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STATEMENT

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BEFORE THE

HOUSE ARMED SERVICES COMMITTEE

TACTICAL AIR AND LAND FORCES SUBCOMMITTEE

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Chairman Wittman, Ranking Member Norcross, and distinguished members of the Tactical Air and Land Forces Subcommittee, it is an honor to be here to provide a summary of the results and recommendations on tactical fighter aircraft and related programs that are under my oversight. I would like to focus my opening comments on three areas: the combined report on F-35 Initial Operational Test and Evaluation (IOT&E) and Live Fire Test and Evaluation (LFT&E), key findings across other programs, and operational test infrastructure needed to support testing current and emerging tactical weapon systems.

DOT&E released its combined F-35 IOT&E and LFT&E report in February 2024 and in March the DOT&E staff briefed those results to this subcommittee. The report provides an assessment of the overall mission capability of the F-35 in the Block 3F configuration, in terms of its operational effectiveness, suitability and survivability. DOT&E approved the Service Operational Test Agency (OTA) test plan in increments, beginning with cold weather testing in January 2018 and culminating in approval of the final iteration of testing in September 2023 in the Joint Simulation Environment (JSE). Approval of the Service test plan for testing in the JSE was contingent upon Service OTA accreditation of the JSE and a certification of readiness for test by the F-35 Program Executive Officer. The IOT&E was adequate to evaluate overall mission capability in the operational scenarios and conditions directed in the Service OTA test plans. The effectiveness evaluation covered all of the Service's missions expected to be assigned to the F-35 and included 89 open-air mission trials, 75 live weapon events, and 64 mission trials in the JSE. Suitability data were collected during test events and unit deployments to environments including cold weather, ships, forward bases, and austere operating locations. Test teams also collected reliability, maintainability, and availability data on the operational test aircraft throughout the test period to support the overall suitability evaluation. Digital modeling,

supported with data collected from the live test events and operational units, augmented live results to evaluate key performance parameters and suitability measures. Test teams conducted 24 cyber survivability events on aircraft subsystems and ground support systems and evaluated training for both pilots and maintenance personnel. A separate LFT&E, conducted from July 2002 to September 2022, assessed the F-35 aircraft and pilot's vulnerability to a variety of threats, including kinetic, chemical, biological, low-power lasers, and electromagnetic pulse and high-power microwaves expected to be encountered in combat. Test teams conducted live fire testing on an early flight test aircraft, two airframe structural test articles, and four F135 engines. Data from these tests were used in models to assess vulnerabilities to specific ballistic threats. Finally, the report also provides an assessment of post-IOT&E F-35 Block 4 Operational Testing through the F-35 capability that is currently fielded in the Block 3F configuration with the Technical Refresh-2 avionics architecture.

Next, I will move on to key findings of other tactical fighter aircraft and tactical fighter aircraft-related programs. The first is the F-15 Eagle Passive Active Warning & Survivability System, (EPAWSS). The current Electronic Warfare test infrastructure significantly limited the breadth of DOT&E's assessment of EPAWSS effectiveness during its recent IOT&E. This limitation affects all spectrum-warfare systems (especially electromagnetic attack systems like the EPAWSS and the EA-18G Growler's Next Gen Jammer – Mid-Band jamming pod). DoD's open and closed, hardware-in-the-loop laboratories and Military Test Ranges need upgrades to address these and other limitations.

The next key finding comes from the F-22A and F-35A/B/C programs. These programs have ongoing test instrumentation challenges that center around the integration of Open-Air Battle Shaping (OABS). OABS was utilized during F-22 IOT&E and FOT&E, F-35 IOT&E and

FOT&E, and F-15EX IOT&E. OABS enables high-fidelity live testing with real-time kill removal and data collection. It is already installed at several CONUS ranges and continues to expand. Multiple USAF, USN, and USMC aircraft (F-15, F-16, F/A-18E/F, F-22, and F-35) are already equipped with OABS, which requires frequent upgrades to keep up with platform and weapon program upgrade processes. OABS provides higher-fidelity, real-time shot assessments between blue and red air-to-air, surface-to-air and air-to-ground weapons engagements, kill removals and detailed mission debriefs. Data collected by the OABS system is also essential to verification, validation, and accreditation of modeling and simulation as the different platforms are integrated into, and continually upgraded, in the Joint Simulation Environment.

As the findings from recent tests show, the operational test infrastructure needed to support modern testing continues to be a challenge. The Joint Simulation Environment (JSE), is a high-fidelity battlespace environment, which is currently integrated with "F-35-in-a-Box" software, blue and red cockpits, and advanced surface and air threats that were required to support F-35 IOT&E. The JSE is rapidly expanding to support multiple-platform test and evaluation, tactics development, and high-end training for aircraft, such as the F-22 and F/A-18, while continuing to evolve to support future scenarios and aircraft requirements. The initial JSE at NAS Patuxent River, MD was followed by USAF JSE facilities at Edwards AFB, CA and Nellis AFB, NV, where stand up of capability is ongoing, along with other facilities under construction.

In addition to the JSE, DOT&E is collaborating with stakeholders on digital test infrastructure that can adapt to evolving threats. This effort includes fielding advances, such as digital, class-of-threat emulators that can be relocated and reprogrammed as the threat evolves. There are also efforts underway that involve networking ranges with these realistic, ground-

based, class-of-threat, radar emulators to create more operationally representative scenarios. These radar emulators are also integrated with OABS for realistic, real-time interactions with threats, while also capturing data from the fight. As I previously discussed, we must get critical platforms such as the F-22 and F-35 fully integrated into the OABS network to really know how we will do against the adversary and to verify, validate, and accredit the JSE. Finally, DOT&E is partnering with the Test Resource Management Center and many other stakeholders to develop a Fifth-Generation Aerial Target to support testing of our current and future tactical aircraft, sensors, and missiles, along with other joint capabilities like ships and land-based air defenses.

I would like to bring to your attention that I must recuse myself from answering or providing information on Lockheed Martin products and systems. I do want to take Questions for the Record and provide you with DOT&E's response at the appropriate classification level.

Thank you for your attention and your continuous support to our Service men and women, and I look forward to your questions.