

Joint Air-to-Surface Standoff Missile (JASSM) and JASSM Extended Range (ER)

Executive Summary

- The Air Force completed follow-on operational testing in accordance with the DOT&E-approved test plan, showing improvement in missile reliability. However, confidence in production quality and reliability is low and therefore precludes any conclusions about missile inventory reliability.
- Mission planning still does not meet user or operational requirements. It needs improvement to support operational theater timing.
- The program is developing and testing a new fuse. The program should complete testing, correct any deficiencies, and retest the changes before incorporating the new fuse into Joint Air-to-Surface Standoff Missile (JASSM) production.
- The program requires a Test and Evaluation Master Plan for the Extended Range (ER) JASSM that adopts an event-based approach to development, builds on lessons learned, and implements improvements before operational testing.

System

JASSM is a stealthy cruise missile that flies a preplanned route from launch to a target, using Global Positioning System (GPS) satellite information and an internal navigation system. JASSM:

- Has a 1,000-pound penetrating warhead
- Has an imaging infrared seeker that can be used for greater accuracy and precision
- Can be launched by B-1, B-2, B-52, and F-16 aircraft
- Includes a container that protects the weapon in storage and aids ground crews in moving, loading, and checking the missile
- Uses the same Air Force mission planning systems used for aircraft and other weapons
- Uses seeker templates (if needed) planned by rear echelon intelligence units

Activity

- The program convened a Reliability Enhancement Team to identify reliability issues, and propose improvements.
- JASSM completed the second phase Follow-on Operational Test (FOT&E) in August 2005, in accordance with the DOT&E-approved test plan. This FOT&E used Lot 3 missiles (produced in 2005). JASSM intends to produce more than 4,900 missiles in more than 16 production lots.
 - The program completed three developmental shots and eight operational missile shots. Of the eight, two missiles failed shortly after launch. Four missiles struck and destroyed their targets as planned. Two missiles functioned correctly, struck their targets, but did not destroy them.



JASSM ER expands these capabilities by adding a more efficient engine, larger capacity fuel tanks, and modified components (all within the same outer shape) potentially doubling the range.

Mission

Units equipped with JASSM can employ the weapon against high value or highly defended targets from outside the lethal range of many threats. It is designed to:

- Destroy targets with minimal risk to flight crews and support air dominance in the theater
- Strike a variety of targets from up to 200 miles away
- Provide flexibility in planning missions using automated preplanned or manual in-flight planned missions
- Attack a wide range of targets including soft, medium, or very hard (although not deeply buried) targets

JASSM ER is intended to support the same capabilities and missions, and expand the reachable targets with a range more than twice the baseline JASSM.

- The program office and developer began ground testing a new electronic fuse. The new fuse will have the same capabilities but will afford better reliability.
- DOT&E is working with the program office, Under Secretary of Defense for Acquisitions, Technology, and Logistics (USD)(AT&L)), and testers to construct a Test and Evaluation Master Plan for JASSM ER.
- The Air Force declared an initial operational capability with JASSM on B-1 and B-52 aircraft.

Assessment

The developer is placing greater attention on supplier testing and review. The program office is constructing a ground test facility to test basic functions of a missile under a controlled environment, at a lower cost than a flight test. The Reliability Enhancement Team recommended both improvements.

The eight JASSM follow-on testing flights showed missile reliability improvement, but also identified new problems. Four missions flew successfully and destroyed their targets as planned. On two missions, the wings did not correctly open and the missiles crashed shortly after launch, for two different reasons. A poor wing actuator connection, identified during development but not corrected, failed on the first mission. After the Operational Test (OT) failure, the developer corrected all inventory missiles. A wing retention bolt that holds the wings closed and releases during launch failed on the second mission. The developer has not identified why this bolt failed. On two missions, the missiles flew successfully but failed to destroy their planned targets (a cave opening and a cave overhang). Both missiles struck away from the optimal impact points, causing little damage. Target location error, planning error, and target difficulty combined to cause the failures.

Some missiles experienced problems that reduce confidence in reliability and production consistency. On three missions (and on two developmental missions), the missile climbed much slower than planned and slower than on previous missions. On two missions, the missile experienced periodic loss of GPS guidance throughout the mission. The developer has not yet identified the sources of these problems. While reviewing the wing deployment problems, the developer identified a Lot 3 production change error that caused wings to bind when they open. This was due to incorrect assembly and the developer corrected it using a redesigned assembly process. This solved the problem, but the developer had to go back and fix all previously-produced missiles.

Previous operational testing identified production quality as an issue, and one purpose of this FOT&E was to demonstrate improvement. All FOT&E missiles were Lot 3 missiles and

Lot 3 production changes triggered several of the failures and problems. One development flight used a Lot 1 missile to assess the reliability of fielded missiles. However, the program office replaced the Lot 1 fuze with a new one before the flight. Developmental testing found the actuator connection problem before OT but the developer did not correct it until after the OT failure. These problems reduce confidence in missile production quality and reliability.

Automated mission planning does not meet timing requirements and is difficult to complete. User requirements and typical theater operations require a JASSM mission plan to be complete in less than 10 minutes (average). This is in order to complete more than 100 missile missions in a typical air tasking order (ATO) cycle (24 hours). Previous test results showed it takes 15 - 25 minutes (average). Exercises this past year show these times did not improve. Aircrews must use in-flight manual planning to complete some of their missions and strike all required targets in an ATO cycle. Manual in-flight planning is easier but less effective for some missile missions since it cannot take full advantage of the missile's stealthiness and range, and it is more susceptible to mistakes. F-16 follow-on testing found a critical error that prevents crews from being able to manually plan missions in-flight.

Recommendations

1. The program should adopt an event-driven approach to development that completes robust testing, identifies problem areas, and corrects them before proceeding into OT.
2. The program should speed up mission planning to match the ATO cycle time.
3. The program should complete planned fuse testing, identify and correct deficiencies in fuse performance, and retest the corrections before incorporating the new fuse in JASSM production.
4. The Air Force should repeat the missions against the cave targets.