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TACTICAL AIR AND LAND FORCES SUBCOMMITTEE  
HOUSE ARMED SERVICES COMMITTEE  
UNITED STATES HOUSE OF REPRESENTATIVES

PRESENTATION TO THE  
HOUSE ARMED SERVICES COMMITTEE  
TACTICAL AIR AND LAND FORCES SUBCOMMITTEE  
UNITED STATES HOUSE OF REPRESENTATIVES

SUBJECT: How the F-35 is Meeting Current and Future Fifth Generation Fighter Capability

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## INTRODUCTION

Chairman Turner, Ranking Member Tsongas, and distinguished Members of the subcommittee, it is my distinct pleasure to be here with you this morning. Thank you for the opportunity to discuss how the F-35 Joint Strike Fighter is meeting current and future fifth generation fighter capability needs. The Air Force eagerly anticipates the fielding of the final System Development and Demonstration Block 3F aircraft. With the F-35A, the Air Force will be capable of striking and destroying a broad range of targets, day or night, in adverse weather conditions. The F-35A missions will include Air Interdiction, Offensive and Defensive Counter Air, Close Air Support, Strategic Attack, Suppression and Destruction of Enemy Air Defenses, Armed Reconnaissance and Combat Search and Rescue. The F-35 will complement other low-observable assets including the F-22, B-2, and B-21 as well as our legacy fourth generation fleet. The F-35 will provide the Air Force with a survivable, lethal, maintainable, and supportable low-observable fighter aircraft which will become the mainstay of our future Combat Air Force.

The F-35 will be the fighter of the future. Not just for the Air Force but also for our sister Services and eight partner nations. Designing and developing an aircraft capable of the missions I've mentioned for three different services and eight partner air forces is probably the most complex and challenging undertaking in Department of Defense history. The systems on board the aircraft are among the most advanced systems in the world. Fusing all of these systems into a coherent, integrated solution that presents enormous amounts of information to the pilot is no easy task. Although challenges with the program exist with cost, schedule and performance, these challenges are being diligently addressed by the F-35 Joint Program Office with close and continual coordination with sister Services and Partners. I'll discuss some of these challenges as

I address how the F-35A is meeting the Air Force's current and future fifth generation fighter capability needs.

### THE OPERATOR'S PERSPECTIVE ON PROGRESS

The Air Force declared Initial Operational Capability in August, 2016 with twelve aircraft in a Block 3i configuration. We continue to deliver new F-35As to our operational unit at Hill Air Force Base with twenty aircraft in place today. That squadron deployed to Red Flag in January to train with our sister services and coalition partners. Other participants included the Royal Air Force, Royal Australian Air Force, United States Navy and United States Marine Corps. Missions included integration with F-16s, F-15s, F-18s, F-22s and a variety of command and control assets. The F-35 performance in Red Flag 17-1 was outstanding. Aircraft and crews integrated seamlessly with all other participants, delivered a dramatic increase in Air Force capability, and significantly enhanced the capabilities of the entire force of 80 aircraft taking part in the exercise. Our first operational squadron is scheduled for additional deployments this calendar year to include a Theater Security Package Deployment to Pacific Command.

Block 3i is an interim aircraft configuration sufficient for Initial Operational Capability. In the hands of Airmen, the F-35A has exceeded our expectations. Block 3i F-35As provide a lethal and survivable 5th Generation Fighter capability to our Combatant Commands that can detect, track and engage targets in contested environments. However, in order to meet the full spectrum of Joint warfighter requirements in future years, the Air Force will need the full warfighting capability that comes in Block 3F.

In September, we will start the stand-up of our second F-35A operational squadron. This squadron will also be at Hill Air Force Base and will be configured with Block 3F aircraft. Block 3F will expand the number and type of weapons carried, provide improved targeting and identification functionality, and enhanced datalinks resulting in improved communication and interoperability. By the end of 2018, we will have two combat coded F-35A squadrons available for world-wide deployment.

#### PERSPECTIVE ON COMPLETING SYSTEM DEVELOPOMENT AND DEMONSTRATION

Concerning the completion of the System Development and Demonstration phase, although delivery of the final Block 3F configured aircraft is later than expected, the Air Force remains optimistic that remaining fixes to known deficiencies for all systems except the AIM-9X will be implemented within the Joint Program Office estimated timeline of October, 2017. The AIM-9X heat seeking missile capability will be delivered one month later in November, 2017. We understand there is risk of up to four additional months before a fully certified aircraft can be delivered. Any delay at this point will further delay our ability to enter into Initial Operational Test and Evaluation or IOT&E. This IOT&E period is where we will fully wring out the aircraft with our best test pilots employing the F-35 in complex scenarios against the most realistic threat simulations we can create. Although we would like to start this IOT&E phase as soon as possible, we do not want to rush the program to an arbitrary end that delivers an aircraft that isn't fully developed and tested.

Concerning the introduction of Block 3F software, the Air Force will have approximately 108 aircraft in either a Block 2B or 3i configuration that will eventually need to be retrofitted with

software and/or hardware upgrades. Approximately twenty-six of these aircraft will require a software-only upgrade. This process will take approximately three days per aircraft to load and thoroughly test the new software. Nineteen aircraft will require new signal processor cards in addition to the software modification. These new cards take minimal time to install and test so the average retrofit time remains approximately three days. Eighteen aircraft will require installation of a newer Helmet Mounted Display System in addition to the signal processor cards and software. The hardware installation will take approximately fifteen days to install and check out. The remaining forty-five aircraft will require significant hardware modifications in the form of a Tech Refresh 2 modification. This modification consists of twenty-six major components and takes approximately thirty days per aircraft to install and checkout. The Air Force is working with the Joint Program Office on a detailed retrofit plan to efficiently and smartly upgrade the existing fleet to the Block 3F configuration.

There are potential risks with any system of this complexity. Since the aircraft is still in development, we've focused on prioritizing noted deficiencies so the Joint Program Office understands which problem areas must be fixed, as well as those that may be resolved with a short-term solution until a more permanent solution can be found. We feel the Joint Program Office and Lockheed-Martin are doing everything in their power to solve remaining issues and produce the aircraft the Air Force needs.

In addition to ensuring the procurement of the promised Block 3F capabilities, the areas of greatest concern are Mission Data Files, modification of our IOT&E fleet and the Joint Simulated Environment. The Mission Data Files describe the sensed environment to the aircraft so that it can

determine how it should respond. While the Operational Flight Program of the aircraft will not change until the next software release, the Mission Data File is tailored to specific Areas of Responsibility and specific threat systems. These files will change as the threat changes. Currently, Mission Data File production capacity and rapid reprogramming ability is limited for emerging threats. Next, the Air Force fleet of Operational Test aircraft requires modification to the final Block 3F hardware configuration. These modifications are behind schedule with availability of the full fleet of twenty-three aircraft projected in mid-2018. The Air Force is working with the Joint Program Office to accelerate this schedule. Finally, the Joint Simulated Environment is the system where we'll train to employ this complex aircraft. The Joint Simulated Environment is almost as complex as the aircraft itself. It will use the actual Operational Flight Plan as well as the Mission Data Files just mentioned. It will provide a very realistic representation of what the aircraft can do against real-world threats and real-world targets. Unfortunately, the Joint Simulated Environment is also behind schedule with an earliest projected ready-to-use date of mid-2018 and a fully accredited simulator available around the start of 2019. Again, we're working with the Joint Program Office to do whatever we can to accelerate this schedule.

#### F-35A PROCUREMENT IN THE FUTURE

The F-35A acquisition schedule makes the F-35 a critical component of the Air Force long-term fighter force. Currently, the Air Force plans to procure an average of forty-eight F-35As annually over the Future Years Defense Program or FYDP for fiscal years 2018-2022. Accelerating the procurement rate prior to the development of Block 4 would add overall cost to the program. If we were to procure at higher than planned rates inside the FYDP, the Air Force

would have to retrofit aircraft already delivered to the fleet with Block 4 hardware and software modifications. Once Block 4 delivers near the end of the FYDP, we should examine the option of accelerating the F-35A program above the current procurement rate to meet the 5th Generation requirements necessary to balance the Air Force ability to fulfill national security objectives.

#### FOLLOW-ON MODERNIZATION CAPABILITY

The follow-on modernization, effort for the F-35A centers on the Block 4 upgrade currently in the early stages of planning. Block 4 will bring increased capability beginning in fiscal year 2021 and approximately every two years thereafter. Block 4 is geared toward meeting the estimated threat in the 2025 timeframe and beyond. Capability improvements will include integration of additional weapons and upgrades to the electronic warfare system, datalink systems, and radar. The Air Force is placing great importance on the hardware upgrade planned as Technical Refresh 3. Technical Refresh 3 will add an improved integrated core processor, an improved panoramic cockpit display, a more capable aircraft memory system as well as other classified hardware changes.

The Air Force is concerned over funding for Block 4. Congress marked the F-35A follow-on modernization in fiscal year 2016 by approximately sixty percent. Similar marks currently exist for fiscal year 2017. Both of these budgets were marked as “Early to Need” based on the lack of a Capability Development Document. The Capability Development Document is currently on schedule to meet the March Joint Requirements Oversight Council for approval. I can’t emphasize

enough how important it is that we fully fund Block 4. We are at a crucial stage where we must begin the developmental work to ensure we have these capabilities available to meet a 2025 need.

#### READINESS OF AUTONOMIC LOGISTICS INFORMATION SYSTEM

The Air Force approved the Joint Program Office's Autonomic Logistics Information System, or ALIS, Roadmap to meet System Development and Demonstration requirements. Since Initial Operational Capability declaration in August, 2016, the Air Force has demonstrated the capability of deploying with the current ALIS 2.0.1 software. Last summer, our Hill Air Force Base squadron conducted a practice deployment to Mountain Home Air Force Base where no prior F-35A support infrastructure existed. This, in addition to our recent Exercise Red Flag deployment in January, showed no major or minor issues with ALIS. The next scheduled release of ALIS 2.0.2 software is March, 2017. This release will deliver a capability to track life limited parts on both the engine and air vehicle. In addition, ALIS 3.0 will deliver in 2018 and will enhance our ability to manage and use ALIS.

The Air Force has been very disappointed with ALIS schedule delays and planned capabilities migrating out of ALIS 3.0, but are encouraged by the capabilities that each new version brings. We are confident that ALIS capabilities at the completion of System Development and Demonstration will provide the ability to meet readiness goals and deliver a system that will be able to grow and adjust with changing demands.



## CONCLUSION

In conclusion, the United States Air Force remains confident the F-35A will provide the survivability, lethality, and maintainability the Combat Air Force needs to meet current and emerging world-wide threats. We remain optimistic the Joint Program Office will deliver a Block 3F aircraft with full warfighting capability in 2017 or early 2018. The Air Force will continue to work closely with our sister services and the Joint Program Office to ensure the right capabilities are delivered and any challenges are prioritized. Our initial experiences with our Block 3i aircraft give us confidence we are on the right path. As our Chief of Staff of the Air Force, General Goldfein, recently stated “Air and Space superiority are not American birthrights. They must be fought for and won.” Finishing the F-35A System Development and Demonstration program of record and transitioning to Block 4 follow-on modernization are critical to ensuring the Air Force is ready to fly, fight, and win when called upon. I thank the committee for their support of the Armed Forces and our nation. Thank you for the invitation and for allowing me to speak with you today.