

EA-6B Upgrades

The EA-6B Prowler is a four-person, carrier capable, twin turbojet tactical aircraft. Its primary mission is the interception, analysis, identification, and jamming of radio frequency transmissions of enemy weapons control and communications. The crew includes one pilot and three electronic countermeasures officers. The EA-6B carries the ALQ-99 Tactical Jamming System (TJS), which includes a receiver, processor, and various mission-configured jammer pods, carried as external stores. The EA-6B has the USQ-113 Communications Jammer, and may also be armed with the high-speed anti-radiation missile for enemy surface-to-air radar destruction and suppression. The EA-6B is a key contributor to the Suppression of Enemy Air Defenses Electronic Attack mission.

Operational since 1972, the EA-6B has undergone a number of upgrades: Expanded Capability, Improved Capability (ICAP), ICAP II, and Block 89A. Another significant upgrade, Advanced Capability (ADVCAP), reached Full Scale Development in FY93 but was cancelled for financial reasons. Initial Operational Test and Evaluation of ADVCAP was completed in FY94 and provided the technical basis for much of the current upgrade program.

Improvements to the ALQ-99 jamming pod capability include the Universal Exciter Upgrade (Full-Rate Production in FY96), Band 9/10 transmitter (Initial Operational Capability (IOC) FY00), a prototype Band 7/8 jamming capability, and the development phase for a Low Band Transmitter (LBT) upgrade.

ICAP III, which is the most significant upgrade, includes a new receiver that is intended to provide a reactive jamming capability. ICAP III systems integrate many of the above mentioned warfighting enhancements with the addition of new controls and displays. It includes provisions for Link-16, via the Multi-Functional Information Distribution System. ICAP-III builds upon the Block-89A improvements to achieve a reactive jamming/targeting and geolocation capability for active emitters. The Navy's procurement plan is to transition all EA-6B aircraft to the ICAP III configuration by 2010. Addition of the Multi-Mission Advanced Tactical Terminal and the Improved Data Modem capability improves battlefield situational awareness for the crew. The program is also integrating Aircrew Night Vision Devices to enhance night capabilities.

TEST & EVALUATION ACTIVITY

Developmental ground and flight testing have been underway at the Naval Air Warfare Center, Patuxent River and China Lake test ranges since February 2002, in preparation for an Operational Assessment (OA) test period. The OA will include Nevada Test and Training Range flights. Recent delays have rescheduled the OA for FY03. Developmental testing at Patuxent River has been focused on meeting entrance criteria for the OA. Specific performance interests are response times, geolocation key performance parameters, suitability estimates of Built In Test, and reliability measures.

The Navy re-baselined the LBT jamming pod program upgrade to the ALQ-99 jammer in September 2000, slipping IOC from FY04 to FY06. Milestone III was delayed to FY05. Engineering Development Models (EDMs) and Developmental Test and Evaluation activities continue to progress. Environmental Stress Screening was started during FY02, to identify manufacturing faults. Ground tests to qualify the EDMs for flight environments started in August 2002 to prepare for the first flight at the Patuxent River Test Center in August 2003, an OA in January 2004, and a low-rate initial production decision targeted for May 2004.



Improved Capability III is a significant upgrade and includes a new receiver intended to provide a reactive jamming capability. Improved Capability III also has new controls and displays, Link-16, and geolocation capability for active emitters.

NAVY PROGRAMS

There was no formal USQ-113 communications jammer Test and Evaluation (T&E) activity in FY02. While completing installation of the 63 sets already procured, the Navy is developing a plan for product improvement and possibly acquiring a larger number of units for deployment.

TEST & EVALUATION ASSESSMENT

For the major EA-6B upgrade, the ICAP III, program risk is centered on adequate performance of the LR-700 receiver. The LR-700 is the key subsystem in the overall ICAP III upgrade. It is planned to provide a much needed reactive jamming and accurate emitter geolocation capability in full azimuth coverage. An OA prior to the operational evaluation (OPEVAL) should add very beneficial time for test, analyze, and fix efforts. Software and hardware trouble (malfunction) report listings were generated during FY02 ground and flight testing, and were dominated by software problems. Hardware failures resulting from flight tests have been minimal; however, in-plant Reliability Demonstration Tests under stressed vibration and temperature cycling for the LR-700 receiver system are on the critical path to success. Software problems involving in flight system lock ups, as well as active emitter display redundancies, are causing a delay in start of OA flight to 2QFY03.

The LBT program continues in the developmental phase and is being closely monitored by the program office. Recent problems with antenna switch components and radiated power have been reported. The capability to test the system at full power (its only mode) is hampered by the Federal Communications Commission restrictions and is considered a risk that may impact an adequate operational test.

The USQ-113 Version 3 completed OPEVAL and provides a greatly needed replacement for Version 2, which is becoming mission incapable due to a lack of replacement parts. There was no Operational Requirements Document generated before the USQ-113 V3 received its congressional plus-up funding. This led to complications as to what capabilities should be included. The most significant operational impact, documented during the OPEVAL, was the difficult operator interface. A working group has been established to determine the best fixes to improve the interface software. Before any additional units are purchased, the shortfalls documented in the OPEVAL should be addressed, and significant improvements to the software should be implemented. Testing at required frequencies is denied because of the impact on civilian sector usage of certain frequency bands. Those same frequency bands are the ones that the enemy will plan to use because of the ready availability of cheap and effective equipment. This inability to test at all required frequencies in other than remote test locations complicates adequate testing. Testing at remote locations is being explored, but such an approach will require transportable real or simulated target/victim equipment and associated diagnostic instrumentation. Some of these same testing challenges similarly apply to the LBT.