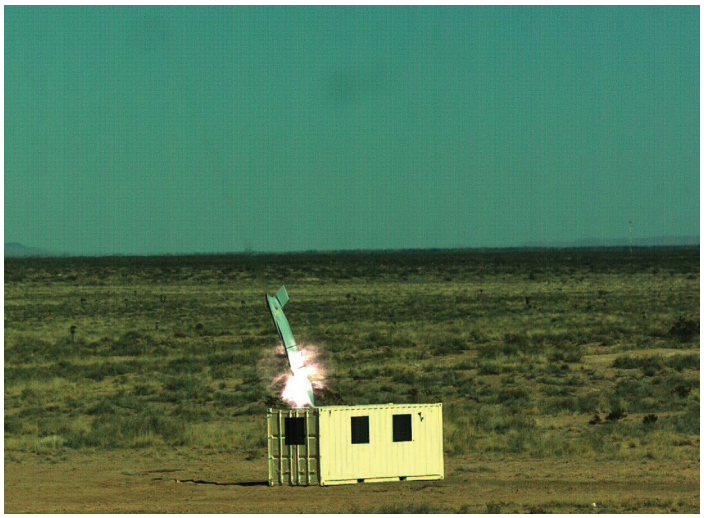
Joint Air-to-Surface Standoff Missile (JASSM)

Executive Summary

- The Air Force executed one successful baseline Joint Air-to-Surface Standoff Missile (JASSM) shot in January 2010. This live shot focused on testing the new or re-designed Missile Control Unit, Digital Engine Controller, Actuator Control electronics, and Air Data Probe.
- There were no production lot Reliability Acceptance Program shots in 2010.
- The Air Force executed four JASSM-Extended Range (JASSM-ER) live fire shots in FY10. Three of four missiles accurately located and subsequently destroyed the associated targets at both nominal and maximum JASSM-ER ranges. The fourth missile experienced an engine over-speed during flight and after one hour of flight impacted the ground 14 nautical miles short of the target area. A failure review board identified the cause for the failure and the program implemented corrective action and screening.
- The Air Force should continue the pursuit of the Electronic Safe and Arm Fuze (ESAF), assuring the availability of a second fuzing option, as well as pursuing technological advancement in fuzing and increasing JASSM's reliability.
- The Air Force should continue to characterize the reliability of baseline missile production lots, incorporating reliability and program management improvements.

System

- Baseline JASSM is a stealthy cruise missile that flies a preplanned route from launch to a target, using GPS guidance 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; the seeker uses image templates prepared by a rear echelon intelligence unit.
  - 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.
- JASSM ESAF is intended to be a more reliable fuze with the same capabilities as the baseline fuze. Continued development is unfunded.
- JASSM-ER is intended to fly longer ranges using a more efficient engine, larger capacity fuel tanks, and other modified components (all within the same outer shape).



- JASSM Anti-Surface Warfare (ASuW) adds the capability to attack maritime targets using two way data-link for in-flight retargeting. Requirements development is ongoing. This effort is unfunded.

Mission

- Operational units equipped with JASSM intend to employ the weapon from multiple aircraft platforms against high value or highly defended targets from outside the lethal range of many threats. Units equipped with JASSM intend to use it to:
  - Destroy targets with minimal risk to flight crews and support air dominance in the theater
  - Strike a variety of targets greater than 200 miles away
  - Execute missions using automated preplanned or manual pre-launch retargeting planning
  - Attack a wide range of targets including soft, medium, and very hard (not deeply buried) targets
- Units with JASSM-ER intend to support the same missions with a range more than twice the baseline JASSM.
- Units with JASSM ASuW would add the capability to attack maritime targets and expanded retargeting capabilities in executing JASSM missions.

Major Contractor

Lockheed Martin, Missile and Fire Control – Orlando, Florida

Activity

- All testing was conducted in accordance with the DOT&E-approved Test and Evaluation Master Plan and test plan.

JASSM Baseline

- The Air Force executed one successful live shot in January 2010. The primary objectives of this flight were to provide final validation of a new Missile Control Unit, recently upgraded Actuator Control electronics and Digital Engine Controller, and a redesigned Air Data Probe, all of which enhance missile performance and reduce the risk of obsolescence in these components.
- The Air Force is certifying JASSM for carriage and employment on the F-15E Strike Eagle. A series of jettison and separation tests continued in May 2010, which included the first separation (unpowered employment) of a JASSM from the centerline station of the F-15E. The jettison testing continued in August and September 2010, and included the first and second jettison from the right wing, the third and fourth jettison overall.
- There were no production lot Reliability Acceptance Program shots in 2010. The program office planned to test retrofitted Lot 6 weapons in 3QFY10. Due to a failure of Flight Termination System batteries in the Test Instrumentation Kits (TIKs), Lot 6 testing was postponed. The limited number of TIKs were used primarily for JASSM-ER testing to meet production contractual obligations.

JASSM ESAF

- The ESAF program remains unfunded; however, the Air Force renewed technical interest in the program. The ESAF has more Built-in Test (BIT) capability than the current electro-mechanical FMU-156/B fuze. The ESAF would be used in both baseline and ER variants.

JASSM-ER

- The Air Force executed four JASSM-ER live fire shots in FY10. Three of four missiles accurately pinpointed and subsequently destroyed three of the four associated targets at both nominal and maximum JASSM-ER ranges. The fourth missile experienced an engine over-speed during flight and after one hour of flight impacted the ground 14 nautical miles short of the target area. A failure review board identified the cause for the failure and the program implemented corrective action and screening.

Assessment

- Despite improvements in workmanship and production processes, there is still a need to evaluate the inherent reliability of production lot missiles to assure that the reliability growth plan is successful.
- DOT&E is concerned with the Air Force's current decision not to fund the ESAF program. The ESAF program should replace the current electromechanical fuze, which relies on moving parts prone to reliability failures. LFT&E requirements (sled and flight tests) will need to be reexamined for data completeness should the Air Force chose to reinitiate the ESAF program.
- The late summer and fall JASSM-ER shots indicate that the JASSM-ER may meet requirements. However, full characterization of the weapon requires the two final integrated test shots scheduled for 1QFY11. These shots will support the Milestone C Defense Acquisition Board scheduled for late 1QFY11.

Recommendations

- Status of Previous Recommendations. Due to the battery problems in the TIKs, the Air Force could not formally address the FY09 recommendation on reliability characterization. The program office is re-invigorating the availability of a second fuzing option and upgrading the current fuze to have less moving parts. Their objective is to improve fuze reliability, provide a second fuzing source, increase electronic BIT function, and improve testability.
- FY10 Recommendation.
  1. The Air Force should continue to characterize the reliability of baseline missile production lots, incorporating reliability and program management improvements once TIK batteries return to inventory.