DEPARTMENT OF DEFENSE

WRITTEN TESTIMONY FOR THE
SENATE APPROPRIATIONS COMMITTEE
SUBCOMMITTEE ON DEFENSE
U.S. SENATE

SUBJECT: F-35 Joint Strike Fighter

COMBINED STATEMENT OF: Mr. Frank Kendall
Undersecretary of Defense
for Acquisition, Technology and Logistics

Lieutenant General Christopher Bogdan
Program Executive Officer F-35

June 19, 2013

Chairman Durbin, Vice Chairman Cochran, 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 is the Department of Defense`s largest and most important acquisition program. Its success is of fundamental importance to our national security. The JSF will form the backbone of U.S. air combat superiority for generations to come. It will replace legacy tactical fighter of the Air Force, Marine Corps and the Navy. The F-35 will provide a dominant, multi- role, fifth-generation aircraft capable of projecting U.S. power and deterring potential adversaries across the full spectrum of combat operations. For our international partners and foreign military sales customers, the JSF will become a linchpin for future coalition operations, will help to close crucial capability gaps, and will enhance the strength of our security alliances. Military technology does not stand still, and maintaining technological superiority our service men and women have relied upon effectively for decades depends on the successful fielding of the F-35.

The multi-role F-35 is the centerpiece of the Department of Defense's future air dominance and precision attack capabilities. The F-35's 5th generation attributes, including integrated advanced technology sensors, networking, and signature controls, are critical for maintaining U.S. air supremacy and ensuring our ability to operate against modern and emerging threats. The emergence of competitor 5th generation aircraft within the next decade; coupled with the proliferation of sophisticated electronic warfare capabilities and modern integrated air defense systems increasingly threaten our current 4th generation aircraft. The F-35 is designed to control the air and to penetrate heavily defended environments in order to deliver a wide-range of precision munitions. Shared

development and international production will bring the added benefit of increased allied interoperability and cost-sharing across the Services and partner nations. The President's FY14 budget request includes a total of $8.3 billion for continued system development ($1.8 billion) and procurement ($6.5 billion) of an additional 29 F-35 aircraft. To ensure the F-35 maintains its effectiveness against continually evolving threats, this request also includes resources to deliver advanced weapons and sensors to the F-35 fleet in the years following Initial Operational Capability for our Services. The Department also endeavored to protect the development of the F-35 Program this year as it adjusted its budget to execute the mandates of sequestration. The Department has requested a reprogramming of $75 million to keep the development program on schedule and we urge the subcommittee's support for this request. Ensuring the success of the F-35 development program and achieving a stable design that will permit increased and more economical production rates have been among my top priorities. I would also ask this subcommittee to help us maintain funding stability in the F-35 Program as you review the FY 2014 President's Budget request.

Where the Program has been

Three years ago, the program experienced a critical unit cost breaches according to the Nunn McCurdy statute. My predecessor, now Deputy Secretary of Defense Ash Carter, rescinded the Milestone B and Acquisition Program Baseline. The Nunn McCurdy breach resulted from overly optimistic perceptions of development risk and an overly aggressive, concurrent acquisition strategy. The critical review and rebaselining process included an examination of all aspects of the program and led to significant changes in how the F-35 program is managed and executed. After elevating the Program

Executive Officer to a three-star flag officer billet and bringing in Vice Admiral Dave Venlet from the Naval Air Systems Command to be the Program Executive Officer, the Department executed a detailed Technical Baseline Review to reassess the time and resources required to complete development prior to resetting the Baseline and certifying the program. To address the technical risks identified by that review, the Department added two years and $4.6 billion to the development and test programs. We also made significant changes to our technical and contractual relationships with Lockheed Martin, the prime contractor. To ensure Lockheed Martin shared equitably in program risks and to incentivize cost reduction, we began the transition from cost-plus production contracts to fixed price-type contracts beginning with a fixed-price incentive-fee contract for Lot 4. In Lot 5, the 2011 Lot, we continued this process, tightening contract terms and obtaining a cost sharing agreement with Lockheed Martin for concurrency risk – the costs associated with implementing design changes to fix problems identified in testing on aircraft that had already been manufactured. We are currently negotiating fixed price-type contracts for production lots six and seven, under which the contractor will be assuming the risk for any cost overruns. With me today is the current Program Executive Officer, Lt Gen Chris Bogdan, who is focused on continuing to execute these changes and deliver this critical warfighting capability to the U.S. Services and our international partners. Also here today is Sean Stackley, Assistant Secretary of the Navy for Research, Development and Acquisition and Dr William LaPlante, Principal Deputy Assistant Secretary of the Air Force for Acquisition and Management. All of us are fully dedicated to the success of this program.

Program Accomplishments in the Last Year

Flight test is progressing close to plan and is about 40% complete. To date the F-35 Program has flown more than 3,000 flights totaling more than 5,000 flight hours and is largely tracking to our re-baselined plan. The first in-flight weapons releases were conducted from both the Air Force's F-35A conventional take-off and landing variant and the Marine Corps' F-35B short take-off/vertical landing version and the program also began testing the most dynamically challenging portion of flight envelope testing. Flight testing of the aircraft's maximum design speed, maximum altitude and high angle of attack flight characteristics, has been successful to date. On June 5, 2013, the integrated test team at Edwards Air Force Base conducted the first powered launch of an AIM-120 Advanced Medium-Range Air-to-Air Missile from an F-35A. Dynamic Load Testing models of the F-35A and F-35B have completed their first lifetime (8,000 hours) of structural fatigue testing, with the F-35C scheduled to complete in July. After tearing down the aircraft, analyzing the results, and making any necessary modifications, each variant will move on to a second lifetime of testing over the coming year. The program also completed a U.S. Air Force operational evaluation that cleared the way to begin pilot and maintenance training at Eglin Air Force Base (AFB). The Marine Corps and Air Force now have thirty-nine (39) F-35's deployed to operational and training squadrons at four locations and have completed over 1,500 sorties totaling 2,000 flight hours. The program has completed initial training for the transition of nearly fifty (50) pilots and over seven hundred (700) maintainers. The Marine Corps activated the first F-35B squadron at Marine Corps Air Station (MCAS) Yuma, Arizona and now has six aircraft flying. None of these aircraft are fully operational of course; that cannot occur until

operational software completes development and test and is fielded. The Services also recently informed the Congress of their plans for establishing Initial Operational Capability (IOC), indicating their confidence in the program's ability to deliver capabilities on schedule. Concurrency costs are coming down faster than program estimates, and production costs are coming down as well. The price of producing F-35s continues to decrease for each successive lot placed on contract; Lot 5 aircraft averaged 4% less than Lot 4's, as did the price for Pratt & Whitney's engines. We expect such reductions to continue.

International Partnership

The F-35 program continues to be the Department of Defense's largest cooperative development and production program, and with eight original Partner countries all continuing their participation under Memorandums of Understanding for System Development and Demonstration (SDD) and for Production, Sustainment and Follow-on Development (PSFD). The eight partner countries are the United Kingdom, Italy, The Netherlands, Turkey, Canada, Australia, Denmark, and Norway. I recently met with my international counterparts at our annual Chief Executive Officer's Conference and I can assure you that the partnership remains strong and committed to the program. Over the last few years, individual partner nations have modified their procurement plans to reflect the program's progress and the available funding in their defense budgets, in a manner similar to the changes in our own procurement plans. However, at this time each considers the F-35 a key to their national defense and remains committed to the program. Turkey deferred the two jets they had ordered in LRIP 7 (2012), deciding to revisit their production decision in time to join LRIP 9 (long lead -2014; on contract in 2015). The

Netherlands first two aircraft are being readied for delivery this year to train Dutch pilots to participate in operational testing. The Netherlands Ministry of Defense is fully committed to the F-35, awaiting conclusion of parliamentary budget debates this summer to determine the timing for the next Dutch aircraft order. Lastly, Canada continues to fulfill the requirements in its mandated CF-18 replacement process with the next update due to Parliament the fall. The process is not anticipated to complete with this update

In addition to development and production with our international partners, there is robust activity in the Foreign Military Sales (FMS) arena. Delivery of Israel's first of nineteen (19) F-35A aircraft is scheduled to begin in 2016, with current plans for seventy-five (75) Israeli F-35's. Japan signed a Letter of Offer Acceptance (LOA) for four F-35A variant aircraft in June 2012 to be delivered from the Lockheed Martin assembly line in 2016. Thirty-eight (38) follow-on aircraft will be produced in a Final Assembly and Check-out Facility (FACO) built in Japan, with deliveries beginning in 2017, for a total of forty-two (42) aircraft. Japan's Ministry of Defense continues to plan for additional production to replace their aging fighter fleet; and a decision on the replacement aircraft is expected by 2017. Last June the F-35 team provided a proposal to the Republic of Korea, which is also competing for the acquisition of its future fighter. We expect Korea's decision by the end of this month. Should the F-35 be selected, deliveries would commence in 2017. The Singapore Air Force is currently working with the F-35 program through a Studies and Analysis FMS case leading to a potential request for acquisition later this year.

Where we are now

The F-35 program continues to make steady progress. I believe we have a

realistic plan in place. We are seeing progress close to plan but challenges and risks remain. We still have a long way to go in the flight test program, with over 50% of the flight test remaining, and have a good deal of development to complete, particularly software and weapons integration.

While the program did experience significant schedule and cost growth prior to the 2010 Nunn-McCurdy cost breach, the Department's actions and our experience over the last three years reflect that the program is on a more stable footing. Our focus now is on completing development, which will permit ramping up to increased economies of scale in production, and on getting support costs down.

Cost, Schedule and Performance

The Department is focused on executing the development program with discipline to ensure the program delivers the planned for capabilities within the time and funding that has been budgeted.

Unit Recurring Flyaway (URF) costs are on track to meet the affordability targets that I established during the MS B recertification in 2012. The transition to fixed price production contracts is helping with this positive trend, but to meet our cost goals the Department must ramp up the production profile. In 2012, I flattened production because of excessive concurrency risk and concern about the stability of the design. The situation today has improved to the point that I am cautiously optimistic that we will be able to increase production in 2015 as planned, provided development and test progress continues to show improvement and costs risks associated with concurrency continue to decline.

Development Status

Over the past two years the Program Office has implemented significant changes in how system software is developed, lab tested, flight tested, measured and controlled. These changes are showing positive effects, and we are moderately confident that the program will successfully release the Block 2B and 3I capability as planned in 2015 and 2016. Block 2B is our initial combat capability, which the U.S. Marine Corps plans to use to declare their IOC. Block 3I will have the same operational capabilities as Block 2B, but includes a hardware upgrade of the aircraft's computers. The Air Force plans to declare IOC with the Block 2B/3I capabilities by December 2016. However, there is more risk to the delivery of Block 3F, required for Navy IOC and the Services' full warfighting capability, by late 2017. The F-35 Program Office is conducting a Block 3 Critical Design Review early this summer. The results of this review, coupled with a solid six months of flight testing on our 2B software, will allow the Department to determine the likelihood of meeting its Block 3F commitments on time. I expect to have more definition regarding Block 3F capability at the end of the summer, but we do see risk in the Block 3F schedule at this time.

While software development and integration is the highest risk the program faces as we complete development, there are other risks we are tracking that warrant management attention. Among these are the Helmet Mounted Display System (HMDS), the Arresting Hook System (AHS) for the F-35C (carrier variant), and the Autonomic Logistic Information System (ALIS). The HMDS is a major technological advance for pilot situational awareness but it has presented design challenges. HMDS issues faced by the program 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 HMDS flight testing to identify and analyze acceptable HMDS performance. As a result of testing, the program has successfully mitigated the effects of four of these HDMS issues. More work is planned this summer to ensure that the night vision camera is effective for Marine Corps operations. All of these systems still pose moderate risk, but the program has well-planned and resourced mitigation plans in place for each. I would categorize these as typical of challenges associated with a complex weapon system development program, but design and production concurrency have rendered them more acute in the F-35's case.

It is important to note the impact our budget uncertainty has had on the program, specifically in the test program. The devastation caused by sequestration and the future furlough of our civilian workforce are real. Although these are not typical challenges, they are our reality and are increasingly difficult to recover from. For example, we estimate a minimum impact to our testing schedule of a one-month slip due to the furlough of Government test personnel. We continue to assess the effects downrange from furlough to our activities on this and other programs, as this is new territory for us in terms of understanding the full impacts.

Production Status

Overall, production performance is tracking to the post-strike Lockheed Martin baseline and the aircraft production quality is improving. As of June 10, 2013, the program has delivered a total of fifty-six (56) aircraft – twenty-five (25) for testing and

thirty-one (31) for operations and training.

In the fall of 2012, the F-35 Program Office was alerted to a case where non-compliant specialty metals were used in the manufacturing of the F-35 Radar. The metals in question are in small high performance magnets that are embedded in the lowest levels of the F-35 supply chain. The non-compliance does not refer to the quality of these materials but to their country of origin. Following a thorough review, and after the required congressional notification, I determined that a National Security Waiver was appropriate to allow acceptance of aircraft containing these non-compliant high performance magnets. There was no risk associated with the use of the materials and the time required to re-qualify a compliant high performance magnet would have resulted in major delay to the production and fielding of the aircraft. Subsequent to the discovery and disclosure of this non-compliance, a complete assessment of the supply chain bill of materials was completed and two other instances where non-compliant specialty metals were being used in the manufacturing of the F-35 Radar and Target Assemblies were discovered. I both amended my earlier National Security Waiver and issued a new National Security Waiver to cover these instances of non-compliance in order to ensure that the production and testing timeline for this critical program would not be negatively impacted until compliant parts could be qualified and obtained. I can assure you that the Department and I take this matter extremely seriously. I have personally met with the prime contractor to discuss its corrective action plans and have tasked the Defense Contract Management Agency to review the reasons behind the non-compliance on the target assemblies. In addition, the program office has insisted that the prime contractor institute aggressive and thorough measures to identify any additional instances and

correct its specialty metal compliance process.

Concurrency Costs

As I mentioned, structural fatigue testing is proceeding according to plan and one of the biggest concurrency risks – that of a significant structural redesign – is decreasing accordingly. The quantity and significance of test findings to date have been consistent with or better than what we have seen on past fighter programs.

Predicted concurrency costs are coming down with the execution of flight testing. Additionally, the projected concurrency costs per aircraft are being revised downward due to a number of initiatives. In the summer of 2012, the F-35 Joint Program Office (JPO) and Lockheed Martin (LM) created a joint JPO-LM Concurrency Management Team. Their first tasks were to identify the key drivers of concurrency costs, develop a discrete bottoms-up cost estimate, and work collaboratively to mitigate expected concurrency impacts. The new cost model reflects a detailed engineering approach informed by the remaining F-35 qualification, flight test, and ground test events. The F-35 program has taken measures to improve management of concurrency risk and minimize the costs of delivering warfighting capability to the Services by reducing the time required to implement changes to the production line, where these modifications are cheapest, and ensure that fewer aircraft need post-production retrofits. These included introducing incentives to the Lot 5 and beyond production contracts so that Lockheed Martin absorbed a reasonable share of the risk and cost of discovering and implementing concurrency changes during production.

Sustainment Costs

The operation and sustainment (O&S) costs estimate reported in this year's

Selected Acquisition Report (SAR) to Congress is unchanged from the independent cost estimate the Director of the Cost Assessment and Program Evaluation office (D, CAPE) provided to support the Defense Acquisition Board's 2012 Milestone B Nunn-McCurdy recertification review. It will be updated for the fall 2013 Interim Program Review DAB, based in part on the program's cost data gained from operations at Eglin AFB and MCAS Yuma.

The SAR reflects O&S costs that total $617B in Constant Year 2012 dollars or $1,113B in Then-Year dollars; the Then-Year estimate highlights the inflationary impacts of operating those aircraft beyond the year 2065. The Cost Per Flight Hour (CPFH) reflected in the SAR is also the unchanged D, CAPE estimate. I established CPFH affordability targets during the MS B recertification, and we are working to achieve reductions that will bring the program in below these targets to ensure the F-35 is affordable as we transition to the operations and sustainment phase.

The Department, Services, and F-35 Program Office have undertaken numerous initiatives to explore ways to reduce total O&S costs. At this point, the O&S costs represent the best remaining opportunity to reduce program costs. These initiatives include:

- Conducting a Sustainment Business Case Analysis using independent reviewers
- Injecting competition in sustainment areas to include managing the global supply chain, producing support equipment, operating our training centers and administering ALIS in each of our bases and squadrons.
- Instituting a robust Reliability and Maintainability program to systematically identify parts and systems on the aircraft today that require repairs too frequently.
- Standing up the organic depots to improve the quality, throughput, and turn-around times for parts repairs.

While we are being aggressive in our efforts to reduce overall O&S costs, our current estimates are just that – estimates. My confidence in our cost estimates will improve when we have actual costs based on sustaining broad operational employment and can benefit from the learning and experience of our warfighters.

Future of the Tactical Fighter Industrial Base

The Department is concerned about the future of the United States' high performance tactical aircraft industrial base. We are on the path to having one active fighter production facility in the next few years, but even more disconcerting is the gap between development programs for the F-35 and the next generation of high performance aircraft. Approximately a year ago, the Defense Advanced Research Projects Agency was tasked by the USD(AT&L) to begin the "Air Dominance Initiative," a program envisioned as leading to competitive prototyping programs for the next generation of air dominance systems technologies beginning in 2016. In the current austere budget climate it will be difficult to find resources to maintain and advance our competitive technologies for high performance tactical aircraft, but it is important that we do so. Programs such as the Unmanned Carrier Launched Air System can fill part, but not all, of this gap.

Conclusion

The Department has a realistic baseline in place and we are seeing steady progress in the program. The Department remains committed to the F-35 as the core of our US combat air superiority and precision strike capabilities for generations to come. The capabilities of the F-35 are necessary to our continued technological superiority on the battlefield. Over the past few years, the Department has put in place the right

fundamentals and realistic plans using sound systems engineering processes, and we are monitoring and tracking performance using detailed metrics. Overall, there is much work still ahead of us and there is still the possibility that we will be surprised during the balance of the development and test program, but at this time we believe we have put the program on a much more stable footing then it had prior to the Nunn McCurdy breach in 2010.

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