ability to retain this skilled and talented workforce. In broad terms, we will see impacts to many aspects of Naval Aviation programs, to include, lower readiness levels as aviation depot throughputs are reduced; extended weapon system test and evaluation timelines as the availability of flight hours on test-ranges are decreased; and potential force modernization delays as longer acquisition timelines may result. However, the true impact of furloughs on tactical/unmanned aircraft and strike weapons programs will not be known until after the furlough occurs. There is still uncertainty as to how many days personnel will be furloughed and who may be exempt. Additionally, there are unknown secondary and tertiary ripple effects that will not be fully understood for some time until after the furlough takes place, to include, the long-term cost impacts due extended program development timelines driven by reduced civilian manning/capacity.

General DAVIS. The 32-hour work week will create schedule delays or increased risk in at least 224 programs. For example, the implementation of a furlough has a direct, negative impact on the KC–46 program critical design review; with civilians comprising 60 percent of an already small, selectively manned unit, a cut of 11 working days puts the CDR at risk. 80 programs are at risk for completing fiscal year 2013 close out actions and/or fiscal year 2014 start-up risk and 40 programs may realize source selection delays. In addition, 50 programs will see contract requests for equitable adjustments or missed milestones and there will be contracting action delays in 136 of these programs of record.

21. Senator WICKER. General Bogdan, DOD appears to have prioritized the F–35 program with regards to sequestration and fiscal year 2014 budget cuts, but it too has been impacted. What are the impacts and what would be the impact of sequestration in fiscal year 2014?

General BOGDAN. Sequestration reductions in fiscal year 2013 in our research, development, test, and evaluation accounts significantly increase the risk to the development program and may result in deferral of some Block 3F capabilities.

Civilian furloughs will also impact the development program. The JPO estimates that the 11-day fiscal year 2013 furlough will put the flight test program at least 1 month behind our planned schedule.

In the Procurement accounts, the sequestration reductions will likely result in the inability to procure all authorized aircraft in Low Rate Initial Production (LRIP) lot 7. The reductions in fiscal year 2013 will result in a reduction in the number of aircraft the U.S. Services buy (approximately three F–35As, one F–35B, and one F–35C). This will also increase the unit cost of the aircraft remaining in the total procurement profile for both the Services and the partner nations.

If sequestration continues into fiscal year 2014, there is a significant risk of not being able to deliver the full Block 3F combat capability and a reduction in the number of aircraft the Services can buy. This production cut will increase overall unit costs and has the potential to cause our partners to reevaluate the number of aircraft they intend to procure.

22. Senator WICKER. General Davis, in your written testimony, you state the Air Force is 200 pilots short of the total manning requirement with the number to grow to 900. Does this take into account potential increase in airline hiring due to anticipated retirement of senior pilots in the coming years?

General DAVIS. Our pilot inventory projections do include decreased retention over the next few years due to airline hiring. We continue to closely monitor airline hiring trends and update retention estimates as circumstances change.

23. Senator WICKER. Admiral Skinner, are the Navy and Marine Corps forecasting any pilot shortages?

Admiral SKINNER. Since PB14 did not include sequestration, the Navy and Marine Corps are not forecasting any pilot shortages with the PB14 budget submission.

If sequestration leads to a Military Personnel, Navy (MPN) reduction in conjunction with force structure reductions (i.e. remove all squadrons from a carrier air wing (CVW) and all squadron personnel), then it is unlikely that Navy or Marine Corps will experience pilot shortages.

F–35 JOINT STRIKE FIGHTER PROGRAM

24. Senator WICKER. General Bogdan, Admiral Skinner, and General Davis, why do we need the F–35?

General BOGDAN and Admiral SKINNER. The F–35 provides a fifth generation fighter aircraft to the U.S. Navy, Marine Corps, Air Force, and partner nations and brings with it the ability to effectively engage and survive a wide range of threats, both air and surface, in contested airspace. It provides a "day-one" strike capability enabling tactical agility and strategic flexibility required to counter a broad spectrum of threats and win in operational scenarios that cannot be addressed by current legacy aircraft, including operations in an anti-access/area denied environment.

The survivability and lethality of the F–35 is enhanced by very low observable stealth characteristics, fusion of onboard and off-board passive and active sensors and real-time integration with other F–35s, DOD and allied assets, which provide a "first detect/first shot" capability throughout the battlespace. The F–35 will provide a significant additive value when brought to bear in a joint/combined warfighting arena.

General DAVIS. It is a fundamental truth of the modern battlefield that to win the fight, you must "own the skies." This means protecting your own forces, while also holding the adversaries' dearest targets at risk. This was a hard lesson learned during World War II, Korea, and Vietnam, and used to our advantage in Operations Desert Storm, Allied Force, Enduring Freedom and Iraqi Freedom. Without it, our troops in combat, whether in the air, on the ground, or on the seas, are put at undue risk, and our chances of ultimately achieving victory are diminished. Owning the skies is difficult to achieve, and requires vigilance in maintaining this advantage through continued investment and development in more capable aircraft, weapons and mission systems. This is more than something simply tasked as a requirement within the Defense Planning Guidance; it is something our joint warfighters expect from their Air Force.

Our potential adversaries know this truth as well, and they continue to seek ways to prevent us from achieving it. Applying lessons from previous conflicts, they are investing in advanced technology for their planes, weapons, and air defense systems

that rival our own capabilities and, in some cases, surpass them. We are also faced with operating a fighter fleet that is smaller and older than at any time in our Service's history. With the threat becoming more capable, and our own fleet at its oldest and smallest, the challenges to our ability to control the skies in any future conflict continue to grow.

To meet these challenges, we are investing in fifth generation fighters to ensure we field a fleet that supports the mission-essential requirement to own the skies. Fifth generation fighters like the F–35 have the capabilities needed to achieve unmatched levels of survivability and lethality, which are required to maintain our air advantage against the most challenging threats. These capabilities include improved stealth, high maneuverability, advanced electronic attack and protection, fused sensors for enhanced situational awareness, advanced precision weapons, and multirole capabilities. Together, they provide our airmen the best tools available to ensure they never have to face a "fair fight in the sky," and they will continue to own the skies in their mission to support and protect the joint warfighter.

25. Senator WICKER. General Bogdan, Admiral Skinner, and General Davis, what is the threat that is driving procurement of this aircraft and why can't we just purchase move F–16s and F/A–18 Super Hornets?

General BOGDAN and Admiral SKINNER. Emerging threats, particularly anti-access/area denial (A2/AD) capabilities that are presently being fielded in China and other nations require all the services' and international partners to develop and procure a fifth generation capability. The ability to survive and remain lethal in these threat environments is critical to our warfighter's operational success. In addition to enhanced survivability and lethality, F–35's integrated active and passive sensor suite will bring increased situational awareness not only for F–35 pilots, but other U.S. and coalition assets networked via near real-time data links.

F–16s and F/A–18E/Fs remain highly capable strike and fighter aircraft and will be operated for many additional years. However, these aircraft have reduced operational effectiveness when facing advanced A2/AD threat systems. To maintain the United States' ability to function in this increased threat environment, a force that includes fifth generation aircraft, like the F–35, is needed.

General DAVIS. Potential adversaries are developing newer planes, weapons, and air defense systems to challenge our ability to "control the skies" in any potential future conflict. They are developing and fielding aircraft that rival or out-perform our legacy fleet with improved speed and agility, the latest and most advanced radars, avionics and electronic jamming, employing highly advanced and lethal air-to-air weapons and levels of signature reduction never seen before outside the United States. We are seeing the worldwide proliferation of air defense systems with advanced early warning and target tracking radars that are digital, agile, and equipped with better protection against jamming. These advanced air defense systems are integrated into robust and networked command and control centers, able to target and engage unprecedented numbers of targets at greater ranges. We are also seeing strategic and tactical surface-to-air-missiles with increased range, maneuverability, target tracking capability and lethality. Ultimately, we are seeing these types of systems evolve in both complexity and capability, being sold worldwide, and being used together to form integrated air defense systems that challenge our air advantage.

While our current fourth generation fleet, such as the F–16, secured a generation of air advantage in previous conflicts, they will be severely challenged in future scenarios against evolving threats. Our legacy fleet is rapidly approaching the point where additional capability enhancements may be unable to ensure operational success within acceptable levels of risk. In particular, the Air Force relies on signature reducing "stealth" technologies to break adversary kill-chains and negate engagements by advanced threats. Signature management can't be simply "added on," but from inception must be incorporated into optimized aircraft designs and materials.

While our fourth generation fleet is decreasingly able to survive and operate in these high-threat environments, they will remain a critical part of our inventory for many years, complementing our fifth generation fleet in reduced threat scenarios. Even in these reduced threat scenarios, we have to honor the proliferation of advanced threats by making targeted investments to increase our survivability and lethality. This also means the Air Force is carefully choosing modernization efforts that maximize the cooperative capabilities between our fourth and fifth generation fleets to enable mission success.

26. Senator WICKER. General Bogdan, Admiral Skinner, and General Davis, DOD plans to procure a total of 2,443 Joint Strike Fighters (JSF) at a cost of approxi-

mately $323 billion (Air Force: 1,763 F–35As; Marine Corps: 340 F–35Bs (STOVL); and Navy: 340 F–35Cs). Has there been any change to these numbers?

General BOGDAN and Admiral SKINNER. The SAR 12 cost estimate to procure 2,443 F–35s (Air Force: 1,763 F–35As; Marine Corps: 340 F–35Bs (STOVL); and Navy: 340 F–35Cs) is $331.4 (TY$B). This is a decrease from the SAR–11 cost estimate of $335.7 (TY$B) to procure the same total of 2,443 F–35s.

General DAVIS. The estimated cost to procure 2,443 F–35s has changed. The 2012 SAR cost estimate to procure 1,763 F–35As, 340 F–35Bs and 340 F–35Cs is $331.4 billion (TY$). This is a decrease from the 2011 SAR cost estimate of $335.7 billion (TY$) to procure the same number of aircraft, and is the result of revised escalation indices, revised procurement profiles, lower labor rates and more accurate cost estimating based on actual data.

27. Senator WICKER. General Bogdan, Admiral Skinner, and General Davis, there has been more information in the press on this program than any other program I can remember in recent history. Overall, the information about the JSF program is negative. It has become the poster child of how not to run an acquisition program. However, a recent Government Accountability Office report notes that the program is now turning the corner with labor hours decreasing and aircraft deliveries accelerating. What has changed since 2010 and why should this committee support the funding requested in the fiscal year 2014 President's budget?

General BOGDAN and Admiral SKINNER. In March 2010 the original Milestone B certification for the F–35 program was rescinded following a critical Nunn-McCurdy breach. At that point, the program suffered from uncontrolled cost growth and an unrealistic development schedule.

The program undertook a complete bottom up reassessment and reorganization. The PEO position was elevated from a two-star to a three-star flag or general officer. Key replan activities included development of an integrated master schedule (IMS), execution of a schedule risk assessment (SRA), and completion of the integrated baseline review (IBR). These incorporated the 2010 technical baseline review's recommendations including revised flight test rates, longer software development spans, new systems engineering processes, and reestablished technical performance measurement. This plan estimated the time and resources realistically required for the development program to deliver Block 3 capabilities. The F–35 development program is now resourced with realistic planning factors to complete the required Block 3 capability testing. Re-plan activities also scrutinized production processes, particularly attention to manufacturing quality metrics, including supplier quality, assembly and test. The program now has oversight into the contractor's supplier risk management process to timely identify problems in the supply chain.

The DAB reviewed the F–35 development, production, and sustainment technical status and cost estimates in February 2012 and on March 28, 2012, OUSD (AT&L) signed an Acquisition Decision Memorandum that officially recertified the program and granted MS B approval.

Since the March 2012 recertification, the program has largely maintained the planned schedule and cost estimates while addressing the normal technical issues that occur during the development of a program.

The fiscal year 2014 budget includes $8.4 billion for continued system development and procurement of 29 F–35 aircraft. 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 and Marine Corps and provide a complementary capability to the Navy's Super Hornet. The F 35 will provide a dominant, multirole, fifth-generation aircraft, capable of projecting U.S. power and deterring potential adversaries. For our international partners and foreign military sales 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 2014 funding is crucial to finishing development to meet the Marine Corps, Air Force, and Navy initial operating capability timelines to provide warfighting capability to the fleet. The program continues to drive down procurement costs while attacking the long-term life cycle costs of the F–35 weapon system to affect affordability—fiscal year 2014 funds are critical to ensure both progress on production learning curves as well as capabilities that reduce maintenance and sustainment costs. The program must also sustain currently fielded aircraft in an effective and economical fashion.

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The program undertook a complete bottom up reassessment and reorganization. The Program Executive Officer position was elevated from a two-star to a three-star leadership position. Key initiatives included development of an IMS, execution of a SRA, and completion of the IBR. These incorporated the 2010 Technical Baseline Review's recommendations including revised flight test rates, longer software development spans, new systems engineering processes, and reestablished technical performance measurement. This plan estimated the time and resources realistically required for the development program to deliver Block 3 capabilities. The F–35 development program is now resourced with realistic planning factors to complete the required Block 3 capability testing. Production processes were also scrutinized with increased attention to manufacturing quality metrics, including supplier quality, assembly and test. The program now has oversight into the contractor's supplier risk management process to enable timely identification of problems in the supply chain.

The DAB reviewed the F–35 development, production, and sustainment technical status and cost estimates in February 2012. On March 28, 2012, the Under Secretary of Defense for Acquisition, Technology, and Logistics signed an Acquisition Decision Memorandum that officially recertified the program and granted MS B approval.

Since the March 2012 recertification, the program has largely maintained the planned schedule and cost estimates while addressing the normal technical issues that occur during the development of a program.

The fiscal year 2014 budget includes $8.4 billion for continued system development and procurement of 29 F–35 aircraft. The Air Force plans to increase the production ramp rate for the F–35A from 19 aircraft in fiscal year 2014 to 60 aircraft in fiscal year 2018. 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 and Marine Corps and provide a complementary capability to the Navy's Super Hornet. The F–35 will provide a dominant, multirole, fifth-generation aircraft, capable of projecting U.S. power and deterring potential adversaries. For our international partners and foreign military sales 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 2014 funding is crucial to finishing development to meet the Marine Corps, Air Force, and Navy initial operating capability timelines to provide warfighting capability to the fleet. The program continues to drive down procurement costs while attacking long-term life cycle costs. The program was able to negotiate a lower unit price in LRIP lot 5 than was originally projected. This continues the trend of actual unit costs being lower than original projections. fiscal year 2014 funds are critical to ensure both progress on production learning curves as well as capabilities that reduce maintenance and sustainment costs. The program must also sustain currently fielded aircraft in an effective and economical fashion.

28. Senator WICKER. Admiral Skinner and General Davis, what is the current cost of each version of the aircraft?

Admiral SKINNER. LRIP 5 (fiscal year 2011) contract prices (including engines) for each variant are as follows:

Air Force - $120 million per aircraft
Marine Corps - $153 million per aircraft
Navy - $140 million per aircraft

General DAVIS. The contract prices (including engines) for LRIP Lot #5 (awarded in December 2012) are as follows:

F–35A (Air Force) - $120 million per aircraft
F–35B (Marine Corps) - $153 million per aircraft
F–35C (Navy) - $140 million per aircraft

The average unit recurring flyaway cost for the F–35A is $76.8 million (BY12$) based on the purchase of 1,763 F–35As.

29. Senator WICKER. Admiral Skinner and General Davis, has the cost of the aircraft increased or decreased as production continues?

Admiral SKINNER. The unit recurring flyaway (URF) cost continues to decrease in each LRIP.

General DAVIS. The URF cost continues to decrease as production continues. Figures 1 and 2 illustrate the actual/projected conventional take-off and landing air vehicle and F135 engine URF from LRIP Lot #1 through LRIP Lot #11. The curves for both show a steady URF decrease.

Figure 1

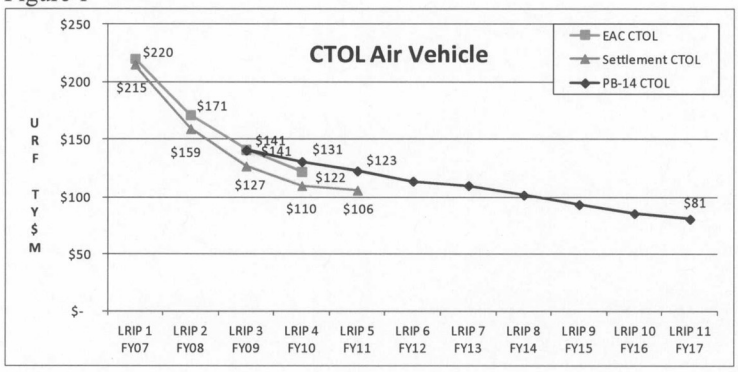
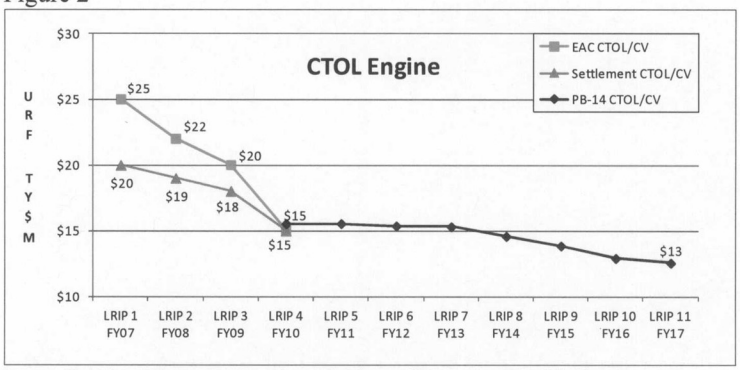


Figure 2



Note: EAC = Estimate at Completion, CV = Carrier Variant

30. Senator WICKER. Admiral Skinner and General Davis, what is the projected flyaway cost of each version of the F–35 when it reaches full rate production?

Admiral SKINNER. The F–35s (including engines) purchased in fiscal year 2018 and delivered in fiscal year 2020 are projected to cost:

Air Force - $85 million
Marine Corps - $110 million
Navy - $100 million

General DAVIS. The first full-rate production lot of F–35s (including engines) (purchased in fiscal year 2018 and delivered in fiscal year 2020) are projected to each cost:

F–35A (Air Force) - $85 million
F–35B (Marine Corps) - $110 million
F–35C (Navy) - $100 million

31. Senator WICKER. General Davis, the last 2 budgets slowed planned production from 40 and 50 aircraft per year to 30 aircraft per year. What is the impact of continuing to push procurement to future years?

General DAVIS. The actual cost of an individual aircraft in any given LRIP lot is largely influenced by how many aircraft are being purchased, and how much production line learning has been achieved to that point. If jets are moved out of early LRIPs into later LRIPs, the speed at which the production line becomes more efficient is slowed and it takes longer to reap the benefits of production line learning. Aircraft in earlier LRIP lots are therefore more expensive than planned, which in

turn drives all participants in the program to reassess the number and timing of their aircraft purchases.

32. Senator WICKER. General Davis, does it save on concurrency costs?

General DAVIS. While pushing procurement to future years saves on concurrency costs in the short run, it also causes aircraft production costs to be more expensive than planned. Additionally, doing this must be balanced with maintaining a valid and cost efficient production line. DOD recognized the need to balance a ramp up in production with the costs incurred by concurrency changes and flat-lined the planned production of F–35 aircraft in 2012–2014. This ensured that concurrency costs were minimized to the best extent possible and that our ability to learn from work that had already taken place in the production program did not suffer.

Note: This question is related to SASCA–02–031.

33. Senator WICKER. General Davis, how does it impact overall costs?

General DAVIS. Pushing production of aircraft into the future years slows down learning so that the production line takes longer to reach peak efficiency. This lag results in overall higher costs to the program, as it takes longer to reduce the cost of the aircraft.

Note: This question is related to SASCA–02–031.

34. Senator WICKER. General Bogdan, what is concurrency in this program?

General BOGDAN. Concurrency on the F–35 is the overlap in the development, testing and production phases of the acquisition program. Essentially, concurrency introduces risk that aircraft we build in early LRIP lots will require post-production modifications and retrofits due to discoveries we make during qualification, flight and ground tests. Additionally, the fixes developed for these discoveries must also be "cut-in" to the production line to correct aircraft not yet produced. One example is the 496 Bulkhead where we discovered cracking during structural and durability tests. That issue was identified during LRIP 2 and the fix delivered to production at LRIP 4. We now have to retrofit the short take-off and vertical landing (STOVL) jets that were produced in LRIP 2 & 3 with the corrected component (planned to begin in 2014).

The specific costs associated with concurrency are production labor, material delta costs, retrofit kit production and labor/infrastructure costs for installing the retrofit. The nonrecurring engineering costs associated with developing a fix are part of the system development and demonstration (SDD) program costs. Planned and scheduled block upgrades to each aircraft are handled separately and are not considered concurrency costs. Concurrency costs will phase out with the completion of SDD.

35. Senator WICKER. General Bogdan, have the concurrency costs increased or decreased?

General BOGDAN. We have just completed the Second Report to Congress on F–35 concurrency costs. In that new report, you will note that the F–35 program concurrency estimate has decreased significantly from when we last reported in September 2012. Overall, we estimate concurrency costs have reduced from $2.8 billion to $1.7 billion. The primary reason for the decrease is a change from using parametric estimating to higher fidelity, discrete estimating techniques based on known F–35 information. The new cost model reflects a detailed engineering approach informed by the remaining F–35 qualification, flight test, and ground test events. It accounts for technical issues affecting air vehicle performance, mission systems required for combat operations, and aircraft structures. Additionally, the actual cost of concurrency is being reduced as the result of accelerating our durability testing and reducing the time it takes to engineer solutions and get them into the production line. We have seen a reduction in this process of approximately 5 months (18 months to 13 months) and continue to work to reduce it further.

36. Senator WICKER. General Bogdan, how do the projected concurrency costs compare to actual concurrency costs?

General BOGDAN. Our estimated concurrency costs in 2013 are 32 percent below our previously projected estimates.

37. Senator WICKER. General Bogdan, the F–35 recently went through an operational test and evaluation and performed poorly. Can you explain the test, what was tested, and why the aircraft performed so poorly?

General BOGDAN. The Air Force recently conducted an operational utility evaluation (OUE), for which the Office for the Director, Operational Test and Evaluation wrote a report. This test was to assess the readiness for the Air Force to start F–

35A training operations. The ability of the Air Force to conduct the training syllabus and achieve useful training was tested.

The OUE Report concluded that the Block 1A.1 System is suitable for the purpose of conducting Air Education Training Command's F–35A training syllabus. However, the report also cited concerns with the effectiveness of some elements of the System. The JPO is aware of and agrees with the concerns related to the conduct of training. Specific concerns raised by the report included comments on the limitations of flight series data (FSD), use of the pilot training aid (PTA), discomfort in use of the simulator helmet, and courseware correction processes. Continuous improvements in these areas are underway, including incremental updates to FSD, planned software updates to the PTA, an update to the simulator helmet that follows the air vehicle development plan, and additional courseware updates by Block. Once fielded these improvements should completely address the concerns raised by the OUE report.

38. Senator WICKER. General Bogdan, can you tell me the status of the helmet (jitter, night vision acuity, and latency), tail hook, lightning protection, Autonomic Logistics Information System (ALIS), fuel dump, and short-takeoff/vertical landing (STOVL) operations?

General BOGDAN. Helmet: Issues faced by the Rockwell Collins helmet over the past year were "green glow," or insufficient helmet display contrast; latency of the displayed information; "jitter," or lack of stability of the displayed symbology as the aircraft maneuvers; night vision acuity; and alignment of the displayed symbology. Last year, the program made significant progress against these challenges using dedicated helmet flight testing of over 45 flights to identify and analyze acceptable helmet performance. As a result of testing, the program has mitigated the effects of four of these helmet issues. More work is planned this summer to ensure that the night vision camera is effective for Marine Corps operations. The next generation Rockwell Collins helmet will begin integration/qualification work later this year, with its planned first F–35 flight in early 2014. The BAE helmet is not as far along in its development and will continue with qualification this year, with its first F–35 flight planned for the spring of 2014.

Tail Hook: The F–35 program is completing design work on the redesigned F–35C arresting hook and expects to conduct ground testing at Lakehurst, N.J., in the fourth quarter of 2013. Technical planning is underway for the first Carrier Sea Trials in the third quarter of 2014.

Lightning Protection: The program has completed the design work for F–35 lightning protection and is currently working to incorporate the fix into production.

Autonomic Logistics Information System (ALIS): ALIS 1.0.3 has been fielded and is in use by the operational U.S. Marine Corps squadron at Yuma and other locations. The F–35 program office is working to rapidly respond to feedback from the field and has a number of data management fixes underway. We expect improved usability and functionality by the fall of 2013 and continue to work on future releases of capability.

Fuel Dump: The final production configuration has been identified, is being confirmed through flight testing and is expected to be finalized by the end of-summer 2013.

STOVL Operations: The F–35B continues to perform well in both testing and operational activities. The aircraft has achieved over 400 vertical landings, over 400 slow landings and over 700 short takeoffs.

39. Senator WICKER. General Bogdan, on February 22, 51 F–35s were grounded after a routine inspection revealed a crack on a turbine blade—heat due to an engine operating longer than usual at a high temperature caused the crack. No other cracks were found. Why did this happen and what is the impact?

General BOGDAN. The F135 engine turbine blades are manufactured to very high tolerances, but there are allowances for minor imperfections. As you identified, this aircraft had been operating in a severe test environment, going much longer in these extreme heat conditions than in a normal operational aircraft. The combination of this extreme test environment and an allowable manufacturing imperfection caused this crack.

After extensive inspections on all engines in the F–35 fleet, no other cracks have been found. Additional analysis indicates that only one additional test asset has been operated near the extreme usage levels of the original asset. None of the operational jets have been operated near this level of stress. Analysis has also shown that the type of minor imperfection discovered in this turbine blade is rare in the fleet. Nevertheless, additional work is being done to assess what the impact of this crack is to the overall projected lifetime of the engine and if additional engineering

work is needed to mitigate the risk. This work is currently underway and should be completed by the end of the summer.

40. Senator WICKER. General Bogdan and Admiral Skinner, the Marine Corps has announced their plans to reach IOC next year, 2014. Some do not believe the F–35B can reach IOC using Block 2B software installed in the aircraft. What is Block 2B software and can the Marine Corps reach IOC using that software?

General BOGDAN and Admiral SKINNER. The Marine Corps plans to achieve IOC between July 2015 (objective date)) and December 2015 (threshold date). Though Block 2B software is necessary to enable the aircraft mission system functionality required for IOC it is one of many requirements the Marine Corps requires to declare IOC. Training, manning, sustainment support, aircraft performance envelop, facilities and infrastructure, L Class ship alterations, and an ability to sustain IOC once declared are equally important aspects. Block 2B software provides for the control precision guided weapons, sensor utilization, and mission system management capabilities to execute close air support, limited offensive and defensive counter air, air interdiction, assault support escort, Armed Reconnaissance, and limited Suppression of Enemy Air Defense missions in concert with Marine Air Ground Task Force (MAGTF) resources and capabilities. The F–35B with Block 2B software and the other essential elements needed to declare IOC will provide the Marine Corps with a complimentary TACAIR combat capability for the MAGTF. Block 3 will leverage our Block 2B capabilities and optimize our TACAIR effectiveness and will generate unprecedented strategic and operational agility within our MAGTF's to counter a broad spectrum of threats and win in operational scenarios that cannot be addressed by current legacy aircraft.

41. Senator WICKER. Admiral Skinner, the first operational squadron stood up at Yuma, AZ, in November 2012 and the first delivery of aircraft to Nellis Air Force Base occurred at the end of February 2013. How many F–35s have been delivered and are they all currently flying?

Admiral SKINNER. As of June 10, 2013, there have been 22 F–35A and 19 F–35B JSF aircraft delivered to U.S. training and operational forces. For the Department of the Navy, the F–35B aircraft have been delivered to the following 3 locations: 11 to VMFAT–501 for training our initial F–35B pilots at Eglin AFB; 6 to VMFA–121, our first operational squadron; and 2 F–35B aircraft on loan to Developmental Test at Edwards AFB in preparation for Operational Test and Evaluation. As a matter of routine operation and maintenance, not all aircraft fly on a daily basis, but all are in a flyable state that supports the operations at each of the locations.

42. Senator WICKER. Admiral Skinner, what is the current status of the squadron at Yuma?

Admiral SKINNER. The squadron at MCAS Yuma, VMFA–121, is in the transition process of accepting aircraft from the factory, standing up maintenance capabilities, and conducting initial flight operations. As of 10 June 2013, VMFA–121 has received 6 aircraft with another 10 anticipated to be delivered by the end of September 2013, bringing the squadron up to their full complement of 16 F–35B aircraft.

INTERNATIONAL PARTNERSHIPS

43. Senator WICKER. General Bogdan, I have been an ardent champion of U.S. defense exports to our allies, friends, and partners abroad. Robust defense trade increases interoperability with our close allies and partners, reduces unit costs for our own military, and helps support a U.S. defense industrial base facing significant budget uncertainty here at home. 10 countries (the United Kingdom, Turkey, Australia, Italy, the Netherlands, Canada, Norway, Japan, Denmark, and Israel) are slated to receive JSF deliveries in the coming years. Several foreign partners, like Canada, Italy, and the Netherlands, have already reduced their projected buys or are reported to be considering doing so. Assuming there are no new buyers, how much would the cancellation of one foreign F–35 affect the unit cost of an American F–35?

General BOGDAN. Unit cost is sensitive to the total quantity procured. Savings in the cost of the aircraft can be realized through bulk purchases and other economies of scale. The actual cost of an individual aircraft in any given LRIP lot is largely influenced by how many aircraft are being purchased, and how much production line learning has been achieved to that point. Loss of purchases will limit the ability of the program to take advantage of economies of scale, as well as reducing learning

opportunities, which would drive the cost up. As an example, when one partner reduced its purchase from 130 aircraft to 90 aircraft, the unit cost went up 1 percent, which equates to over $1M per jet. Specific numerical impact is largely dependent on the country in question and the time at which the decision was made and cannot be generalized.

44. Senator WICKER. General Bogdan, when a foreign partner reduces its buy, are we bound to return any portion of the money they invested in development or is that considered a sunk cost?

General BOGDAN. When a foreign partner reduces its purchases, we are not bound to return any portion of the money provided by that country for development.

45. Senator WICKER. General Bogdan, the Marine Corps B model of the F–35 is the most expensive version. If Singapore orders 75 Bs, as they are reportedly about to, how much will that reduce the unit cost of an American F–35B?

General BOGDAN. The specific amount of the reduction in unit cost is dependent on the years in which Singapore may decide to purchase aircraft and can only be calculated after their order is finalized.

Unit cost is sensitive to the total quantity procured. Savings in the cost of the aircraft can be realized through bulk purchases and other economies of scale. The actual cost of an individual aircraft in any given LRIP lot is largely influenced by how many aircraft are being purchased, and how much production line learning has been achieved to that point. Additional purchases take advantage of economies of scale, but also provide additional learning opportunities, which in turn drive down costs even further. Likewise, aircraft reductions in any given LRIP lot would have the opposite effect.

46. Senator WICKER. General Bogdan, what is the status of the potential sale to South Korea?

General BOGDAN. The U.S. Air Force and the F–35 JPO are in the final weeks of completing requirements under the competitive process laid out by the Korean Government beginning in January 2012. The proposed sale of the F–35A has been reported to Congress and a draft letter of offer and acceptance has been presented to the Korean Government for consideration. It is anticipated that a final decision by the Korean Government will be made this summer.

47. Senator WICKER. General Bogdan, what other countries have asked for formal briefings on the F–35?

General BOGDAN. The F–35 JPO has briefed a number of countries including Belgium, Spain, United Arab Emirates, Finland, and Switzerland.

48. Senator WICKER. General Bogdan, what plane do you consider the toughest international competitor for F–35, and what is the current cost differential between the two?

General BOGDAN. The leading international competitor for the F–35 is largely based on the requirements the countries' are trying to fill. Each country currently looking to purchase an advanced fighter aircraft has different requirements and limitations. This changes what is viewed as the leading competitor. There are a number of options available on the international market including the Typhoon, Rafale and Su-30MK, but there is no reliable way to compare costs between them all, given the proprietary nature of sales negotiations.

[Whereupon, at 4:21 p.m., the subcommittee adjourned.]