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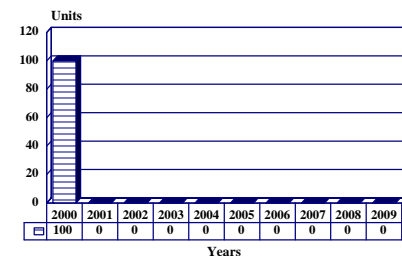
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VRC-12(V) - Archived 10/2001

Outlook

- Replacement of VRC-12 radios is ongoing
- US SINCGARS production is anticipated to end in 2002
- Israel replacing VRC-120 with the newer Machiol system
- Barring any unexpected activity, this report will be archived in the near future

10 Year Unit Production Forecast
2000 - 2009



Orientation

Description. The VRC-12 and its family are VHF/FM vehicular radios.

Sponsor

US Army
Communications - Electronics Command
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USA

Contractors

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Status. In operational service with the US and various nations. Still in production, although procurement is likely to have slowed down as the US shifts its favor to SINCGARS.

Total Produced. Over 285,150 units, including variants, are estimated to have been produced through 1999.

Application. Tactical VHF/FM communications for various vehicles and operational missions; systems can be installed in jeeps and weapon and personnel carriers, as well as in tanks. Also used in marine craft.

Price Range. Unit costs for the VRC-12 family (in FY92 dollars) range from US\$15,200 for the basic VRC-12 set to US\$8,200 for the VRC-46, to US\$21,000 for the VRC-45, and to US\$16,000 for the VRC-49. (Prices based on contract cost averaging.)

Technical Data

Design Specifications. The VRC-12(V) is a VHF-FM radio set consisting of the RT-246/VRC automatic receiver/transmitter, the RT-524/VRC manual receiver/transmitter (with built-in loudspeaker), and the R-442/VRC auxiliary receiver as its basic components. Combinations of these and other components make up the VRC-43 to -49 series of radios.

The VRC-12(V) family supplies short-range, two-way, radio telephone communications in the 30 to 75.95 MHz range, with channel spacing of 50 kHz and a total of 920 channels available. The transmitter has a power output of 35 watts minimum. The sections have a sensitivity of 0.50 uV for 10 dB (S+N+D)/(N+D) for 8.0 kHz deviation. As many as two additional receive

channels can be monitored simultaneously with certain sets from this series.

Operational Characteristics. The various radio sets find their primary use in vehicles such as jeeps, trucks, armored personnel carriers and tanks. The VRC-12(V) family can also be used in marine craft and in some communications shelters and vans. The radios can be interconnected with other radios for relay use when specific sets need to communicate beyond their normal range. In certain applications, the VRC-12(V) family radios are remotely controlled and are connectable with remote telephone facilities for radio-wire integration operation. The radios can be used by themselves or in conjunction with vehicular radio-intercom gear.

Variants/Upgrades

VRC-12L-2. Receives and transmits on one channel, while at the same time monitoring an additional channel. Also provided is push-button tuning of 10 preselected channels.

VRC-43. Receives and transmits on one channel and also has push-button tuning of 10 preselected channels.

VRC-44. Receives and transmits on one channel, while at the same time monitoring two additional channels. Also provided is push-button tuning of 10 preselected channels.

VRC-45. Supplies simultaneous two-way operation on two different channels with push-button tuning of 10 preselected channels.

VRC-46. Receives and transmits on one channel with local manual channel selection.

VRC-47. Receives and transmits on one channel, while at the same time monitoring an additional channel.

VRC-48. Receives and transmits on one channel, while at the same time monitoring two additional channels. Also provided is local manual channel selection.

VRC-49. Supplies simultaneous two-way operation on two separate channels with local manual channel selection.

VRC-120. The Tadiran low-cost upgraded version of the VRC-12.

KY-189 Handset. In 1991, NAPCO introduced the KY-189 secure intelligence handset, a self-contained COMSEC device that can be connected directly to the radio set, replacing the standard handset. Using the handset's 15-character keypad, the user can scramble transmissions between KY-189-equipped PRC-77/VRC-12 radio sets, including selective transmissions to

an individual radio, group or the entire net. The handset also contains a small LED screen for displaying unit ID and date-time group of each call on the net.

New Synthesizer. The Swiss firm W+F Bern Electronics offers the new A-2030 single-unit frequency

synthesizer for the VRC-12 family's RT-524/246/442s transceivers, replacing the A-2000 and all A-3000 modules at a considerable weight and space savings.

Program Review

Background. Between 1967, when production began, and the end of 1999, over 285,000 VRC-12 radios and variants are estimated to have been manufactured for the US Army and various governments (estimated at some 50 countries). The VRC-12 and its manpack counterpart, the PRC-77, have been said to be the most widely used and enduring VHF tactical radios ever produced, as well as battle-tested all over the world.

The VRC-12 was substantially updated since production first began. Literally thousands of refinements to the original design have been made to incorporate changes prompted by battlefield experience. The latest production VRC-12 was an up-to-date radio more capable than the original VRC-12 produced 20 years ago, and also reported as much more reliable. For instance, the earlier generation germanium transistors were replaced with silicon transistors.

Tadiran Upgrade. In June 1994, Tadiran announced the introduction of its VRC-120 VHF combat net radio as a full replacement for the popular VRC-12. The VRC-120 uses the same mounting and cabling as the VRC-12 system. The new version is reported to last longer, work better, and cost half of what older frequency-hopping radios cost.

The Israeli Ministry of Defense announced in August 1995 that it had awarded Tadiran a US\$80 million contract to provide VRC-120 radios to replace the Israel Defense Forces' VRC-12 radios. This initial three-year contract was used to procure VRC-120s for use in tanks, armored vehicles and other various vehicles.

In 1999, the Israel Defense Force reportedly began to replace its VRC-120 radio systems with the new

Machiol system. These upgrades were reportedly taking place in vehicles such as the M-60 battle tanks, the M113, the Merkava, and the Puma APCs. Israel is believed to be in the process of replacing all of its VRC-12 radios.

SINGGARS Impact. When SINGGARS came onto the defense communications market, it rapidly became a popular system. Numerous nations have already procured SINGGARS units and many others are in the process of SINGGARS procurement. Recently, a contract was awarded to ITT for SINGGARS units, to be used in the United Kingdom's Bowman program.

Most, if not all, US VRC-12 radios will probably be replaced by SINGGARS variants by the end of 2000.

Joint Tactical Radio System (JTRS) Impact. In February 1998, the US Office of the Secretary of Defense announced that the JTRS program would be the only radio system purchased after 2000. None of the US military branches would be allowed to procure anything but JTRS – with few exceptions. The Pentagon did permit exceptions to the US Navy for its Digital Modular Radio (DMR), to the US Air Force's Airborne Integrated Terminal Group, and to the US Army's Near Term Digital Radio. These exceptions were granted because JTRS would not be fully operational when each branch needed to fill necessary radio orders.

Since SINGGARS, the replacement for VRC-12 radios, is already "on its way out," it is assumed most or all VRC-12 radios have already been upgraded to SINGGARS variants.

Funding

No specific funding information is available.

Recent Contracts

<u>Contractor</u>	<u>Award (\$ millions)</u>	<u>Date/Description</u>
Tadiran	80.0	Aug 1995 – Israeli Ministry of Defense contract for the VRC-120 radio to replace Israel Defense Forces' VRC-12 radios. The initial contract was for three years.
Fidelity Technologies	9.1	Oct 1996 – An FFP ID requirement contract for various spare/repair parts of VRC-12(V) family of radios. Contract to be completed by year-end 2000. (DAAB07-97-D-C001)

Timetable

<u>Year</u>	<u>Major Development</u>
FY 1967	Production initiated
FY 1994	Tadiran introduces VRC-120 upgraded radio
FY 1995	Spares and export sales
FY 1995	Tadiran awarded US\$80 million contract produce VRC-120 radios for Israel
FY 1996	Fidelity awarded contract for spare/repair VRC-12 parts
FY 1998	US Secretary of Defense mandates no radios but JTRS to be procured after 2000 in US
FY 2000	Production of VRC-12 spares/repair parts anticipated to be concluded
FY 2002	Anticipated completion of US SINGARS production

Worldwide Distribution

The VRC-12(V) and its family members have been sold to customers in several countries (said to be around 50 nations). Those countries that *Forecast International* is aware of include **Canada, China, Egypt, Greece, Israel, Pakistan, South Korea, Switzerland, Turkey** and the **United States**.

Forecast Rationale

The VRC-12(V) family of radios, although successful, is rapidly being replaced as updated systems become available.

The scheduled replacement for the US VRC-12(V) radios, the SINGARS radio, is actively replacing the older VRC-12. At this time, production of SINGARS for US military services appears to be winding down. All US SINGARS production is expected to be completed by year-end 2002. This infers that by now, year 2000, most or all VRC-12 radios have been replaced. The following forecast allows for the completion of the last known VRC-12 contract, placed with Fidelity Technologies in 1996, with an optimistic estimation of 100 spares being manufactured in the year 2000.

The belief that most US VRC-12(V) radios have already been replaced is bolstered by the fact that the

replacement for US SINGARS units, the US Joint Tactical Radio System (JTRS), is currently in the research, development and evaluation stage, and has already been slated as a SINGARS upgrade. JTRS is intended to replace all US military radio systems, including SINGARS. For instance, in February 1998 the US Secretary of Defense announced that JTRS would be the only radio system allowed to be purchased after 2000. None of the US military branches would be allowed to procure anything but JTRS, with few exceptions. These exceptions are not known to have included the VRC-12 radio system.

Outside the US, VRC-12 prospects appear to be just as dim. The last known contract for VRC-12 systems was awarded in 1995, by the Israel Ministry of Defense, for delivery of the VRC-120 radio. The contract was a large one, and some of these systems may still be in use. However, by 1999 it was reported that the Israel

Defense Force was replacing its VRC-120s with the newer Machiol system. Since no other foreign interest in the VRC-12 radio family has been publicly expressed since the Israel contract, and since there are numerous other radio systems with enhanced capabilities on the market, it is assumed that no additional contracts will be awarded in the future.

The VRC-12 family of radios has apparently reached the end of its production life. While the VRC-12(V) family of radios has been extremely successful, these

radios have become antiquated. Therefore, no future VRC-12 contracts are expected to be awarded, and spares/repair parts production is not expected to continue past year-end 2000. Barring any unexpected activity, this report will be archived sometime in the near future.

Please see the SINCGARS and JTRS reports, located in *Forecast International's* C³I binder, for more detailed information on these two systems.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR PRODUCTION

Designation	Application	Thru 99	High Confidence Level			Good Confidence Level			Speculative			Total 00-09		
			00	01	02	03	04	05	06	07	08		09	
VRC-12(V)	VEHICULAR COMMUNICATIONS (VARIOUS)	142650	100	0	0	0	0	0	0	0	0	0	0	100
VRC-12(V)	Prior Prod'n:	142500	0	0	0	0	0	0	0	0	0	0	0	0
Total Production		285150	100	0	0	0	0	0	0	0	0	0	0	100