

# ARCHIVED REPORT

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## APX-76(V)

### Outlook

- Despite the valuable role the APX-76 IFF interrogator has played with military aircraft around the world, it is slowly being replaced by more modern and capable systems
- Requests for limited support and spare/repair parts continue to be published in *Federal Business Opportunities*
- Newer IFF systems, such as the APX-111, APX-113, and the APX-114, are being installed in new-production aircraft to replace older systems, such as the APX-72 and APX-76
- No further production of the APX-76 is expected. This report will be archived in 2008

### Orientation

**Description.** Airborne Identification Friend or Foe (IFF) interrogator.

**Sponsor**

U.S. Air Force  
Warner Robins Air Logistics Center  
Robins AFB, GA  
USA  
Web site: <http://www.wpafb.af.mil>

**Status.** Spares/logistics support continue, being phased out of service in favor of more modern systems.

**Application.** The APX-76 equips the F-4, F-15, P-3, SH-60, E-2C, and S-3.

**Price Range.** The APX-76A costs approximately \$3,150 per unit. The APX-76B is estimated to cost \$8,000 to \$9,200 for the basic system.

Price is based on an analysis of contracting data and other available cost information, and on a comparison with equivalent items. Individual acquisitions may vary depending on program factors.

### Contractors

#### Prime

**BAE Systems North America -  
Information & Electronic Systems,  
Advanced Systems Division**

<http://www.cnir.na.baesystems.com>, One Hazeltine Way, Greenlawn, NY 11740-1600  
United States, Tel: + 1 (631) 261-7000, Fax: + 1 (516) 262-8002,  
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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](mailto:rich.pettibone@forecast1.com)

## APX-76(V)

## Technical Data

	<u>Metric</u>	<u>U.S.</u>
<b>Dimensions</b>		
Weight	16.8 kg	37 lb
<b>Characteristics</b>		
Frequency	1090 (transmit) 1030 (receive)	
Power	2 kW (high)	
Duty cycle	1% max	
Sensitivity	-83 dBm	
MTBF	225 hr (APX-76A) 400 hr (APX-76B)	

**Design Specifications.** The APX-76A interrogator provides a beyond-visual-range radar identification capability for all-weather tactical aircraft. It incorporates full AIMS (Air traffic control radar beacon system, IFF, Mark XII, System) capability in IFF/SIF Modes 1, 2, 3/A, and 4, with narrow antenna beamwidth and reduction of “fruit” achieved via interrogation and receiver sidelobe suppression circuits in conjunction with special antennas having sum (mainlobe) and difference (sidelobe) suppression patterns.

The basic system consists of four units: a transmitter/receiver, a switch amplifier, the interrogator control, and an electronic synchronizer. Eight small dipole antennas

are installed on the main search radar antenna of the specific aircraft.

**Operational Characteristics.** The APX-76A Interrogator, like all IFF/SIF systems, is used to identify whether a radar-detected target is friendly or unknown. Friendly aircraft are assigned specific codes with which to respond when queried by the APX-76(V) and similar interrogators on the ground and in the air. Failure to respond indicates either a hostile aircraft or a friendly aircraft with a transponder problem. This latter situation has always been a problem with IFF/SIF and has been the cause of tragic “friendly fire” incidents since the first use of the Identification Friend or Foe technique.



APX-76(V)

Source: BAE Systems

## Variants/Upgrades

**APX-76B.** This version incorporated an all solid-state transmitter and power supply into the APX-76(V) for the U.S. Navy. The unit demonstrated easier maintenance and reliability. The APX-76B is directly interchangeable with its predecessor, installation taking 15 minutes.

The U.S. Navy and U.S. Air Force both developed modifications to the APX-76(V) to improve its

resistance to jamming. Vulnerability studies, equipment testing, and evaluation of broadband equipment revealed the need for upgrades and showed that considerable improvement could be achieved through modifications. These involved changes to four printed circuit cards in the APX-76(V) system.

## Program Review

Production of the APX-76(V) began in 1967 for all branches of the U.S. armed services, as well as with other nations through the Foreign Military Sales (FMS) program. In some applications, it is carried along with the APX-101(V) transponder.

### *Newer Systems Replacing APX-76*

Many users selected the APX-109(V) or APX-111(V) combined interrogator/transponder to replace the APX-76(V) interrogator, as well as the APX-100/APX-101(V) transponders.

In a series of *Commerce Business Daily* announcements in November and December 1998, the Battelle Memorial Institute announced that it was conducting a study for the U.S. Air Force to assess, and ultimately enhance, the functionality, reliability, and maintainability of IFF transponders for Air Force applications. Significant acquisition and logistics cost

savings could be achieved by developing a Common IFF (CIFF) transponder to replace four IFF transponders currently in Air Force Inventory: APX-64(V), APX-72(V), APX-100(V), and APX-101(V). The study would determine the feasibility of, and engineering approach to be used in, achieving a Common IFF transponder.

By late 2000, contracts had been awarded to BAE Systems for CIFF equipment for several new aircraft, particularly F-16s and F/A-18C/Ds. The APX-117/118 systems are in full production.

### *Spare and Repair Parts Continue to be Produced*

Requests for limited support and spare/repair parts continue to be published in *Federal Business Opportunities*.

## Timetable

<u>Year</u>	<u>Major Development</u>
1967	Initial production
1969	Full-scale production
1975	APX-76B introduced
1981	Full-scale production of APX-76B
1983	Most APX-76A models being upgraded with solid-state technology

## Worldwide Distribution/Inventories

<b>Australia</b>	P-3C
<b>Bahrain</b>	F-4J
<b>Canada</b>	CP-140
<b>Egypt</b>	E-2C, F-4E
<b>Germany</b>	F-4F
<b>Israel</b>	E-2C, F-4E, F-15A/B/C/D
<b>Japan</b>	E-2C, F-4EJ, F-15J
<b>Netherlands</b>	P-3C
<b>Norway</b>	P-3B

## APX-76(V)

<b>Saudi Arabia</b>	F-15C/D
<b>Singapore</b>	E-2C
<b>South Korea</b>	F-4D/E
<b>Spain</b>	F-4C
<b>Turkey</b>	F-4E
<b>United Kingdom</b>	F-4J/K/M
<b>United States</b>	USAF: F-4C/D/E/G, F-15A/B/C/D/E
	USN: E-2C, F-14A/D, P-3A/B/C, S-3A/B, SH-60B, SH-60F

## Forecast Rationale

### *APX-114 More Modern and Capable*

Despite the valuable role the APX-76 IFF interrogator has played with military aircraft around the world, it is slowly being replaced by more modern and capable systems. The APX-114 has essentially replaced the APX-76 in the international marketplace.

APX-76(V) activity is primarily for spares and a limited number of replacement units. A modest level of support will be required well into the forecast period because of the number of aircraft carrying the system. No new systems will be produced. In addition, newer systems will begin to be retrofit into older systems equipped with the APX-76. This report will be archived next year.

## Ten-Year Outlook

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No further production of the APX-76 is expected. This report will be archived in 2008.

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