

## Joint Air-to-Surface Standoff Missile (JASSM)

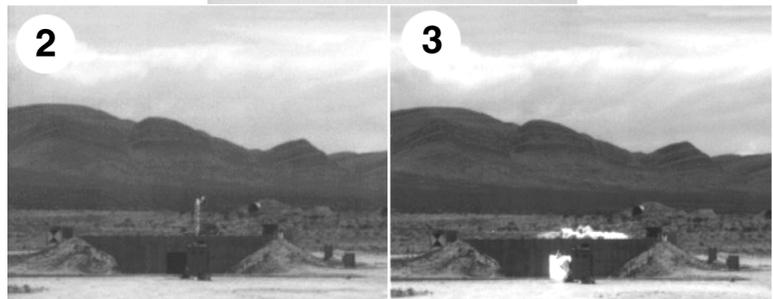
The Joint Air-to-Surface Standoff Missile (JASSM) is a cruise missile which is launched from beyond area air defenses in order to kill hard, medium-hardened, and soft/soft-distributed targets. It will attack fixed and relocatable targets using an Inertial Navigation System/Global Positioning System for enroute navigation and an Imaging Infrared seeker for terminal guidance. Threshold integration aircraft are the B-52H and F-16C Block 50. However, software upgrades to the F-16 will prevent completion of operational test on that aircraft until after the Milestone III full-rate production (FRP) decision. Therefore, a Follow-on Test and Evaluation (FOT&E) after Milestone III will be executed to evaluate the F-16 operational JASSM capability. JASSM Key Performance Parameters are Missile Mission Effectiveness (MME) (ability to survive and kill a defined target set), Interoperability, Range and Aircraft Carrier Operability. Due to funding limitations and F/A-18 E/F test platform availability, the Joint Requirements Oversight Council approved deferring the Carrier Operability Key Performance Parameters until after Milestone III. Therefore, F/A-18 E/F integration will be evaluated in an FOT&E in FY04 or later.

In 1996, the services performed an Analysis of Alternatives and validated a JASSM requirement versus a proposed Stand-Off Land Attack Missile-Expanded Response Plus (SLAM-ER+). A 1998 Milestone II decision approved Engineering and Manufacturing Development entry and the Low-Rate Initial Production (LRIP) entrance criteria. Flight-testing began in FY00. In December 2001, the program was approved for LRIP and designated an Acquisition Category 1C with the Air Force as the lead for a November 2003 FRP decision. The U.S. Air Force plans to buy 3,700 units over 13 years. Navy quantities are to be determined. The FRP rate is planned for 360 units per year. Early in JASSM development, the Joint Chief of Staff directed programs with Global Positioning Service to use the Selective Availability Anti-Spoofing Module (SAASM) by 2002. To avoid delays, OSD approved a plan for JASSM development and testing without SAASM, while concurrently developing a final production missile with SAASM, designated Lot 2.

The JASSM test strategy has featured early Operational Test involvement with the continued use of modeling and simulation to gain Test and Evaluation (T&E) efficiencies. Operational units are being used in T&E to minimize training time once JASSM is fielded. Government test aircraft, instrumentation, and ranges support the contractor-run Developmental Testing (DT). The Live Fire Test and Evaluation (LFT&E) strategy calls for lethality to be evaluated using all developmental and operational test attacks. To accommodate the two-lot development approach, four Lot 2 missiles will be tested in DT. After successful completion of the DT, there will be four Lot 2 Operational Test shots to validate the modifications.

### TEST & EVALUATION ACTIVITIES

Developmental testing continued in FY02 with six launches, five of which were successful. In October 2002, the third Lot 2 missile on the sixth DT mission departed controlled flight after launch and spiraled to the ground. Contractor analysis found a control actuator jammed due to overlapping design clearances. In response, all JASSM wing assemblies will be retrofitted with new actuator hardware and will be tested in a final DT flight tentatively scheduled for FY03.



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# AIR FORCE PROGRAMS

Since JASSM Operational Test Certification in April 2002, there have been three Operational Test missions. The first was successful, the second was declared a test error, and the third is under investigation. During the second mission, JASSM unexpectedly deviated from its pre-planned course and was intentionally destroyed as it approached a range boundary. Contractor analysis determined the missile performed as designed and the deviation was caused by the compounding errors of the test team planning a narrow launch envelope and then inadvertently launching the missile slightly out of that envelope. Although it was determined the missile reacted appropriately, training materials, mission-planning software, and cockpit presentations will be modified to avoid this situation when JASSM is operational. In October 2002, the third Operational Test mission flew as planned, accurately impacted the target, but did not detonate. The Program Office has reported initial findings indicating this failure was not related to two other fuze/arm failures experienced during previous testing. The final determination of this failure is pending.

Robust reliability and maintainability testing continues. Extensive captive-carry, environmental and aircraft loading evaluations are being conducted on both the F-16 and B-52 aircraft. During these events, it was discovered that rainwater was collecting inside both the protective ground covers and the missile itself, causing paint bubbling and electrical failures. In response, the contractor will redesign the covers and install additional drain holes in the missile body.

In response to the issues and failures experienced in flight and reliability testing, the JASSM Program Executive Officer (PEO) placed all free flight testing on hold in October 2002. In January 2003, an Independent Review Team will consider the issues and retrofits to provide a recommendation to the PEO concerning readiness to resume all flight-testing. The program office is planning for Operational Testing to resume in March 2003, assuming re-certification and the final DT event are complete.

The U.S. Air Force has unveiled plans to develop and field a JASSM-ER (Extended Range). To increase the missile's range, as a minimum the engine and fuel system will be modified. DOT&E is working with the Air Force Operational Test and Evaluation Center and the JASSM Program Office to develop a T&E program for this new capability.

## TEST & EVALUATION ASSESSMENT

Single-shot kills have been achieved against a communications van, radar, weapons bunker, and medium-hardened bunker. A hardened bunker was defeated in two shots, exceeding predictions that three shots would be required. Thus far, when the system functions properly, the warhead has proven lethal against its target set. MME will be evaluated against a set of 17 targets. However, not all 17 will actually be attacked/destroyed. Instead, MME will be derived from models validated using live fire data from a 7-target subset of the 17. Since the models are being developed as the live shots are taken, DOT&E will closely monitor model maturity. Furthermore, while planned in Operational Test, survivability has yet to be evaluated. Survivability of JASSM against a realistic and current threat matrix is critical in the overall MME determination and will continue to be a priority in Operational Testing.

Discoveries in the JASSM program have proven the value of robust and comprehensive Operational Testing. With Operational Testing less than half complete, testing has uncovered issues that could have caused arming/detonation failures, flight control jamming/departures from controlled flight, paint bubbling and cracking, circuitry shorts, and unexpected course deviations. None of these issues surfaced in developmental testing, and in the case of the control actuator binding, was undetected during over 20 previous releases. While none of these problems appear to be unsolvable or prevent eventual JASSM fielding, each one has proven significant enough to warrant an adjustment or retrofit. Absent the testing accomplished to date, many of these problems would not have been discovered until operational combat crews employed JASSM.