

E-4B National Airborne Operations Center (NAOC)

SUMMARY

- The E-4B National Airborne Operations Center (NAOC) System planned for testing is the Modification Block I. It consists of three major components: integration of the Global Air Traffic Management Phase II System, Audio Infrastructure Upgrade, and the Senior Leadership Communications System.
- This Acquisition Category III program did not have a declared Milestone A or B.
- The E-4B modernization program entered Engineering and Manufacturing Development during March 2000.
- Laboratory and ground-based aircraft developmental testing commenced during late FY04. The E-4B Operational Utility Evaluation will be in FY05. This test supports a full-rate production and fielding decision for the Block I modernization into the E-4B fleet.
- Major test and evaluation focus areas include adequacy of the integration, information assurance protection, onboard communications capability, and system-of-systems interoperability.



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SYSTEM DESCRIPTION AND MISSION

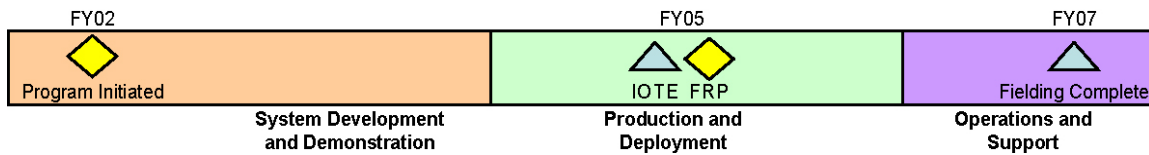
The E-4B NAOC is a fleet of four militarized Boeing 747-200 aircraft that provides a survivable airborne national command post for senior leadership. The aircraft, based at Offutt Air Force Base, Nebraska, contain multiple and redundant secure national and strategic communications systems along with computerized workstations and databases. The E-4B is a long-range aircraft with long endurance supported by an in-flight air refueling capability.

The E-4B requires numerous improvements to maintain flight worthiness and improve command, control, and communications capabilities. The next near-term major improvement is Modification Block 1, which includes an Audio Infrastructure Upgrade, Global Air Traffic Management Phase II compliance improvements, and a new Senior Leadership Communications System.

The Audio Infrastructure Upgrade will provide an internal communications backbone through integration of a digital switch, multiplex systems, and a secure voice recording system. The Global Air Traffic Management Phase II modification will integrate a dual beyond line-of-sight data link capability and new displays and controls in the E-4B cockpit. The Senior Leadership Communications System will integrate a secure video teleconferencing and video broadcast reception capabilities in addition to new displays and controls.

AIR FORCE PROGRAMS

TEST AND EVALUATION ACTIVITY



DOT&E reviewed a test concept to baseline current E-4B NAOC capabilities for those systems to be replaced by Block 1 modifications. This baseline will compare the performance of the appropriate Block 1 modification systems with legacy systems. An E-4B NAOC Modification Block I Integrated Test Team submitted the Test and Evaluation Master Plan to DOT&E for approval in July 2004. The Air Force provided DOT&E with a draft Operational Test Concept in February 2004.

- The operational test will feature more robust testing of beyond-the-horizon communications capabilities provided by the Block I modification, as well as verifying legacy communications capabilities. The operational test will include a joint interoperability evaluation by the Joint Interoperability Test Command.
- The operational test will focus testing on the Information Assurance vulnerabilities introduced by the Block I modifications, particularly the Global Air Traffic Management integration.

Completion of the integration of a prototype Block 1 Modification kit is underway in the laboratory. The E-4B aircraft inducted during November 2004 is completing installation of the Block I kit (installation of wiring, movement of equipment).

TEST AND EVALUATION ASSESSMENT

A previous E-4B modification effort to automate the computerized displays and data storage was unsuccessful. The Block 1 Modification test planning process will identify appropriate test events for early insight into developmental maturity and identify risks to a successful Operational Utility Evaluation.

The principal technical risk to the Modernization Block I program is the content of the system architecture and the integration of a large number of commercial off-the-shelf and modified off-the-shelf items into that architecture.

The E-4B platform's Joint interoperability Information Exchange Requirements are not complete, nor is the Information System Support Plan. The Integrated Test Team collaboratively developed the Information Exchange Requirements and they will be included in the test plan for approval.

The prototype Block I kit and installation into the E-4B may not be production representative. Before operational requirements are completed, follow-on testing to verify performance of the production kit is required. The integration contractor, Boeing, is also the developmental tester. Boeing's participation in the Integrated Test Team has improved test planning and provided visibility into both developmental and operational test planning.

Close adherence to the schedule is required for the test E-4B modification aircraft to take advantage of two major exercises involving the E-4B. Participation in these exercises by the Block I modified E-4B and a baseline E-4B will provide key comparison data to determine the operational effectiveness and operational suitability of the Block I modified E-4B.