

EA-6B UPGRADES



NAVY ACAT II Program

ICAP III:

Total Number of Systems:	123
Total Program Cost (TY\$):	\$ 1.195B
Average Unit Cost (TY\$):	\$ 5.03M
Full-rate production:	3QFY03

BAND 9/10 TRANSMITTER:

Total Number of Systems:	204
Total Program Cost (TY\$):	\$130.2M
Average Unit Cost (TY\$):	\$503K
Full-rate production:	1QFY97

BLOCK 89A:

Total Number of Systems:	123
Total Program Cost (TY\$):	\$432.5M
Average Unit Cost (TY\$):	
BLK 82 (46 kits)	\$1.6M
BLK 89 (49 kits)	\$0.7M
Full-rate production:	4QFY99

LOW BAND TRANSMITTER:

Total Number of Systems:	180
Total Program Cost (TY\$):	\$139.1M
Average Unit Cost (TY\$):	\$772.6K
Full-rate production:	2QFY02

Prime Contractor

Northrop Grumman/Litton

Prime Contractor

Marconi Aerospace Electronic Systems

Prime Contractor

Government

Major Subcontractor: Northrop Grumman

Prime Contractor

Marconi Aerospace Electronic Systems

USQ-113 COMMUNICATIONS

JAMMER:

Total Number of Systems:	63
Total Program Cost (TY\$):	\$47.5M
Average Unit Cost (TY\$):	\$400K
Full-rate production:	FY96

Prime Contractor

Lockheed Martin (Sanders)

SYSTEM DESCRIPTION & CONTRIBUTION TO JOINT VISION 2010

The EA-6B “Prowler” aircraft contributes to the *Joint Vision 2010* concept of *full-dimensional protection* by improving supported aircraft probability of survival through its contribution to the Suppression of Enemy Air Defenses (SEAD) Electronic Attack (EA) mission.

The EA-6B is a four-seat, all weather, twin turbojet powered, tactical EA aircraft designed to operate from aircraft carriers and airfields ashore. Its primary mission is the interception, analysis, identification, and jamming of enemy weapons control and communications systems in support of joint offensive and defensive operations. High priority EA missions include SEAD by denying, delaying, or degrading the enemy’s ability to detect and target friendly forces. The crew includes one pilot and three electronic countermeasures officers. The EA-6B carries the AN/ALQ-99 Tactical Jamming System (TJS). The TJS on-board system (OBS) includes the receiver, processor, and aircrew interfaces. The TJS also includes a selection of mission-configured jammer pods carried as external stores. Each jammer pod contains a ram air turbine generator, two selectable transmitter modules with associated antennas, and a universal exciter that is interfaced with and controlled by the OBS and aircrew. The modular open architecture of the jammer system, which facilitates optimizing transmitters and antennas for a given frequency range, also facilitates tailored mission configurations. The EA-6B also has the USQ-113 Communications Jammer and is armed with high-speed anti-radiation missiles (HARM).

BACKGROUND INFORMATION

The EA-6B has been operational since 1972. It has undergone a number of upgrade programs: Expanded Capability, Improved Capability (ICAP), and Improved Capability II (ICAP II). ICAP II was adjudged operationally effective and suitable and was installed on operational aircraft in Operation Desert Storm. Major upgrades included HARM capability and updated communications.

A major set of upgrades, designated Advanced Capability (ADVCAP) was in Full Scale Development in FY93. These included on-board system upgrades and substantial changes to the aircraft itself. ADVCAP warfighting improvements included a new receiver processor system, the AN/ALQ-149 Communications Jammer, a new band 2/3 transmitter, and an upgrade to the universal exciter. Also included was a major aircraft avionics upgrade and airframe and engine improvements. IOT&E of the warfighting improvements on ADVCAP were completed in 1QFY94. The ADVCAP program was dropped from the FY95 Navy budget submission and subsequently cancelled.

The current EA-6B upgrade program includes:

- **Sustainment:** Funding levels support changing all aircraft to a Block 89A configuration; however, the program office and the OPNAV sponsor are reviewing the configuration mix to optimize inventory. The Block 89A configuration brings all aircraft to a common baseline

including structural and safety of flight, computer, navigation system, and communications upgrades. Those aircraft not receiving the Block 89A upgrade will be upgraded directly to ICAP III configuration.

- **Improvements:** Essential warfighting capability improvements include the Universal Exciter Upgrade (UEU), the Band 9/10 transmitter (transferred to the Navy from the cancelled EF-111, and the Low Band Transmitter (LBT), all of which are modular upgrades for use with the AN/ALQ-99 jamming pods. In addition, there is an ongoing USQ-113/Connectivity Upgrade program that provides aircrew with improved situational awareness and the ability to receive and jam communications signals and to launch HARM attacks more effectively. Situational reception is via a Multi-Mission Advanced Tactical Terminal and the Integrated Data Modem. Until the ICAP III program is fielded, a laptop computer that does not interface with on-board systems will control the situational awareness and Communications Receiver/Jammer capabilities.
- **ICAP III:** The ICAP III develops and procures a new tactical receiver that provides a reactive jamming capability and replaces the current 1960s era receivers. Additionally, ICAP III systems integrate the above mentioned situational awareness systems and USQ-113 Communications Receiver/Jammer displays with the aircraft on-board systems. A new Controls and Displays Suite replaces existing displays, allowing improved crew operation of the aircraft. Provisions for Link-16, via the Multi-Functional Information Distribution System are included. The current plan is to transition all EA6-B aircraft to the ICAP III configuration by 2010.

The UEU program completed OPEVAL and was found to be operationally effective and suitable. It achieved Milestone III in 2QFY96, and entered full-rate production in 4QFY96. The Band 9/10 transmitter completed DT in June 1997 and OPEVAL was conducted from July-August 1997. The independent DOT&E evaluation determined Band 9/10 to be effective and potentially suitable. FOT&E is still required to evaluate compatibility of a new radome for use with the Band 9/10 transmitter, prior to fleet fielding, has not been completed. The new radome is intended to resolve the potential for damage of the current radomes by the Band 9/10 XMTR. Band 9/10 XMTR Milestone III was achieved in 1QFY98.

TEST & EVALUATION ACTIVITY

DT of the Block-89A upgrades was completed in December 1998. The Block-89A TEMP was approved in October 1998 and OPEVAL was completed in August 1999. The key focus of this OPEVAL was to ensure that there was no regression in operational effectiveness and suitability due to replacement of the mission computer and re-hosted mission software. COMOPTEVFOR released their final report in September 1999, stating the system was operationally effective and not operationally suitable due to incomplete documentation (NATOPS manual). The Program Office is resolving documentation deficiencies and IOC should be achieved in 3QFY00.

DOT&E staff continues to participate in ICAP III reviews to assist in proper test planning continues. System design of some components proved problematic early in FY99, with a four-month delay in testing incorporated.

The draft LBT TEMP was updated during FY98 to reflect Navy staffing to re-baseline the LBT development program for cost and schedule overruns. LBT design and build activities are underway, though not all design specifications have been completed. EMD and DT&E are progressing on track.

Developmental and Operational Testing of USQ-113/Connectivity integration continued in FY99. DOT&E approved the TEMP in October 1998. USQ-113 was deployed to Kosovo as a wartime contingency capability in two Fleet EA-6B squadrons. DT is scheduled for completion in November 1999, with OT&E expected to begin in 2QFY00. IOC is planned in FY00.

TEST & EVALUATION ASSESSMENT

As subsequent components of the current EA-6B Upgrade program enter IOT&E, EA-6B aircraft and avionics systems will be tested as part of the baseline configuration. Sequential FOT&E allows for testing of new capabilities, regression testing, and continued evaluation of the full operational potential of each EA-6B upgrade program beyond their independent Milestone III decisions. This systematic approach allows incremental improvement to EA-6B war fighting capability, providing a synergistic roadmap for fielding of the ICAP III EA-6B variant. The complexity of upgrading airframe and survivability modifications, safety of flight improvements, jammer upgrades, and system modifications to meet ICAP III baseline requirements are program challenges.

The production of new materials to resolve Band 9/10 radome discrepancies has been difficult but well within the technical abilities of the program office and suppliers. The tactical limitations imposed are relatively minor, but the program office intends on fielding a system without limitations. DOT&E will ensure discrepancies are corrected during FOT&E.

ICAP III achieved a Milestone II decision in May 1998. A formal TEMP is expected to be submitted in 2QFY00, well behind schedule. The Navy has embarked on a highly optimistic test strategy/schedule that provides little time to resolve emergent hardware or software issues prior to the next major test milestone. Planning efforts have been comprehensive and risk assessment and mitigation efforts are underway to resolve test schedule issues.