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

Executive Summary

- The Joint Air-to-Surface Standoff Missile (JASSM) program continued development of a new fuze variant and the extended range variant. The Air Force stopped testing the new fuze after failures in sled track and qualification testing.
- The JASSM program is not executing a DOT&E-approved test plan. DOT&E has not approved the Test and Evaluation Master Plan (TEMP) for the extended-range variant due to an inadequate test strategy.
- JASSM testing of baseline missiles confirmed previous estimates of low missile reliability.
- Based on analysis from one of the baseline missile failures, the JASSM program directed operational commands not to use fielded JASSM missiles until a safety-related failure mode is corrected or mitigated.
- Other proposed variants (data link and maritime) should not begin development until the user resolves questions about operational employment and requirements.
- The JASSM program should draft executable strategies for each variant to conduct sufficient developmental and adequate operational testing prior to production and fielding.

System

- The baseline 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; the seeker uses image templates planned 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
- There are four other potential increments, which add new capabilities to the baseline JASSM missile.
  - JASSM Extended Range (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 Electronic Safe and Arm Fuze (ESAF) adds a more reliable fuze with the same capabilities as the baseline fuze
  - JASSM Weapon Data Link (WDL) is intended to add capabilities for two-way communication that support battle damage assessment and in-flight re-targeting

  - JASSM Maritime will build on WDL capabilities and add the capability to attack maritime targets under certain circumstances

Mission

- Operational units equipped with JASSM can employ the weapon from multiple aircraft platforms against high value or highly defended targets from outside the lethal range of many threats. JASSM 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
  - Execute missions using automated preplanned or manual in-flight mission planning
  - Attack a wide-range of targets including soft, medium, or very hard (not deeply buried) targets
- JASSM ER is intended to support the same missions and expand the reachable targets with a range more than twice the baseline JASSM.
- JASSM ESAF has the same capabilities as the current fuze, namely multiple delay settings to attack a wide-range of targets. The new fuze is intended to improve the reliability beyond the current fuze.
- JASSM WDL will allow planners to remotely re-plan JASSM missions electronically while the missile is airborne, either when carried by the launch aircraft or after launch while en route to the target.
- JASSM Maritime will increase the number of sea-borne targets that theater planners can attack.

Activity

- Baseline JASSM: The Air Force Weapon System Evaluation Program conducted eight operational JASSM tests with operational tactics and test organizations. Range safety destroyed one missile purposely early due to a test instrumentation failure (scored as a "no-test"). Four missiles flew their preplanned mission successfully and destroyed their targets. Three of the missiles failed shortly after launch; one failed to start the engine, and two failed to properly deploy the wings.
- Additional analysis of one failure identified a potential safety issue with all previously produced missiles. The program office is working with the developer to correct all fielded missiles as soon as practical and has notified operational commands not to use any JASSMs until the corrections are completed. Some units may be permitted to employ JASSM using a limited employment launch envelope that reduces the risk of failure.
- JASSM ER, ESAF, and WDL: The JASSM program is not executing a DOT&E-approved test plan for any of the JASSM increments.
- JASSM ER completed one developmental test flight and one integrated test flight. The flights were intended to address climb performance identified during previous baseline missile operational testing and to prepare for entry into initial production.
- JASSM ESAF restarted sled track testing this year after stopping testing last year due to failures. The first new corrected fuze failed during a sled track test. This, in combination with failures in reliability and qualification testing, led the program office to again stop ESAF developmental testing.
- JASSM WDL began development in January 2006. In July, the program stopped test planning for this increment to address conflicting user operational concepts and requirements.
- JASSM Maritime: there is very little information about this increment.

Assessment

- Testing of JASSM baseline missiles confirmed the previous estimates of low reliability for the early production lots. This low reliability will require operational units employing JASSM to fly more sorties, re-plan more missions, and re-strike targets multiple times in order to achieve operational objectives.
- The program is taking steps to correct all fielded missiles after testing identified a safety-related failure mode. For previous failures, the program mitigated the failure using restrictions or changed procedures, or simply accepted the risk of the failure.
- JASSM testing to date identified issues that will impact JASSM ER readiness for production and operational testing, including missile climb performance, missile mission range (a Key Performance Parameter), and missile reliability.
- JASSM ESAF testing failures repeated the mistakes made in FY05. The previous effort showed that concurrent testing and development lead to problems in finding and correcting deficiencies before production and operational testing begin. The program intends to propose a new test strategy to address these issues. DOT&E has not received the detailed plan for this new approach.
- DOT&E has not approved the JASSM TEMP due to concerns with test planning. The TEMP includes minimal developmental testing prior to initial production and will likely lead to discovery of new failure modes during operational testing (after production begins). In baseline JASSM testing, this approach led to the fielding of immature missiles before development was completed. Fielded missiles required extensive corrections. Cuts in funding slowed production and fielding, forcing the user to accept the risk that production missiles may not function as needed. The program intends to submit a new TEMP for approval by May 2007, after the majority of JASSM ER development is complete.
- There is very little information about requirements, acquisition strategy, or test planning for JASSM WDL or Maritime variants.

Recommendations

- Status of Previous Recommendations.
  FY05 #1: The program did not adopt an event-driven strategy for ESAF, ER, or WDL testing.
  FY05 #2: The program has not yet demonstrated progress in reducing mission planning times.
  FY05 #3: DOT&E recommended that the program complete fuze testing as planned, based on a stop test in fuze testing last year. The program began an updated, DOT&E-approved strategy for ESAF testing and correctly stopped the effort when test results indicated they must correct problems and re-accomplish testing.
- FY06 Recommendations.
  1. The JASSM ER program should obtain TEMP approval before progressing further.
  2. JASSM ER should conduct robust, realistic developmental testing, determine Key Performance Parameter capabilities or shortfalls, and correct deficiencies prior to initial production and operational testing.
  3. JASSM ESAF needs a revamped LFT&E test strategy that eliminates concurrent testing and adequately tests the fuze in progressively challenging environments before Live Fire testing, flight testing, and production.
  4. JASSM WDL and Maritime need to identify conflicts in user operations concepts and requirements before beginning deliberate planning for acquisition and test strategies.