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THE HOUSE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON TACTICAL AIR AND LAND FORCES

DEPARTMENT OF DEFENSE

WRITTEN TESTIMONY FOR THE HOUSE ARMED SERVICES COMMITTEE SUBCOMMITTEE ON TACTICAL AIR AND LAND FORCES UNITED STATES HOUSE OF REPRESENTATIVES

SUBJECT: F-35 Lightning II Program Update

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I. Introduction

Chairman Turner, Ranking Member Sanchez and distinguished Members of the Committee. Thank you for the opportunity to address this committee regarding the F-35 Lightning II.

The F-35 Lightning II Joint Program Office is the Department of Defense`s largest acquisition program, and it is of vital importance to our Nation's security. The F-35 will form the backbone of U.S. air combat superiority for decades to come. It will replace the legacy tactical fighter fleets of the Air Force, Navy, and Marine Corps with a dominant, multirole, fifth-generation aircraft, capable of projecting U.S. power and deterring potential adversaries. For our International Partners and Foreign Military Sales (FMS) customers, who are participating in the program, the F-35 will become a linchpin for future coalition operations and will help to close a crucial capability gap that will enhance the strength of our security alliances.

II. Accomplishments

In the months since this committee last heard from the Program Office, the F-35 team has had numerous accomplishments. There is nothing more rewarding than to see the F-35 in the hands of the warfighter. The United States Marine Corps' announcement this summer that it had achieved an Initial Operating Capability (IOC) with the F-35B was an excellent first step in operationalizing the F-35. For the first time, our Combatant Commanders will now have a 5^{th} generation strike fighter capable of operations from expeditionary airstrips or sea-based carriers. The F-35 team is committed to expanding and sustaining this capability.

There were numerous accomplishments in flight testing in recent months, most notably, completion of F-35B Block 2B Operational Test aboard the USS WASP and early successful

completion of the second round of development tests with F-35C aboard the USS EISENHOWER. The F-35A completed ground test firings of its internal GAU-22 25-millimeter cannon and airborne functionality testing is now underway earlier than planned with F-35A air-to-ground accuracy testing which was originally scheduled next summer. In addition to those items mentioned above, below is a list of accomplishments also achieved during the year. In this hearing I intend on providing a fact based assessment of both the good and the bad on the program so you can form your own judgments as to the program's progress.

- Began Block 3F testing
- Completed all Block 2 testing with the exception of a single A-model fuel fix
- Successful completion of F-35B Operational Test 1 aboard the USS WASP
- First successful operational fleet (VMFA-121 Yuma) weapons drops
- Successfully completed all Block 3i weapons delivery accuracy events
- Successfully completed F-35C Development Test 2 aboard the USS EISENHOWER
- Delivered first LRIP 7 aircraft
- Installed two Full Mission Simulators in the F-35 simulation facility
- Released Block 2B software for training
- Started Air Force and Partner pilot training at Luke Air Force Base
- Declared Marine Corps Initial Operational Capability
- Delivered first F-35A to Hill Air Force Base
- Delivered United Kingdom and The Netherland's aircraft to Edwards Air Force Base for Operational Test
- Rolled out first F-35A from the Italian Final Assembly and Check Out facility
- Conducted First Flight of Italian-built F-35A
- Completed Italian tanker flight testing
- Conducted first Turkey and Norway site activation team visits

While these accomplishments are good news it does not mean that we are without current challenges and risks which we are addressing each and every day.

III. Progress in addressing 33rd Fighter Wing issues:

On March 27, 2015 a Tactical Air and Land Forces Congressional Delegation visited Eglin Air Force Base in Florida to discuss the F-35 program and current state of training

operations. There were numerous pilot and maintenance issues identified during the visit related to the F-35 air combat system. These issues and our comments follow:

1. **Contractor's scale of control due to Autonomic Logistic Information System (ALIS)**. The program continues working hard with the services to identify those processes that can be transferred to organic maintenance, and in the future intends to transfer to organic maintenance many of the things industry currently performs. For example, the US Marine Corps is transitioning ALIS administration from industry to organic manpower, and the Department is currently putting in place plans to duplicate and place the ALIS network and hardware on to US Government owned and operated facilities.

The Program is also expanding the use of DoD program office personnel in the field as part of our growing Lightning Support Team, replacing industry field service representatives. We are also expanding many of the repairs currently being performed by industry with both our Depots and local maintenance units.

2. **Accuracy of parts status**. JPO continues to develop strategy to ensure global Total Asset Visibility (TAV) through contractor-based System Application Products (SAP) systems, ALIS, US Gov't Accountable Property System of Record (APSR), and other supporting inventory managements system to achieve total asset visibility. As part of the F-35 asset management strategy, Lockheed Martin was tasked by the JPO to develop tools that would link parts supply chain information from the end-user (warfighter) all the way back to the vendors so parts orders could be tracked from beginning to end and provide accurate unit counts, delivery dates, and parts status. The program continues to engage with Lockheed

Martin in pursuit of asset management solution that will leverage Lockheed Martin data management systems.

3. Supply Chain Concerns. The program continues to address issues that have resulted in shortfalls of inventory at the sites. We have addressed this problem aggressively by pursuing additional Service funding and the use of a new forecasting tool which predicts material availability several years in advance and continually adjusts data with revised engineering estimates and flight line usage numbers, thereby improving safety stock. We are also improving the timing for purchasing spares: all LRIP 9 spares contract were awarded during fiscal year 2015, within the first year of budget execution; LRIP 10 spares contracts actions are scheduled as soon as fiscal year 2016 funding is available; and the LRIP 11 spares listing have been completed for further contracts actions. In 2015, there has been a steady upward trend for repairable stock levels.

4. ALIS False Positive Concerns. The F-35 air system is experiencing fewer "false" Health Reporting Codes (HRCs) generated by the aircraft. The problem was more severe with our earlier software versions (Block 1B and Block 2A) which are being used at Eglin Air Force Base. The release of Block 2B software has resulted in an improvement cutting these false codes over earlier Block 1B/2A versions in half.

5. Lengthy Download Times. Currently the pilot debrief timeline is too long as it takes approximately 1.5 hours to download a 1.5 hour flight. This is unacceptable and the Program Office and Industry are in the process of fielding an improved system. The new Ground Data Security Assembly Receptacle System (GDR) will decrease the timeline to download mission data by a factor of 8, meaning a 1.5 hour flight will be downloaded in

about fifteen minutes. The new system successfully completed a Critical Design Review in September 2015. Developmental units are now being built for qualification and integration testing. We will deliver the new GDR in July 2016 with the first 10 units delivered to the US Air Force to meet its August 2016 Initial Operational Capability (IOC). Further GDR deliveries to back-fill other units will begin in fall 2016.

6. Flight Gear not Comfortable or Practical. F-35 pilot flight equipment (PFE) is integrated with the ejection seat arm restraint system, which limits mobility. The JPO shares this concern and is actively looking for alternatives to include alternate flight gear. With the help of the Aeromedical community, the JPO is pursuing the implementation of an improved capability for in-flight relief without pilots having to unbuckle the seat restraint harness.

7. Seat Configuration. The design of the F-35 is optimized for 21st century warfare long-range see, shoot, kill tactics rather than close-in dogfighting. No change to the rear visibility of the jet will be possible without reducing the one thing that makes the F-35 so survivable – stealth. The pilot community is currently developing tactics and CONOPS to deal with this visibility limitation and should not detract from its survivability or mission accomplishment.

8. Block 3i Limitations. The capabilities delivered in Blocks 2B/3i are indeed limited – that was how the program was designed. The decision as to whether these limited capabilities are good enough for declaration of IOC is purely a U.S. Air Force decision. The JPO believes the 2B/3i capabilities provide the warfighter with ample combat capability and survivability in some – but not all – combat situations. The final Block 3F in late 2017 will

deliver many more weapons and capabilities. The JPO is prepared to brief the committee in depth on both the unclassified and classified capabilities of Block 2B/3i.

9. Software Fix Cycle Time Too Long. Fixing software deficiencies is a complicated and sometimes time-consuming task. Anytime software in the aircraft is changed, many things must happen before the new software and capability can be delivered to the warfighter. Having said that, the JPO and Lockheed Martin have re-engineered our software processing to significantly reduce the time it takes to design, test and field limited software fixes. In the past this cycle took three months; today the JPO and Lockheed Martin have reduced this cycle time (from fix, to lab test, to flight test) to about one month. Additionally, working with the US Navy and Air Force Systems Commands we now have the ability to deliver new versions of software to the Operational Test community within approximately 45 days from release to Development Testers. This early release will provide advance feedback on deficiencies and software issues so they can be corrected in a much shorter timeframe.

10. Gun Aiming System Quality. The three F-35 variants are in various phases of testing the internal gun (F-35A) and external gun pod (F-35B/C). The F-35A gun system ground testing is complete with test firings of 10, 15, 30, 60, 90, 120, and 181 rounds. Gun accuracy, measured during the ground testing, is performing better than the required specification. Effectiveness testing of the combat ammunition is ongoing, and when combined with the measured accuracy, should show favorable comparisons to most legacy aircraft. Airborne gun functionality testing is now underway earlier than planned with F-35A air-to-ground accuracy testing which was initially scheduled for August 2016.

11. Electro-Optical Targeting System (EOTS) limitation compared to external targeting pods, especially for Close Air Support (CAS). The F-35 has significant growth potential and at the end of Development (end of CY2017) the Program will begin its Follow-on Modernization work which will include upgrades and technology insertion of its sensors. The F-35's EOTS current performance requirements were established as part of the development baseline in the mid-2000s. Meanwhile, development in external targeting pod capabilities has continued to progress, while F-35 has worked to integrate EOTS based on its original design and unique requirement set. The F-35 will deliver warfighting capability that meets the warfighter's needs that were established in the early years of the program. This means that in some instances the current F-35 EOTS will not have the same capability that exists in currently fielded / upgraded platforms that have benefitted from technology upgrades over the past decade. Improving EOTS to leverage the newer technology that has been developed over the last 10 years is a high priority in Follow-on Modernization (Block 4).

12. Old weapons on 5th gen aircraft; Newer, better weapons won't be usable at IOC. The weapons planned for release with Block 2B in 2015 and Block 3F in 2017 are expected to meet Service requirements. Newer weapons such as GBU-38/54 (500 LJDAM/JDAM) and SDB-II (GBU-53) are planned for integration on the F-35 beginning with Follow-on Development in the 2019-2021 timeframe.

13. IOC with only two air-to-air weapons, not four. It is true that in Block 2B/3i the aircraft will be capable of only two AMRAAMs carried internally--but again this is a limited capability that will be improved with the full Block 3F capability in late 2017. With Block

3F the internal AMRAAM capability will double to four. Post SDD, the authorized AMRAAM Loadouts can be increased to the maximum aircraft capability of 12 missiles, carried both internally and externally.

14. MADL is not compatible with IFDL (F-22) datalink. The U.S. Air Force has not identified a requirement for MADL/IFDL compatibility--current information sharing between the F-35 and F-22 is accomplished via Link-16. While improved F-35/F-22 datalink compatibility approaches are being investigated by numerous companies under Independent Research and Development, there is no formal Program of Record effort to integrate MADL and IFDL on either aircraft yet. The JPO believes such capability, if it were to become a requirement, could be developed in Block 4 Follow-on Development.

IV. Progress toward Air Force and Navy Initial Operational Capability (IOC) dates.

The U.S. Navy has set August 2018 as its Initial Operational Capability date with the F-35C. In support of meeting the U.S. Navy IOC, the F-35C recently successfully completed its second of three sea trials and provides the U.S. Navy a highly useful carrier launch and recovery envelope for operationally representative internal store configurations that the training squadron, VFA-101, will begin using next year to train. We had no significant deficiencies or issues with this second sea trial and the aircraft and crew, as well as the test team, performed magnificently. The remaining sea trials next year will round out the aircraft carrier flight envelope by enabling launch and recovery with external stores.

U.S. Air Force IOC with Block 3i capabilities is planned between August and December 2016. The F-35 Lightning II Joint Program Office's number one priority is meeting Air Force IOC in August 2016. Hill's active-duty 388th Fighter Wing and Reserve 419th Fighter Wing

will be the first Air Force combat-coded units to fly and maintain the Lightning II. In support of meeting the Air Force's IOC date, Hill Air Force Base in Utah has already received the first three F-35As. A minimum of twelve F-35s are required to declare IOC and current aircraft delivery plans support this requirement. Overall, we are closely tracking US Air Force IOC for August 2016, although there are a number of risks must be mitigated to meet this date.

- **ALIS:** We are currently developing the next version of ALIS, version 2.0.2, which includes new capabilities to support Air Force IOC. This version combines the management of F135 engine maintenance within ALIS and tracks all the life-limited parts on each and every F-35 aircraft. It also provides ALIS connectivity between 2 or more squadrons and will allow a squadron to deploy to multiple sites at the same time. ALIS 2.0.2 is planned to complete development by the end of November 2015 bringing all these new capabilities into the integration and test phase. Working groups with representation from the U.S. Services and Partner countries are finalizing comprehensive test plans for initial testing in January 2016 leading to formal system security testing in early May 2016. However, there is schedule pressure that we are monitoring very closely and attempting to mitigate to meet the objective US Air Force IOC date of 1 August 2016 with ALIS 2.0.2. I believe there is at least 30-60 days of risk in meeting the ALIS ready to field date needed for US Air Force IOC.
- **Modifications and impact to training:** The Air Force IOC aircraft at Hill Air Force Base will need modifications to bring them to full Block 3i configuration to provide the full Block 3i aircraft operating envelope, and adding airborne lightning protection and weapons employment capabilities. These modification requirements and their associated down times

add risk to the IOC date because the down times for modifying these aircraft removes them from the flightline and reduces the number of aircraft for pilot training. We are working with the US Air Force to find solutions to the aircraft shortfall

- **Mission Data File:** The U.S. Reprogramming Lab (USRL) at Eglin Air Force Base is tasked with delivering four different Areas of Responsibilities (AOR) Mission Data File (MDF) loads for specific geographic regions of the world. MDF loads enable the aircraft's sensors to identify and categorize threat radio frequency emissions. As of October 1, 2015, the lab is on track to provide three of the four required AORs prior to the Air Force IOC objective date of August 1, 2016, with the final Mission Data File to be delivered in September, 2016.

V. Cost, Schedule, and Performance Metrics and Production Status:

The price of F-35s continues to decline steadily Lot after Lot. For example, the price (including airframe, engine, and profit) of an LRIP 8 aircraft was approximately 3.6% less than an LRIP 7 aircraft, and an LRIP 7 aircraft was 4.2% lower than an LRIP 6 aircraft. Both LRIP Lots 9 and 10 airframe and engine contract negotiations are nearing completion and contract award is anticipated later this year for LRIP Lot 9, and once the DoD Budget is authorized and appropriated, we will be ready to award the LRIP Lot 10 contract sometime at the beginning of the new year.

The program is on track to meet its 2015 production goal of delivering 45 aircraft to our customers. Forty-four (44) of those aircraft are being produced in Fort Worth, Texas, and the Italian Final Assembly and Check Out facility at Cameri, Italy is on track to deliver its first Italian F-35A by the end of the year. As of October 2, 2015, thirty-two (32) LRIP Lots 6 and 7

aircraft have been delivered to our test, operational and training sites. Sell-off (DD-250) of LRIP Lot 6 aircraft ran 68 manufacturing days behind the contracted dates but we have seen a 42-day improvement with the Lot 7 aircraft. We continue to work with Lockheed Martin and Pratt & Whitney, as well as the supply base to ready the program for the production ramp increase over the next few years.

Through the calendar year, aircraft deliveries are tracking our initial forecast and the numbers of hours required to build the aircraft is declining. Additionally, the quality in each delivered aircraft is improving. This begins with establishing the appropriate contractual requirements and program plans, ensuring contractor flow-down to its supply chain, and monitoring execution through robust performance metrics. The program continues to collaborate with the Defense Contracts Management Agency, the Defense Contract Audit Agency, and the prime contractors to influence improvement initiatives, ensure process discipline, attention to detail and adherence to established and robust procedures yielding a continually improving and more capable aircraft delivered to our U.S. and international customers.

The supply chain is a critical element to the F-35 production and accounts for 74 percent of the program cost. Lockheed Martin continues to work closely with the supply base to address issues impacting on-time delivery and quality performance. Year to date improvements have been seen in material availability reducing shortages by 50 percent. Despite these reductions, critical part shortages continue to cause out of sequence work and production inefficiencies. Corrective action plans have been identified and implemented and are being monitored by the program office. Lockheed Martin continues to refine its supply chain's readiness to transition to higher production rates through its annual Production Readiness Review (PRR) process. The

JPO continues to identify improved performance metrics to gain additional insight into the prime contractor's ability to proactively manage its supply chain. The JPO is working with the prime contractor to further refine the PRR process. Mitigation plans for current supplier performance issues and production readiness risks have been identified and are actively managed.

The Program is exploring the possibility of entering into a Block Buy Contract (BBC) with Lockheed Martin Aero and Pratt & Whitney to procure 465 F-35 aircraft over Lots 12-14. The advantage of a BBC approach includes substantial cost savings, stability for the supply chain, and reduction in administrative burden and costs.

The Department is committed to working with Congress to get approval for the Block Buy Contract during the fiscal year 2017 Budget deliberations for a fiscal year 2017 Economic Order Quarterly (EOQ) procurement action followed by a fiscal year 2018 Block Buy contract award. The F-35 JPO has put the RAND Corporation, a Federally Funded Research Development Center, on contract for an independent savings assessment, and a final out-brief of the results of this study are due in March 2016.

This year has seen the propulsion program respond to quality and reliability issues that were affecting production deliveries and sustainment. Reliability improvements that started during the 2010 re-baselining have been introduced into production and we are working to improve further. Quality issues have reduced and production deliveries recovered to or ahead of contract delivery dates by late summer. Production deliveries this fall are about a month behind due to growing pains with Pratt & Whitney's planned transition to a commercial parts kitting warehouse, but are expected to recover by year's end.

Beyond production, one of the major areas of concern with maintenance and sustainment

over the past 18 months has been the availability of aircraft. The metrics used to measure this are called Aircraft Availability and Mission Capable rates. Aircraft availability is a measure, in percentage, of how many aircraft are available in the hands of the warfighter on any given day – meaning they are not in maintenance or being modified. Mission capable rate is the percentage of available aircraft that are capable of flying particular missions, having passed all their pre-flight maintenance and pilot checks. Typical aircraft availability rates for mature aircraft range from 60 to 75 percent, and typical mission capable rates for mature aircraft range from 70 to 80 percent. In 2013, these measures were not good; for F-35 Aircraft Availability was around 35 percent and Mission Capable rates were around 40-45 percent. As a result, in 2014, we began a dedicated Reliability and Maintainability program, along with a focused look at our maintenance procedures known as "Operationalizing the F-35." These programs incorporated aircraft design improvements, repair improvements on parts that are broken, better maintenance procedures and manuals, and better, more available spare parts. All of this has resulted in steady improvements over the past year and a half. Our focused efforts improved Aircraft Availability and Mission Capable rates late last year, hitting levels of approximately 55 percent and 65 percent, respectively. Although we have more work to do to improve on these metrics, the current set of initiatives seems to have started a positive trend.

VI. Continuing Resolution:

While the F-35 program is able to function under a short term continuing resolution (CR) without driving significant impacts to the program, a long-term CR would be detrimental to the F-35 production ramp-up and drive increased costs for the United States and our International Partners. It would restrict the government's ability to award the full quantity of U.S. F-35 aircraft

to be procured in the LRIP Lot 10 contract until the 2016 defense budget is approved. Should the program operate at fiscal year 2015 budget levels, for a long period of time the Department would be unable to provide 16 F-35As for the U.S. Air Force and 3 F-35Bs for the U.S. Marine Corps. If the Department is unable to procure these 19 aircraft on the Lot 10 contract, alternate contracting arrangements will have to be made, potentially resulting in increased costs for not only the 19 US aircraft but for the other aircraft in Lot 10. A long-term CR would also negatively impacts the program's ability to move forward with early planning of F-35 Follow-on Modernization which is the next phase of the program once SDD ends in October 2017. Up to a year's delay of Follow-on Modernization Program could result from an extended CR.

VII. Technical Issues:

- **Structural Testing:** As previously reported, in September 2013, during F-35B full-scale durability testing we experienced a significant bulkhead crack at 9,056 Equivalent Flight Hours (EFH), which is 1,056 EFH beyond its first lifetime. The durability testing was stopped on the B-model and a root cause investigation was conducted. Once root causes had been established, redesign efforts for the bulkheads began. A number of locations were identified requiring redesign to meet the intended life, and most were addressed using standard techniques such as material thickening or cold working. However, several bulkhead areas were identified that will need further material improvements to meet the full 8,000 hour life. As part of the material improvements, industry is currently qualifying a process known as laser shock peening (LSP). This method will be available for both production and retrofit of fielded aircraft by the end of 2017. There is no immediate airworthiness concern for fielded or test aircraft because they have thousands of hours of life left before they reach their

interim life limit and then require LSP. Additionally, due to the differences between the bulkhead forging materials of the F-35B (Aluminum) and the F-35A/C (Titanium), we have yet to see the same cracking issues with the A and C-models. Currently the A-model second life durability testing is complete with no major findings. The C-model is currently at 13,000 EFH and expected to be complete with second life durability testing in February 2016. The B-model is approaching 12,000 EFH and expected to complete second life durability testing in July 2016. In addition, the durability tests for the horizontal and vertical stabilizers for the three variants have successfully completed 24,000 EFH or three lifetimes of testing with no significant findings.

- **Software Development:** At this time Block 2B software is in the hands of the warfighter and we have also completed 99 percent of Block 3i testing. We expect the 3i software, which is the Block 2B capability re-hosted on improved hardware, to be in the hands of the warfighter in the spring of 2016.

Block 3i software will allow the aircraft to perform basic Close Air Support (CAS), Interdiction and limited Suppression of Enemy Air Defenses (SEAD)/ Destruction of Enemy Air Defenses (DEAD) operations in a contested environment. Block 3i Mission Systems software has completed Developmental Testing and many of the deficiencies discovered this past spring and summer have been corrected. This software was delivered to the Operational Test community at Nellis Air Force Base on 1 October 2015, significantly sooner than previous software loads. This early look at the final Block 3i software by the Operational Testers will mitigate the risk of meeting US Air Force IOC requirements. Operational testing began flying with the new software last week. The US Air Force sees this software

development as a potential risk for IOC until it has been fully tested and explored by our operational testers; however, development ground testing results note improvement.

The F-35 now has its fleet of six (6) mission systems aircraft in the final SDD Block 3F configuration and although we are slightly behind due to spending more time fixing Block 2B and 3i software, Block 3F developmental testing is moving forward aggressively to recover schedule margin to ensure time to correct deficiencies and deliver on our commitments.

- **F135 Engine:** The program was able to determine root cause for the engine failure, and developed an interim solution: a "pre-trenched" rub material that has been implemented in the field and on the production line. Retrofit of the entire fleet is over forty percent complete and will be completed in spring of next year. Pratt & Whitney has agreed to cover the costs for the repairs to engines in the field and the cut-in of the solution to the production line, while the program office will pay for the design activity as per the development contract. The corrective action team studied several re-design options including the interim pre-trench solution and determined that the pre-trench design was the best performing and most affordable solution for the long term.
- **Safe Escape:** The F-35 escape system was designed to provide safe escape for the widest range of both aircrew weight (103 to 245 pounds) and anthropometry (sizes), well beyond current legacy fighters. The only issue we currently have with the system effects only lightweight pilots (those less than 136 pounds). There is an increased risk of neck injury to these lightweight pilots during the three phases of the escape sequence: Catapult, Wind Blast, and Parachute Opening. The reason there is an increased risk only for lightweight pilots is

because these pilots are assumed to have lower neck strength than heavier pilots and therefore are unable to sustain higher neck loads we are seeing during ejection.

The program is working with our industry partners on three specific improvements that will provide lightweight pilots that same level of protection and safety as all other F-35 pilots. These three improvements are: one, a reduced weight helmet that weighs 6 ounces less than the current helmet that will reduce neck loads during catapult and windblast phases; two, a pilot "weight switch" on the ejection seat that reduces the opening shock of the parachute by slightly delaying the parachute's opening for lightweight pilots; and three, a head support that will be sewn into the parachute risers that will reduce the rearward head movement of the pilot when the main chute of the ejection seat opens reducing the pilot's neck loads. The combination of three improvements will provide the needed protection for lightweight pilots.

- **Fuel Over-Pressurization and On-board Gas Generation System:** Two other technical issues we are currently resolving are the potential for structural damage to fuel tanks at increased G-levels and implementation of the aircraft's ability to inert its fuel tanks for lightning protection. Corrections for all three variants for the fuel tank deficiency have begun. The improved inerting system was recently qualified, and full lightning clearance is expected by the end of 2015. However, due to differences in F-35B and F-35C fuel systems, the new inerting system has not yet been fully qualified for the B or C models. The F-35B will be fixed with software by November 2015 for fielded aircraft and LRIP 8 for production aircraft. The F-35C will be corrected with a hardware change in the 2016-2017 timeframe.

Implementation of both overpressure and lightning corrective actions will occur together to provide full g-envelope and full lightning protection for all three variants.

VIII. Autonomic Logistic Information System:

Overall, ALIS is making slow but steady progress. The Program Office has implemented changes in accordance with the June 2013 response to the Department of Defense Inspector General's 2012 report with respect to cyber security. ALIS continues to be managed as an integral part of the F-35 Air System and we remain fully engaged with the appropriate cyber security organizations to ensure compliance with system certification & accreditation policies per the IG recommendations.

The Program recognizes that ALIS is one of the most significant technical and schedule risks on the program. For too long, the program treated this crucial element of the F-35 weapon systems as a piece of support equipment instead of the very complex, software intensive, total logistics and maintenance system it is. We are now treating ALIS as if it were its own "weapon system". We have implemented a more disciplined engineering process that include periodic design reviews, a new leadership structure, improved lab infrastructure, more realistic testing with greater warfighter involvement, and a more structured incremental software delivery plan and associated metrics. As part of this change, the Program is in the process of standing up an ALIS operational test capability at Edwards Air Force Base in California, as recommended by the IG report. This capability is planned for January 2016, and should lead to more predictable ALIS performance and quicker discovery and corrections before fielding.

IX. System Development and Demonstration to Follow-on Development:

With the F-35's System Development and Demonstration phase on-track to complete in

October 2017, the Follow-on Modernization effort will be the means to deliver improved capabilities to the weapon system to ensure its relevance against advanced and emerging threats. The Modernization Program will be "right-sized" so it is affordable and sustainable. In addition, the Department will ensure that separate cost, schedule, and performance data will be available to provide detailed insight into program execution. To this end, a contract was awarded to Lockheed Martin in June of this year to perform requirements decomposition efforts and conduct an initial System Requirements Review on Block 4 capabilities. We will follow this up with a System Functional Review and a Preliminary Design Review in the 2016-2017 timeframe. The Block 4 Capabilities Development Document (CDD) has completed Air Force Requirements Oversight Council review, and is planned to complete Joint Requirements Oversight Council staffing and approval in spring 2016. The F-35A Dual Capable Aircraft (DCA) will be included in the Block 4 Follow-on Modernization effort. This summer a series of test flights were conducted to assess the thermal, acoustic, and vibration environments of the F-35 weapons bay and characterize the impacts on the B-61 weapon. Data from these tests will be used to support the upcoming Critical Design Review and Baseline Design Review conducted by the Tail Kit Assembly Program Office and Sandia National Laboratories. Nuclear certification planning efforts have also been initiated as part of the Block 4 contracting activity in anticipation of B-61 integration on the F-35 in the coming years.

X. International Partner and FMS Participants:

International participation on the program with 8 Partners and 3 FMS customers remains stable and strong. Just last month, we saw the rollout and first flight of the first Royal Norwegian Air Force F-35 and previous to that the first Italian Air Force F-35A rolled out of the

production facility in Cameri, Italy and had its first flight. We are also now training International Partner pilots at Luke Air Force Base in Arizona. We have also conducted F-35A aerial refueling flight testing with a Royal Australian Air Force KC-30A tanker and completed F-35A aerial refueling flight testing with an Italian Air Force KC-767 tanker.

In 2015 initial site planning commenced standup of maintenance capabilities in Norway, Netherlands, Turkey, United Kingdom, Israel, Japan and Korea.

Letters of Offer and Acceptance (LOA) have been signed for all three FMS Participants, Korea, Israel, and Japan. First Aircraft Arrivals (FAA) are scheduled for each Participant and all activities are on schedule to support their needed delivery dates.

The Japanese Final Assembly and Check Out assembly facility is now complete with both Electronic Mate Assembly Stations tools installed and accepted. Construction and installation activities remain on schedule, and the major components are now being shipped. The first Japanese F-35A is scheduled to rollout of the facility in November 2016.

XI. Conclusion:

In summary, the F-35 program is growing and accelerating and making progress on many fronts, including flight test, production, maintenance, fielding and building a global sustainment enterprise. The program is fundamentally on track and we remain confident to deliver on the program's commitments. As with any big, complex program new discoveries, challenges and obstacles will occur; however, we believe the combined Government/Industry team has the ability to overcome current issues and future discoveries in order to successfully deliver the full F-35 capability to the Warfighter.

The JPO will continue executing with integrity, discipline, transparency and

accountability, holding ourselves accountable for the outcomes on this program. We recognize the responsibility the program has been given to provide the backbone of the U.S. and allied fighter capability with the F-35 for generations to come, and that your sons and daughters, grandsons and granddaughters may someday take this aircraft into harm's way to defend our freedom and way of life. It is a responsibility we never forget.

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