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Boeing 767 AWACS

Outlook

- Four 767 AWACS aircraft have been built to date
- No additional production is forecast

Orientation

Description. Airborne warning and control aircraft based on the Boeing 767.

Sponsor. Japan Air Self-Defense Force, Tokyo, Japan.

Status. Available to order.

Total Produced. Through 2009, four 767 AWACS aircraft had been produced.

Application. Airborne electronic surveillance and acquisition of aircraft targets, and the destruction of those targets by coordinated action with accompanying combat aircraft. Secondary maritime surveillance mission.

Price Range. \$403 million in 2010 U.S. dollars.



767 AWACS

Source: Boeing

Boeing 767 AWACS

Contractors

Prime

Boeing Integrated Defense Systems	http://www.boeing.com , PO Box 516, St Louis, MO 63166 United States, Tel: + 1 (314) 232-0232, Fax: + 1 (314) 777-1096, Prime
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Subcontractor

GE - Aviation	http://www.geae.com , 1 Neumann Way, Cincinnati, OH 45215-6301 United States, Tel: + 1 (513) 243-2000 (CF6-80C2 Turbofan)
Lockheed Martin Systems Integration - Owego	http://www.lockheedmartin.com/si , 1801 State Route 17C, Owego, NY 13827-3998 United States, Tel: + 1 (607) 751-2000, Fax: + 1 (607) 751-2597 (CC-2E Computer)
Northrop Grumman Electronic Systems	http://www.es.northropgrumman.com , 1580-A W Nursery Rd, Linthicum, MD 21090 United States, Tel: + 1 (800) 443-9219, Email: ES_Communications@ngc.com (APY-2 Radar)
Northrop Grumman Navigation Systems Division	http://www.es.northropgrumman.com/by_division/navigationssystem/ , 21240 Burbank Blvd, M/S W8, Woodland Hills, CA 91367-6675 United States, Tel: + 1 (818) 715-2470, Fax: + 1 (818) 715-3368 (LN-100G)
Telephonics Corp	http://www.telephonics.com , 815 Broadhollow Rd, Farmingdale, NY 11735 United States, Tel: + 1 (631) 755-7000, Fax: + 1 (631) 755-7200 (APX-103 Interrogator System)

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Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 22 Commerce Road, Newtown, CT 06470, USA; rich.pettibone@forecast1.com

Technical Data

(767 AWACS)

	<u>Metric</u>	<u>U.S.</u>
Dimensions		
Overall length	48.51 m	159.17 ft
Overall height	15.85 m	52.0 ft
Wingspan	47.57 m	156.08 ft
Radome diameter	9.14 m	30.0 ft
Radome thickness	1.83 m	6.0 ft
Weight		
Max T-O weight	175,000 kg	385,000 lb
Performance		
Speed	800+ km/h	431+ nm
Service ceiling	10,360-12,222 m	34,000-40,100 ft
Range	10,370 km	5,600 nm
Propulsion		
767 AWACS (2)	General Electric CF6-80C2 turbofan engines rated 273.6 kN (61,500 lbst) each.	

Boeing 767 AWACS

Armament

None

Crew/Accommodation

Two flight crew plus 19 AWACS mission specialists.

Program Review

Background. Exactly which aircraft would follow the 707 as the basis for an airborne warning and control aircraft became an issue for Boeing when the company decided in September 1991 to discontinue production of 707 airframes. At the time, four nations (Australia, South Korea, Italy, and Japan) had entered discussions with Boeing over possible E-3 AWACS purchases. Of the four, Japan was considered the most immediate candidate for a purchase. However, in mid-1991, the Japanese government delayed its planned AWACS purchase due to an increase in the price of the aircraft. Boeing subsequently terminated the 707 series, though the company did say that the Japanese decision was not specifically responsible for the closure. The 707 production line at Renton, Washington, had been previously shut down, and any new E-3 AWACS production would have occurred at a different location. The company faced tremendous costs to relocate the line for what would likely be only a short production run.

Replacement Airframe

Boeing then turned its attention to the question of a 707 AWACS replacement. The company studied various models of its commercial product line (the 737, the 747, the 757, and the 767), and eventually settled on the 767 as the new AWACS platform.

Meanwhile, Japan looked at a wide range of airborne early warning (AEW) products, including the C-130, the P-3, and the E-2. Tokyo ultimately decided against all of these turboprop options, given the superior command and control and range capabilities of the 767 AWACS over the other candidates.

In late 1991, Boeing launched an internal three-phase program to develop the 767 AWACS (also called the E-767). Phase one involved a rough cost estimate provided to the U.S. government. The company also evaluated the basic structural modifications that would

need to be performed on the commercial 767 airframe. Phase two entailed a detailed cost estimate of the aircraft. Wind tunnel testing of the airframe/rotodome configuration was also performed. By mid-1992, Boeing had more than 100 people working on the 767 AWACS program, even though it did not yet have a firm customer. The final phase of the Boeing development plan was the contract phase, which began with the initial firm order.

Funding for two E-767 AWACS aircraft was included in Japan's FY93 defense budget. The two aircraft were delivered in March 1998. An additional two E-767s were funded in Japan's FY94 defense budget. These were delivered in January 1999.

Equipment. Equipment on the 767 AWACS includes the Northrop Grumman APY-2 surveillance radar, the Lockheed Martin CC-2E computer, BAE Systems displays, two modified Northrop Grumman LN-100G INS/GPS platforms, and the Telephonics APX-103 interrogator set. Optional features include an in-flight refueling receptacle, electronic support measures (ESM) equipment, infrared countermeasures, the Joint Tactical Information Distribution System (JTIDS), and HAVE QUICK secure radios.

767 Airframe Changes. Representing the largest cost item in development of the 767 AWACS were structural modifications to the commercial airframe. Additional changes included a new dual gearbox. Two 150-kVA generators were added to each GE CF6-80C2 turbofan engine. Fuel tanks were modified to include ethylene glycol water heat exchangers for the radar cooling unit. The optional aerial refueling receptacle mentioned above would be located above and aft of the forward door on the port side of the aircraft. Aerial refueling would provide the 767 AWACS an extended on-station time of up to 24 hours.

Funding

Procurement of two E-767s was funded in Japan's FY93 defense budget. An additional two E-767s were funded in Japan's FY94 defense budget.

Boeing 767 AWACS

Contracts/Orders & Options

In November 1993, Boeing received a \$408.4 million contract from the U.S. Air Force for installation of AWACS prime mission equipment on two 767 aircraft for Japan. This effort included procurement, installation, and testing of the AWACS radar and other mission equipment, as well as acceptance testing and delivery of the aircraft. Combined with the direct sale of the two 767 airframes to Japan, the complete deal was worth approximately \$840 million to Boeing.

In October 1994, Boeing received a \$773 million order from the Japanese government for two additional 767 AWACS aircraft.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
Dec	1991	Boeing announces plan to market 767 AWACS
Oct	1992	Boeing selects CF6-80C2 to power 767 AWACS aircraft
	1993	Order for first two Japanese 767 AWACS
Mar	1998	Delivery of first two E-767s to Japan
Jan	1999	Delivery of third and fourth E-767s to Japan

Worldwide Distribution/Inventories

Japan	4
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Forecast Rationale

At least nominally, the 767 AWACS remains part of Boeing's product line. Nevertheless, it is unlikely that any more examples of this aircraft will ever be produced. Current demand in the airborne early warning market is focused on smaller aircraft types and, indeed, Boeing itself promotes the 737 AEW&C (airborne early warning and control) aircraft in this market. The 737 AEW&C is based on the 737-700 narrowbody airliner, which is considerably smaller than the 767 widebody.

Only four 767 AWACS aircraft have ever been built, and all four are operated by the Japan Air Self-Defense Force (JASDF). Various press reports surfaced in 2008 that the Japanese Defense Ministry was interested in the acquisition of additional AWACS aircraft. However, should such an acquisition proceed, the probable choice would be the 737 AEW&C.

RSIP Upgrades

Meanwhile, the JASDF is undertaking an upgrade program, known as the Radar System Improvement Program (RSIP), for its four E-767s. This program will

increase the E-767's radar sensitivity, allowing it to detect and track smaller targets. It will also improve the radar's computer with a new multiprocessor and rewrite software to facilitate future maintenance and enhancements.

Boeing is under contract to supply the RSIP kits, which are built principally by Northrop Grumman under subcontract to Boeing. The kit consists of a new radar computer, a radar control maintenance panel, and software upgrades to the radar and mission system programs.

A Letter of Agreement is scheduled to be signed in 2010 for installation of the RSIP kits, which is planned for completion in 2012. The FY09 Japanese defense budget contains initial funding of JPY6.602 billion (\$73.4 million) to begin the installation effort.

767 Production Life

It is true that, as long as the 767 remains in production, the appearance of additional 767 AWACS aircraft cannot be absolutely ruled out. Boeing has not made any decision regarding when 767 production will end.

Boeing 767 AWACS

Continuing market demand for the 767-300F freighter and a recent, brief revival of demand for the 767-300ER passenger model have been keeping the aircraft in production.

Boeing's new 787 Dreamliner is slated to eventually replace the 767 in the firm's commercial airliner product line. Once production ends of the 767 as a civil airliner, though, the aircraft could live on as a military platform. This would depend on the 767 being selected as the

winner of the U.S. Air Force's KC-X tanker competition. Boeing bid a tanker version of the 767 in the original KC-X contest, which saw the Air Force select an Airbus A330 variant in early 2008. However, Boeing successfully protested the selection, and the program is to now be recompeteted. The company is evaluating whether to again bid a 767 version for the KC-X contract, or instead (or in addition) submit a 777-based design.

Ten-Year Outlook

No production is forecast.

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