

AMSEL-RD-MAA

Man Pack, Team Pack, HF Military Radio Sets

Chief, Admin Office  
AMSEL-AD-H  
ATTN: Mr. Stevenson

Asst Admin Officer  
R & D Dir

12 Aug 65

In reference to phone con of 11 Aug 65 inclosed find copy of summary, subject as above.

1 Incl  
as

M. K. FEFFERMAN  
2d Lt, AGC  
Asst Admin Officer

# DISPOSITION FORM

(AR 340-15)

REFERENCE OR OFFICE SYMBOL

AMSEL-RD-MAA

SUBJECT

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to Chief, Admin Office

FROM Asst Admin Officer

DATE 12 Aug 65

CMT 1

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MAN PACK, TEAM PACK  
HF MILITARY RADIO SETS

Prior to 1940 the number of different types of radio sets in the Army inventory was extremely small. Up to this time, and actually up to the time of our entrance into World War II, the communications system of the Army was basically a wire system.

Radios were designed for the specific use of artillery batteries, or infantry divisions, or interceptor squadrons. They were based on a concept of warfare which did not require that they bear the main load or necessarily inter-communicate with each other. The sets were in the medium and high frequencies, and were tone or CW. The hand-cranked generator, loop antennas, and manual tuning were characteristic of these sets.

The SCR-131, -161, and -171, were the three sets that were available just prior to 1940. These were CW, short range, loop antenna, 4-5 megacycle, portable or semi-portable equipments. The SCR-131, which lasted until 1944, was used by the Infantry and Cavalry, the SCR-161 by the Field Artillery, and the SCR-171 for air-ground and division headquarters communications. This latter set had a long wire antenna for the longer ranges over which it was required to operate.

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The first real man pack equipments designed for Signal Corps use were the SCR-194 and SCR-195. These were designed in 1935 as experimental short range radio telephone equipments covering 27-52 megacycles, and 52-65 megacycles, for Artillery and Infantry use respectively. The successful use of these in the 1939 maneuvers foreshadowed the later demand for man pack radios in all frequency ranges, and conditioned the subsequent development of radios towards maximum emphasis on weight reduction as a basic requirement.

The war period of 1940-1945 saw some development of HF man pack and team pack equipment, though the major emphasis was on the development of FM equipment for field and vehicular use, and on higher powered vehicular HF equipments such as the SCR-299.

The first of these was the SCR-284, which was a combination field and vehicular equipment powered from a hand generator in field use, and a dynamotor in the vehicular case. It provided both CW and voice communication in the 3.8 to 5.8 megacycle band. Weight was about 120 pounds, of which the largest piece was about 45 pounds, so that it was not too easily man-handled in the field. It was the official replacement for the SCR-131, SCR-161, and SCR-171 sets.

As an interim measure, the SCR 288 was built until the SCR-284's became available. These were similar to the 284, and were a copy of a Swedish designed set. Only a few of these were actually built.

While the SCR-284 was going through its production tooling phase and initial production, the Fort Monmouth laboratory was working on a newer and still lighter HF radio. When the demand in 1941 came for a unique set for use by special troops trained specifically for Arctic operations, this unit was brought out and a limited quantity were produced by the Rauland Corporation of Chicago. This became the SCR-694-AW, was painted completely white, including all accessories, and was installed in the Weasel. It provided voice and CW in the 3.8 to 6.5 megacycle range. Performance wise it was almost the equivalent of the SCR-284, and had the considerable advantage of a 25-pound transceiver. It was, of course, a quick reaction type of design and was lacking in such refinements as waterproofing, fungus proofing, operation under high temperature, etc. It was not a completely militarized package.

A new development was then initiated to correct these deficiencies and this resulted in the SCR-694-C which became available in 1944. It, like the SCR-284 that it replaced, had both a team pack and a vehicular capability. It did have one

important advantage over its predecessor. It could be packaged so that two men could carry the station and it could be jumped. It was used in the initial parachute drops into Europe.

A special version of the SCR-694, which was called the AN/TRC-2, was developed and manufactured in 1944 for special use in the Pacific theatre. The purpose was to get a completely independent station that could be infiltrated into the Philippines and operate for some months without resupply. The set consisted of the basic SCR-694, a new transceiver covering the 2 - 3.4 megacycle range, gas engine generators, spare parts, gasoline, etc. It comprised about 20 forty pound packboard loads. Several hundred of these were delivered.

The next step in the development cycle was the AN/GRC-9. Having the SCR-694-C in production and use the laboratories set about a still more sophisticated set. In 1944 dual development contracts were placed with the Crosley Corporation (AVCO) and the Rauland Corporation. This became a multi-band set covering 2 to 12 megacycles. Complete with all accessories the set weighted 116 pounds, broken down into three 35-40 pound loads. Stripped down to only essentials for voice operation from a whip it weighted about 87 pounds.

The AN/GRC-9 was completed in 1945 and has been a standard issue item since that time.

An attempt was made in 1946 to start work on the AN/PRC-18, a proposed replacement to cover 1.5 to 24 megacycles, and to be part of a new HF family which included the AN/GRC-19, and a series of higher powered sets nomenclatured the AN/GRC-21, and AN/GRC-23. Only the AN/GRC-19 was ever completed.

There was a complete hiatus then until early 1959 when to satisfy the need for a long range reconnaissance set, the AN/TRC-77 was developed on a crash basis by Electronic Defense Laboratory. This was a simple, crystal controlled, CW only set of about 20 watts, powered by a rechargeable nickel-cadmium battery. After initial tests in Europe, action on procurement was delayed for about 15 months. Then a crash requirement for 120 equipments was placed on EDL in June 1961. These were delivered in March through May 1962. There is a current procurement for 970 sets with deliveries scheduled to start September 1965.

When the current program of SSB equipment developments, the AN/GRC-106 and AN/GRC-108, was initiated, it included a team pack set, the AN/GRC-105. However, Army staff did not approve the CONARC requirement on the basis that a man pack instead of a team pack set was the real requirement. This was in March 1960.

\* The Signal Corps quick reaction facility operated by Sylvania at Mt. View, California.



When in Spring 1963 the XVIII Airborne Corps needed a man pack HF SSB set, the only available source was the U. S. Marine Corps AN/PRC-47. This is a Collins designed HF SSB transceiver covering 2-12 megacycles, and providing a 100 watt transmitting capability. It breaks down into two 40-pound packages including a rechargeable secondary battery. A few of these were procured for this purpose.

In 1964 a QMR for a man packed set, the AN/PRC-62, was approved and this equipment is now in the last stages of development. When tested and approved, it will replace the AN/GRC-9, and the AN/TRC-77, and AN/PRC-47 and any other interim sets that might be procured for Viet-Nam (i. e. Hughes HC-162). This set will provide high quality voice communications, high speed (burst) CW and have a capability for receiving signals from the older AM voice sets. The basic transceiver will weigh about 14 pounds. With various choices of battery a complete station will weigh between 30 and 38 pounds. This set represents about the maximum capability and minimum weight that can be achieved today in a military package. It is expected to have a service life of about 10 years.

For the future the Army is doing exploratory development work on a man pack wide band HF and VHF set covering 2 to 76 megacycles that will have capabilities of both SSB and FM

transmission. It is hoped that by the use of integrated micro-electronic design techniques that this objective can be achieved. It has the potential advantage of being able to consolidate the Army's present separate HF and VHF tactical command systems into a single system.