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OBEWS (MSQ-T22(V))

Outlook

- OBEWS offers a practical and effective way to increase U.S. Air Force pilots' electronic warfare skills
- OBEWS is installed on U.S. Air Force F-16s and F-15Es
- Newer systems are being developed that will replace the OBEWS in the marketplace
- Production will end after 2007 if no new contracts are signed
- No new production is expected; barring any further developments, this report will be archived in 2009

Orientation

Description. On-Board Electronic Warfare Simulator, an EW training system carried on aircraft.

Status. In production; ongoing logistics support.

Sponsor

U.S. Air Force
Tactical Air Warfare Center
Bldg 351
Range System Programs
Eglin AFB, FL 32542
Tel: + 1 (904) 882-2257
Web site: <http://www.eglin.af.mil>

Application. F-16C/D, F-15E.

Price Range. Estimated unit fly-away cost is \$120,000 to \$140,000, depending on installation particulars.

Contractors

Prime

BAE Systems Electronics & Integrated Solutions

<http://www.baesystems.com/Businesses/EIS/>, 65 Spit Brook Rd, Nashua, NH 03061-0868 United States, Tel: + 1 (603) 885-4321, Fax: + 1 (603) 885-2772, Prime

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OBEWS (MSQ-T22(V))

Technical Data

	<u>Metric</u>	<u>U.S.</u>
Dimensions		
Planned		
Slightly over	10 x 20 x 2.5 cm	4 x 8 x 1 in
Characteristics		
Features	Internally mounted Hosted in data transfer equipment	
Interface with	ALR-56C ALR-56M ALR-69(V) ALE-40(V) E-47(V)	

Design Features. The Air Force developed the MSQ-T22(V) On-Board Electronic Warfare Simulator (OBEWS), a videocassette-sized unit that can be carried in an aircraft. OBEWS provides electronic warfare continuation training for pilots by supplementing the external radar signal environment with digital signals, or by completely simulating that environment. The system is internally mounted and works through the radar warning receiver (RWR), which would be the ALR-56M and ALR-69(V) in the F-16 and the ALR-56C in the F-15E.

It is programmable for up to 100 threats, 10 of them airborne. OBEWS carries a topographical map of the operational area and, using aircraft altitude data, simulates the effect of terrain masking.

Software developed under the OBEWS contract is supplied as government-furnished media to the contractor. OBEWS mission planning and debriefing are done on the Air Force Mission Support System (AFMSS). The software is not hardware-dependent,

and can be ported to systems other than the one specifically developed for OBEWS.

The OBEWS system is protected under United States Patents 5228854 and 5378155.

Operational Characteristics. OBEWS provides onboard electronic warfare continuation training for F-16 and F-15E pilots by supplementing the radar signal environment with digital signals, or by completely simulating that environment. System capabilities make training at pilots' home bases a complement to training received while deployed to fully equipped electronic combat ranges, such as during Red Flag exercises.

Pilots receive realistic aural and indicator inputs from their RWRs and countermeasures dispensers while in flight and on actual missions. They can take evasive action or implement/simulate other countermeasure techniques during actual training missions. OBEWS interfaces with mission planning and debriefing systems, and multiple aircraft missions can be debriefed by combining the information from individual units.

OBEWS (MSQ-T22(V))



Boeing F-15E Strike Eagle Attack Aircraft of USAF

Source: USAF

Program Review

EW Training Intensified in 1980s and 1990s

U.S. Air Force training in electronic combat techniques intensified through the 1980s and 1990s. But even though range facilities improved, tactical pilots could not receive live EW training on one of the major electronic combat ranges as frequently as desired. Sending crews to these ranges is expensive, so to complement this training, an onboard system that provides continuation training at a pilot's home base during actual flight was developed. This is superior to simulator training, the only other alternative.

The AAI Corporation developed a pod-mounted OBEWS proof-of-concept prototype and flight tested it at Eglin AFB, Florida, in 1989. This validated the operational effectiveness and suitability of OBEWS as an electronic countermeasures training device. A follow-on engineering and manufacturing development (EMD) system was internally mounted and worked through each platform's RWR. ALR-56M and ALR-69(V) RWR-equipped F-16s can be equipped with OBEWS. For the F-15E, OBEWS was designed to work through the ALR-56C RWR. IOT&E flight testing of the prototype was completed in FY90.

The Air Force completed EMD and engineers began integrating OBEWS into F-16C/D aircraft in September

1993; planning continued for OBEWS integration into F-15E aircraft.

Factory testing was conducted in FY94, with an emphasis on software.

The FY95 Defense Appropriation Conference added \$20,661,000 to the EW development line to continue OBEWS, and directed the Air Force to combine those funds with \$9,798,000 in FY94 funding to support activities in both years. Congress agreed with the Air Force that the project should be a high priority, calling it essential to pilot training. The conference committee said that the \$120.6 million needed to acquire systems for 900 aircraft and 40 debriefing systems would be less than the probable cost of an advanced combat aircraft. The committee argued that with OBEWS, training could be done with fewer aircraft.

Full Funding from FY96-FY01

The appropriations legislation directed the Air Force to include full funding from FY96 through FY01 to finish development and begin procurement of OBEWS. The committee also directed that no funds be reallocated within the program element without consulting the congressional defense committees.

This is not surprising, given that OBEWS tended to be overshadowed by the larger programs the Air Force was

OBEWS (MSQ-T22(V))

fighting for. Procurement money can be readily drawn from overall aircraft programs.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
Sep	1989	OBEWS Prototype DT&E test report
Dec	1989	OBEWS Prototype IOT&E test report
Apr	1992	EMD RFP release
Sep	1992	EMD contract award
1Q	FY94	Critical Design Review
Sep	1994	Air Force terminates effort; Congress directs program to continue
1Q	FY94	Critical Design Review
1Q	FY96	DT&E on F-16C/D
4Q	FY96	IOT&E on F-16C/D completed
4Q	FY96	Production decision on F-16C/D
2Q	FY98	IOC achieved on F-16C/D
	FY07	Estimated end of production

Worldwide Distribution/Inventories

To date, this is a U.S.-only program.

Forecast Rationale

Practical and Effective

OBEWS offers a practical and effective way to increase U.S. Air Force pilots' electronic warfare skills because aircrews can experience an EW environment while flying actual training missions. With OBEWS, aircrews are in an actual flight environment that includes the distractions and other factors present in combat. Simulator operations do not provide the same level of skill honing.

It is cost-effective to fly missions using these simulators, maintaining the competitive edge that can make the difference between life and death in combat. An added feature of OBEWS is that it offers training against simulations of threat equipment that cannot be used in a live environment where signal transmissions are prohibited for safety or security reasons.

Installations in the F-15E have depended on available funding. Other combat aircraft could eventually be

considered for installations, although budget constraints could forestall such activity. Newer systems are being developed that will replace OBEWS in the marketplace. In addition, the capability can be designed into the avionics suites of next-generation aircraft. Foreign Military Sales (FMS) applications are possible for select allies flying the F-16 and attack versions of the F-15, but none have been recorded. Because of the inclusion of electronic combat-specific features, software controls are strict.

Entering Last Year of Production

The OBEWS system entered its last year of production in 2007. Acquisition on a one-to-one basis with aircraft is not likely since units could be swapped out when an aircraft is retired or taken from service for significant amounts of time. With no new contracts being signed, it appears that OBEWS production has been completed.

Ten-Year Outlook

No new production is expected of the OBEWS system. Barring any further developments, this report will be archived in 2009.