

Joint Standoff Weapon (JSOW)

Executive Summary

- The Navy began operational testing of the Joint Standoff Weapon (JSOW) C-1 in April 2015. Problems identified during FY12-13 integrated testing resulted in follow-on integrated testing in late FY14 and pushed operational testing to FY15. The JSOW C-1 operational testing is scheduled to complete in FY16.
- Preliminary results to date indicate:
 - Weapon impact accuracy for moving maritime targets is well within the accuracy requirement value, and accuracy performance against stationary land targets has been maintained.
 - The JSOW C-1 Mean Flight Hours Between Operational Mission Failure (MFHBOMF) remains below the requirement value, primarily the result of software-driven problems, but is showing progress towards meeting the requirement value by the end of operational testing. Achieving adequate assessment of MFHBOMF during operational testing is an area of moderate risk.
 - The pilot-vehicle interface (PVI) has improved, but there remain some minor challenges the aircrew must work around for successful mission execution. The Navy is incorporating fixes to address this into the F/A-18E/F H12 Operational Flight Program (OFP), scheduled for release in FY17.
- Testing of the implemented updates to the JSOW software to address these problems validate the use of developmental and integrated test data for DOT&E's operational evaluation of JSOW C-1.

System

- The AGM-154 JSOW family uses a common and modular weapon body capable of carrying various payloads. The JSOW is a 1,000-pound class, air-to-surface glide bomb intended to provide low observable, standoff precision engagement with launch and leave capability. All variants employ a tightly coupled GPS/Inertial Navigation System.
- AGM-154A (JSOW A) payload consists of 145 BLU-97/B combined effects submunitions.
- AGM-154C (JSOW C) utilizes an imaging infrared seeker and its payload consists of an augmenting charge and follow through bomb that can be set to detonate both warheads simultaneously or sequentially.

Activity

- Operational testing began in April 2015, with the first captive carry flight test in June 2015.



- AGM-154A and AGM-154C are fielded weapons and no longer under DOT&E oversight. AGM-154C-1 (JSOW C-1) adds moving maritime target capability and the two-way strike common weapon datalink to the baseline AGM-154C weapon.

Mission

- Combatant Commanders use JSOW A to conduct pre-planned attacks on soft point and area targets such as air defense sites, parked aircraft, airfield and port facilities, command and control antennas, stationary light vehicles, trucks, artillery, and refinery components.
- Combatant Commanders use JSOW C to conduct pre-planned attacks on point targets vulnerable to blast and fragmentation effects and point targets vulnerable to penetration such as industrial facilities, logistical systems, and hardened facilities.
- Units will use JSOW C-1 to conduct attacks against moving maritime targets and have the ability to retarget weapons post launch. JSOW C-1 will retain the JSOW C legacy capability against stationary land targets.

Major Contractor

Raytheon Company, Missile Systems – Tucson, Arizona

- During June and July 2015, the Navy completed six low humidity Stationary Land Target captive flight test (CFT)

FY15 NAVY PROGRAMS

- events at China Lake, California, with 22 runs collected.
- During August and September 2015, the Navy conducted high humidity testing at Naval Air Station Key West, Florida. The testing included 28 high humidity CFT runs; one night, three morning, and three afternoon high humidity Moving Maritime Target events, and 48 CFT runs.
- The Navy did not complete any free flight testing in FY15 because of cancellations due to weather and aircraft availability. The Navy successfully completed one free flight test event on October 21, 2015.

Assessment

- The Navy began operational testing of the JSOW C-1 in FY15. Preliminary results to date indicate:
 - Weapon impact accuracy for moving maritime targets continues to be well within the accuracy requirement value and accuracy performance against stationary land targets has been maintained.
 - JSOW C-1 MFHBOMF is below the requirement value. This is primarily the result of software-driven problems. With the migration from F/A-18E/F H8 OFP to H10, the MFHBOMF is showing progress towards meeting the requirement value by the end of operational testing. Achieving adequate assessment of MFHBOMF during operational testing is an area of moderate risk.

- The Navy has reduced the complexity of the PVI in the F/A-18E/F H10 OFP. There remain minor PVI challenges that could prevent successful mission execution. These challenges can be effectively overcome with proper training prior to employment. The Navy is addressing these challenges in F/A-18E/F H12 OFP, scheduled for release in FY17.
- A software upgrade for the Joint Mission Planning System, version 3.0.2, arrived in late September. This is expected to resolve issues with the placement of the network-enabled weapon Link 16 network load for the JSOW on the F-18, but this has not yet been verified.

Recommendations

- Status of Previous Recommendations. The Navy has partially addressed the previous recommendations. The Navy has demonstrated a reduction in software-driven failures during the extended integrated testing phase. While they have significantly reduced the complex PVI, their plan will not fully address this issue until the F/A-18E/F H12 OFP release, scheduled for FY17.
- FY15 Recommendation.
 1. The Navy should continue to reduce the PVI complexity between the JSOW C-1 and the F/A-18E/F to permit successful mission execution.