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ARC-222 - Archived 9/2007

Outlook

- ARC-210 has taken market share from ARC-222
- JTRS program will ultimately replace most legacy radios
- Barring any new developments, this report will be archived in 2007

Orientation

Description. Airborne, AM/FM, SINCGARS (VHF) transceiver.

Sponsor

U.S. Air Force
Electronic Systems Center
9 Eglin Street
Hanscom AFB
Bedford, MA 01731-5000
USA
Tel: + 1 (781) 377-4441

Status. In service.

Application. The ARC-222 has been identified with Block 40 F-16C/D aircraft modified for the close air support (CAS) mission, Special Operations Forces aircraft such as the MC-130H and the C-130J, and for the JSTARS aircraft.

Price Range. Using U.S. Air Force budget documentation, the ARC-222 radio set cost \$20,000.

Contractors

Prime

Raytheon Network Centric Systems , Radios and Terminals

<http://www.raytheon.com>, 1010 Production Rd, Fort Wayne, IN 46808 United States,
Tel: + 1 (260) 429-6780, Fax: + 1 (260) 429-6736, Email: commsys@raytheon.com,
Prime

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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

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Technical Data

	<u>Metric</u>	<u>U.S.</u>
Characteristics		
RT-1704 Receiver/transmitter unit		
Weight	3.63 kg	10.0 lb
Size	12.07 cm x 12.7 cm x 17.46 cm	4.75 in x 5.0 in x 6.88 in
C-121319 Panel control unit		
Weight	0.73 kg	1.6 lb
Size	5.74 cm x 14.6 cm x 9.58 cm	2.25 in x 5.75 in x 3.75 in
Frequency Range - FM	30 MHz to 87.975 MHz; 2,320 channels	
Offsets	± 5 kHz; ± 10 kHz	
Frequency Range - AM	108 MHz to 155.975 MHz; 1,760 channels (108 MHz to 115.975 MHz - receive only)	
Frequency Range - HI/VHF	136 MHz to 173.975 MHz	
Maritime band (U.S. or international)	156.025 MHz to 162.025 MHz; 57 preset channels	
Channel change time	50 milliseconds	
Primary power	28 V DC; 5.25 Amps max	
Interfaces		
Remote control	MIL-STD-1553B or C-12319/ARC-222	
ADF - Direction finding	OA-8697/ARD	
Homing	CM-482; ID-48/ARN, ID-1351 A/ARN	
DCT - Digital communications terminal	PSC-5	
IDM - Improved data modem	IAW SSD-IC-DM01	
AIC - Aircraft intercommunication	AIC-10, AIC-18, AIC-25, AIC-6533	
GPS - Global positioning system	TOD IAW ICD-GPS-060	
ERF - Fill data	IAW JTC3A9001C	
DS-102 Fill port	MX-18290/VRC, DTD (CYZ-10)	
Antenna tuning	MIL-STD-188-114	
Crypto/COMSEC	TSEC/KY-58 VINSON	
Automatic radio retransmission		
Night vision compatible	MIL-L-85762	
MTBF	4,650 hrs	

Design Features. The ARC-222 airborne SINCGARS radio consists of two units: a receiver/transmitter and a control unit. The total weight of the system is 11.6 pounds (4.36 kg). It directly supersedes the ARC-186(V) VHF set as a form-fit replacement. 1,760 channels in AM, with a channel change time of 50 milliseconds. According to the manufacturer, the ARC-222's demonstrated mean time between failures (MTBF) is 4,650 hours, and its mean maintenance corrective time (MMCT) is less than 10 minutes.

Operational Characteristics. The radio operates in frequency ranges. It utilizes 2,320 channels in FM and

Program Review

Background. In June 1991, the U.S. Air Force Electronic Systems Division requested sources for production of an airborne SINCGARS (Single Channel Ground and Air Radio System) VHF radio set. The new radio was to replace the U.S. Air Force's earlier ARC-205 HAVE SYNC efforts intended for E-3 aircraft and as a replacement for the ARC-186(V).

A formal Request for Proposals was released in December 1991. The potential competitors were limited to those manufacturers who already had an existing SINCGARS available to demonstrate interoperability. While the number of contractors was not all-inclusive,

the short list consisted of ITT, the U.S. Army prime contractor for the SINCGARS program (ITT developed the ARC-201 airborne SINCGARS for helicopter and light aircraft applications); General Dynamics, the Army SINCGARS second source; and Rockwell Collins, which developed a SINCGARS-compatible version of its ARC-186(V) airborne VHF radio. Magnavox Electronic Systems is believed to have offered a VHF version based on its HAVE QUICK II UHF ARC-164, designated the ARC-195.

In July 1992, Magnavox was selected as the contractor to develop the new radio, which received the ARC-222

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nomenclature in 1993 (and is also known as the Air Force Airborne Radio System, or AFABS). Magnavox decided that the ARC-222 should become a modification of the highly successful CA-663CH SWISS radio. The CA-663CH had successfully tested for SINCGARS interoperability and ARC-186 form/fit. In September 1995, Hughes Defense Communications purchased Magnavox Electronic Systems, resulting in the ARC-222 program being carried under the Hughes name. Raytheon acquired Hughes in 1997, so the ARC-222 is now a Raytheon product.

The ARC-222 was selected for installation in A-10 and Block 40 F-16C/D aircraft modified for the close air support (CAS) mission, with Special Operations Forces aircraft to possibly include the MC-130H, AC-130, MH-53H/J, and MH-60G; HH-60U, TH-53A, MH-53J, C-130J aircraft; JSTARS aircraft; and Airborne Battlefield Command and Control Center (ABCCC) aircraft. The ABCCC installation was delineated as eight ARC-222s per aircraft.

The FY95 budget request indicated that the Air Force was planning to buy 714 SINCGARS-V radios, using

\$10.3 million tucked away under the budget element titled "Other Procurement, Air Force." Another \$9.9 million came from FY94 funds to buy another 696 units. In addition, 485 radios were purchased in April 1994 for \$5.8 million, with another 222 ordered that July in a \$12 million deal. This procurement schedule was intended to permit the Air Force to complete its SINCGARS purchases early.

In a major victory for the unit in July 1994, the ARC-222 was picked for the C-130J. Instead of the multiband ARC-210, the Air Force decided to use the ARC-222 in conjunction with the ARC-164, thus satisfying its VHF and UHF needs, respectively. This decision may have been reversed, as since 1995, the only contract detected was an award by the Royal Australian Air Force. A competitor of the ARC-222, the Rockwell Collins' ARC-210, has received several orders from both international customers and the U.S. armed services. It is believed the ARC-210 may have forced the ARC-222 out of the market.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
Sep	1989	Air Force announces termination of Cincinnati Electronics ARC-205 contract
Nov	1991	Formal RFP issued for ARC-205/ARC-186 replacement
Jul	1992	Magnavox selected as prime for ARC-205/ARC-186 replacement
	1993	Radio type designated ARC-222
FY	1994	Production decision approved
	1994	ARC-222 selected for ABCCC and C-130J aircraft
Jan	1995	Contract awarded for Royal Australian Air Force P-3C program; includes 36 ARC-222s

Worldwide Distribution / Inventories

The ARC-222 is deployed largely on **U.S. Air Force** aircraft, as well as **U.S. Army** fixed-wing aircraft and helicopters. Confirmed foreign customers include the air forces of **Australia, Italy,** and the **U.K.**

Forecast Rationale

ARC-210 is the Big Seller

In recent years, there has been little publicized information on the ARC-222. The Raytheon website no longer lists the ARC-222 under its "Products" section. The last mention of the ARC-222 in U.S. budget documentation was for a \$1.5 million modification to AFSOC MC-130 aircraft in FY04. ARC-222 radios were to be installed or modified as required.

One possible explanation is that the Rockwell Collins' ARC-210 radio has been purchased for aircraft previously thought to be receiving the ARC-222. Over the past few years, the ARC-210 has been one of the top selling radios on the market. To date, nearly 15,000 ARC-210 radios have been produced. In addition to being selected for the F-18, the U.S. Air Force chose the ARC-210 to be included in the Avionics Modernization Program kit for 519 C-130 aircraft. Many international

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customers, such as Spain, Poland, and South Korea, have procured the ARC-210.

***JTRS Products Should Replace ARC-222
Radios***

Most U.S. radios are scheduled to be replaced by devices developed under the Joint Tactical Radio System (JTRS) program. The objective of this program is to produce standardized open-architecture, software-programmable communication systems. JTRS has had some difficulties and the U.S. military has had to initiate a JTRS Alternative Communications effort. The JTRS

Alternative Communications for army helicopters consists of ITT SINGARS and Raytheon ARC-231 radios. Forecast International believes that other airborne applications will also use this Alternative Communications suite or the popular ARC-210 in place of the ARC-231.

The lack of any new contracts in recent years, the omission of the ARC-222 from the Raytheon website, and the U.S. military's focus on JTRS suggest the ARC-222 has reached the end of its production lifecycle.

Ten Year Outlook

No production is forecasted.

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