

First Production Phased-Array Antenna Installed on AWACS Test System-3 Aircraft

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Boeing today installed its first production phased-array antenna on the E-3 707 Airborne Warning and Control System (AWACS) test system-3 aircraft, in preparation for its participation in the U.S. Air Force's Expeditionary Force Experiment (EFX '98) demonstrations later this year.

The goal of EFX '98 is to demonstrate how emerging command and control capabilities can significantly enhance U.S. forces' ability to decisively halt invading forces. The Boeing phased-array antenna system, with its ability to receive large amounts of information quickly, will be one of the featured components.

During the demonstrations, the AWACS aircraft, via the antenna system, will receive mission data in real time enroute to a crisis area. This will allow AWACS operators to make decisions and direct actions with the most current information available.

The 1,500-element antenna, which measures 2 feet by 3 feet and is approximately 1-inch thick, makes possible high data-rate retrieval, as well as other high-bandwidth applications that have been unavailable on mobile platforms in the past. Unlike conventional, mechanically steered antennas that are bulky and slow to switch between satellites, the Boeing phased-array antenna steers two independent beams electronically, permitting instantaneous connections between satellites and mobile platforms. Boeing initiated development of phased-array antennas in 1986, and since that time has conducted numerous tests and experiments.

In June 1996, Boeing became the first company to successfully flight-test a prototype phased-array antenna for direct broadcast television reception. The tests, conducted on a Cessna 206-model aircraft, demonstrated the antenna system's ability to automatically acquire and track direct broadcast satellites, and display television onboard the aircraft while in flight. Since 1996, the antenna has been showcased during Joint Warrior Interoperability (JWID) exercises, and was installed on a 757 business jet.

Boeing later this month also will install phased-array antennas on a C-135 U.S. Air Force avionics testbed aircraft and a KC-135 aircraft. The two aircraft also will participate in the EFX demonstrations.

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