

# E-8C Joint STARS

Joint Surveillance Target Attack Radar System

**NORTHROP GRUMMAN**

The E-8C Joint Surveillance Target Attack Radar System (Joint STARS) is an airborne battle management and command and control (C2) platform that conducts surveillance of fixed and moving ground targets to develop an understanding of the enemy situation and to support location, tracking, targeting, and attack operations. These functions support the primary mission of Joint STARS -- to provide dedicated support of ground and air theatre commanders.

The E-8C is a modified Boeing 707-300 series commercial airframe extensively refurbished and modified with the radar, communications, and operations and control subsystems required to perform its operational mission. The most prominent external feature is the 40-foot-long, canoe-shaped radome under the forward fuselage that houses the 24-foot-long, side-looking phased array antenna. The Joint STARS radar system tracks ground vehicles and low flying aircraft across a broad area using its Moving Target Indication (MTI) capability. Joint STARS can also create high fidelity imagery of selected areas by operating in Synthetic Aperture Radar (SAR) mode. The Joint STARS aircraft normally carries a crew of 21, and 18 of these crewmembers occupy individual operator work stations where they analyze information from the on-board radar system and support targeting, C2, and battle management operations.

The Joint STARS system can respond quickly and effectively to support worldwide military contingency operations and recently demonstrated this by completing 249 surveillance missions during Operation Enduring Freedom. The E-8C aircraft can fly a mission profile for 9 hours without refueling. During normal operations, its range and on-station time is substantially increased through in-flight refueling.

The radar and computer subsystems on the E-8C can gather and display both broad area and detailed battlefield information. Position and tracking information on enemy and friendly ground forces is collected as events occur. This information is analyzed on board and also relayed in near-real time to the Army's common ground stations and other operations centers via the secure, jam-resistant surveillance and control data link. Battlefield situational information is also relayed to ground command, control, communications, computers and intelligence (C4I) nodes beyond line-of-sight via several on board radio communication systems.

In order to be responsive to the evolving threats of the future, several modernization and upgrade programs, including new engines for improved operational performance and fuel efficiency, are planned for the Joint STARS fleet. As a battle management and command and control asset, the E-8C can support the full operational spectrum of missions from monitoring peacekeeping operations to major theater war.

## SPECIFICATIONS

**Type:** USAF airborne ground surveillance and battle management platform

**Power Plant:** Four Pratt and Whitney TF33-102C

**Speed:** Optimum orbit speed 390 - 510 knots (Mach 0.52 - 0.65)

**Range:** 9 hours (unrefueled)

**Maximum Altitude:** 42,000 feet (12,802 meters)

**Maximum Takeoff Weight:** 336,000 pounds (152,409 kilograms)

**Payload:** Joint STARS MTI/SAR radar, data processing and communications equipment



Radar Operation Modes

- Wide Area Surveillance
- Sector Search
- Attack Control
- Moving Target Indicator
- Synthetic Aperture Radar
- Ground Reference Coverage Area

