

History of Communications Equipment

The first radio was used experimentally in 1899 between Fire Island and the lightship 12 miles away. A year later, the Signal Corps installed two stations for New York harbor traffic. In 1903, a pair of stations provides space telegraph - in those days an excellent description of radio - across Norton Sound to and from Nome. By 1908, there were eight stations in Alaska, six in the United States, five upon army transports, three in the Philippines and one in Cuba. Their spark-gap sets ranged in power from 750 watts to 10 kilowatts. Field tests improved these sets far beyond the Boer war models; meanwhile, the Signal Corps developed the army's first vehicular sets, loaded into wagons or on pack mules. Cumbersome as these were, they illustrated the fact that the researches of Maxwell and Hertz were giving birth to the era of Marconi and DeForest. Military communication was assuming its 20th-century character. The emergence of a science of electronics was paralleled by the appearance, after long waiting and frustration, of a science of heavier-than-air flight. On 1 August 1907, the current Chief Signal Officer, BG James Allen, established an aeronautical division, "to have charge of all matters pertaining to military ballooning, air machines and all kindred subjects." In 1918, the Signal Corps was faced for the first time with the need to install radio apparatus aboard airplane. American air-to-ground radiotelephone was not ready.

There was little progress made in communication history until 1932. The EE-8 was standardized in that year, although not procurable until 1937. It was one of the items developed well in advance of WWII, which proved them in that conflict. Outdoing the maximum transmission range of its predecessor, the EE-5 by at least six miles, it was also lighter and "talked up much better." There was little development of radio systems until 1939. In that year the first "walkie-talkie" was developed. It was known as an SCR-193, 194 and 195. The SCR-194 was not convenient, however, to carry because of its size and weight. By 1942, the SCR-536 "handy-talkie" and the SCR-511 "pogo-stick" radios came into being. Radios were also being produced for the armored forces. These radios were called the "500" series sets. The first models were the SCR-509 and SCR-510. These sets were being delivered to Fort Knox. At the same time a new tank, M3, equipped with the latest radio, the SCR-528, went on display at Aberdeen Proving Grounds for the scrutiny and comments of representatives of the air corps, signal corps, and ordnance department. Company commanders would have the SCR-508 (with a transmitter and 2 receivers); battalion and platoon commanders, the SCR-528s (a transmitter and one receiver); all the rest would have SCR-538.

Requirements for Radio Set AN /PRC-6

The PRC-6 was formally started on March 1945. Intended primarily as a replacement for radio set SCR-536, the PRC-6 was to be used as a means of communication between foot troops of the most forward elements (company- platoon) and between infantry and close support armored elements. This new set had to be compatible with radio sets the SCR-300 and GRC3 through 8 (b) and had to have a range of 300 yards in jungle and one mile in rolling terrain. As to weight, it could weigh a maximum of nine pounds, but six pounds was considered desirable. Its size and shape had to be such that it could be easily concealed. The radio set and its battery good the separate to facilitate concealment on the body. Its mode of operation was to be FM-modulation, with one preset and 44 possible channels. The battery had to have a minimum life of four hours, with a 2:1 receive-transmit ratio. And, lastly, shape of microphone and headset had to be the type to permit free use of the hands.

Development of the "Handy-Talkie"

At the outset, opinions differed from army personnel as to the desirable form the PRC-6 should take. Several configurations were made. Motorola made its initial development model curved to fit the body, to facilitate concealment. In comparison with other FM equipment, this receiver-transmitter using miniature tubes was very light but required an 11-pound battery for operation.

While the contractual development of the PRC-6 was taking place, the laboratories were carrying on a parallel development of this equipment: 11 newly developed subminiature tubes (acorn tubes). These new tubes enabled the laboratories to designed and employ a new FM circuit which delayed the requirement for a chain of multiplier stages. The resultant circuit substantially reduced the radio's power

input requirements, permitting a realistic design for the PRC-6. To continue development of the set along these lines, a contract was let to Raytheon with the ultimate aim of producing a squad radio, which could be manufactured. Raytheon succeeded in its final laboratory model in reuniting the receiver-transmitter and battery in one case, resulting in the production of the final model of the PRC-6, known as the "handy-talkie."