

FY18 DOD PROGRAMS

A-10 as part of the planned F-35A and A-10 comparison testing.

- The JOTT and the F-35A operational test squadrons deployed four F-35A OT aircraft from June 4 – 29, 2018, to Eglin AFB, Florida, to conduct Pre-IOT&E air-to-air missile Weapons Demonstration Events over the Gulf Coast test ranges. During the deployment, the test team completed six AIM-120 and six AIM-9X missile events, some with multiple shots, and all in accordance with the approved plan. In limited cases, DOT&E approved modifications to the mission profile when warranted.
- The JOTT, in coordination with VFA-125, the Navy's west coast F-35C Fleet Replacement Squadron, deployed six aircraft aboard the USS *Abraham Lincoln* from August 18 – 31, 2018, to conduct shipboard operations and evaluate F-35C sortie generation rate (SGR) capabilities, per the IOT&E test plan.
- The test included participation of aircraft from Carrier Air Wing Seven, which provided an operationally representative flight deck environment. This was the first time the F-35C was integrated with the rest of a carrier air wing as it would during an operational deployment.
- The Navy approved the use of the F-35 Integrated Power Package (IPP) in the hangar bay for maintenance purposes, on an interim basis, just prior to the SGR testing onboard CVN 72. This approval will enable more efficient maintenance during deployments, increasing the options for providing electrical power and cooling air to aircraft undergoing maintenance. Squadrons will use temperature sensing devices to ensure that the IPP exhaust, which vents upwards on the F-35C, does not damage hangar bay overhead equipment, cabling, and structure while in use.
- The Navy finalized a design for the Closed Bay Fire Fighting Tool (CBFFT), and produced several examples to provision CVN 72's crash and fire personnel prior to the SGR testing. The CBFFT will allow emergency responders to cut through the exterior of an F-35 aircraft carrying live internal ordnance and plug a water hose into the hole to provide ordnance cooling during a fire on the flight deck.
- The JOTT and the F-35A operational test squadron deployed four F-35A OT aircraft to Volk Field Air National Guard Base, Wisconsin, to evaluate sortie generation rate surge operations from September 10 – 16, 2018. Although the test plan called for six aircraft to deploy, two remained at Edwards AFB due to maintenance problems.

• Assessment

- DOT&E will report the results of the pre-IOT&E test events following IOT&E.

Gun Testing

• Activity

- All three F-35 variants have the GAU-22/A cannon. The F-35A gun is internal; the F-35B and F-35C each use an external gun pod. Differences in the outer mold-line fairing mounting make the gun pods unique to a specific variant (i.e., an F-35B gun pod cannot be mounted on an F-35C aircraft).
- Through July 2018, 19 air-to-ground strafing missions had been completed to assess gun accuracy on the F-35A. Eighteen missions were flown with AF-31 and one mission with AF-80. Over 3,400 rounds were fired using a cross section of rounds, including PGU-23, PGU-47, and PGU-48.
- Through July 2018, 13 air-to-ground strafing missions had been completed using the missionized gun pod; one on BF-15, one on BF-16, six on BF-17, and five on CF-08. Overall, 2,695 rounds were fired using PGU-23 and PGU-32 rounds, including some for assessing accuracy compliance.
- Operational test pilots conducted live firings of the gun against airborne targets, including drones and towed banners, throughout CY18. These firings were often in combination with other weapon demonstration events, such as air-to-air missile employment events.

• Assessment

- Based on F-35A gun testing through September 2018, DOT&E currently considers the accuracy of the gun, as installed in the F-35A, to be unacceptable.
- F-35A gun accuracy during SDD failed to meet the contract specification. Although software corrections were made to the F-35 mission systems software to improve the stability of gun aiming cues, no software or hardware corrections have yet been implemented to correct the gun accuracy errors.
- Investigations into the gun mounts of the F-35A revealed misalignments that result in muzzle alignment errors. As a result, the true alignment of each F-35A gun is not known, so the program is considering options for re-boresighting and correcting gun alignments.
- During air-to-air gun testing, F-35A operational test pilots received intermittent "unsafe gun" cockpit alerts while attempting gun attacks. These alerts occurred with two different aircraft; the root cause is under investigation.
- F-35B and F-35C air-to-ground accuracy results to date with the gun pod have been consistent and meet the contract specifications. They do not show the accuracy errors of the internal gun on the F-35A.

Mission Data Load (MDL) Development and Testing

• Activity

- F-35 effectiveness relies on the MDL, which is a compilation of the mission data files (MDF) needed for