

RADIO, U.S. ARMY

A Working Bibliography of MHI Sources

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EARLY RADIO NOTE & SOURCES

The U.S. Army showed early interest in the revolutionary medium of radio communication. Guglielmo Marconi, the Italian electrical engineer who developed wireless telegraphy, first transmitted electrical messages without wire in 1896, and within two years the US Board of Ordnance and Fortifications authorized funds for Signal Corps investigation of the military feasibility of this new means of communication. Meanwhile, certain officers of the Signal Corps had already been experimenting with wireless on their own. CPT George O. Squier, notably, conducted personal experiments with the new medium in 1897, as did COL James Allen. (Both later would become Chief Signal Officers, 1917-1923 and 1906-1913, respectively.) Another officer, CPT Charles E. Kilbourne had experimented independently with wireless as early as 1891.

Signal Corps development of radio, delayed slightly by the Spanish-American War of 1898, became an Army reality in Sep 1899 with successful operation of a radio system between Fire Island, NY, and the island's light ship, over 10 miles distant. It constituted the first publicly operated radio station in the U.S. Thereafter, the Signal Corps established radio systems in San Francisco harbor (1900), Alaska (1903), the Philippines (1906), and Cuba (1907). Meanwhile, experimental work continued, and in the 1901 Pan American Exposition held at Buffalo, NY, the Signal Corps' wireless display and demonstration drew enthusiastic crowds. By 1905, the Corps' developmental interest had focused on short-range communication and portable equipment.

In 1907, standardized wireless equipment was first issued to service schools and to Signal Corps field units. At the same time, the corps looked into "wireless telephony," which transmitted voice instead of electrical dots and dashes. Despite this initial venture into the advanced field of "radio-telephony," Field Service Regulations of 1908 did not mention wireless in its coverage of communication. The 1910 edition of the FSR, however, recommended that wire or wireless telegraph be employed for considerable distances.

By 1912, the Signal Corps had devised a field radio pack (mule-borne) and an airplane radio set, and in 1914 published its first manual on radiotelegraphy. Army radio equipment operated with some success in the Vera Cruz expedition, 1914 and along the Mexican border, 1916. However, only limited success marked wireless use on the Punitive Expedition into Mexico, 1916-1917. Unfortunately, no effective field radio was developed in time for employment in WWI by the US Army-or any other army for that matter.

SOURCES:

- Clark, Paul W. "Major General George Owen Squier: Military Scientist." PhD dss, Case Western Reserve, 1974. pp. 56- 57 & 77-78. UG128.S78.C53.
- Clendenen, Clarence C. Blood on the Border: The United States Army and the Mexican Irregulars. NY: Macmillan, 1969. pp. 333-34. F1234.C63.
- Greely, Adolphus W. Reminiscences of Adventure and Service. NY: Scribner's, 1927. p. 159. E181.G79.
By Chief Signal Officer, 1887-1906, who notes that CPT Kilbourne's 1891 experiments resulted in a "telephonic conversation over a break of twenty-two feet."
- Reber, Samuel. "The Signal Corps Field Wireless Apparatus." Lecture, Army War College, 24 Jan 1907. 28 p. UG613.R2.
- Smith, Merritt Roe, ed. Military Enterprise and Technological Change: Perspectives on the American Experience. Cambridge, MA: MIT, 1985. UL170.M55.
See Chap 6 for comparison of US Navy development of radio.
- Squier, George O. Telling the World. Baltimore: William & Wilkins, 1933. Chaps 4-5, especially pp. 133-34. TK5115.S67.
See also his papers, Arch.
- U.S. Army Signal School. Historical Sketch of the Signal Corps (1860-1928). Ft Monmouth, NJ: 1929. pp. 63-64. UJ23.A55.
- U.S. War Dept. Office, Chief of Staff. Annual Reports of the Chief Signal Officer, 1898-1917. UJ23.A1.
See esp reports of 1903 (pp. 47-48); 1904 (pp. 37-40); 1909 (pp. 24-28); & 1914 (pp. 9-11).
- _____. Field Service Regulations, United States Army, 1908 & 1910. Wash, DC: GPO, 1908 (pp. 47-48); 1910 (pp. 55-56). U173.A5.

See also:

- Papers of William Chubb & Samuel Reber, Arch. WWI Vets Survey: Signal Corps. Arch.

PRE WWII

Morgan, William A. "Invasion on the Ether: Radio Intelligence at the Battle of St. Mihiel, September 1918." Military Affairs (Apr 1987): pp. 57-61. Per.

Squier, George D. Papers. Arch.

Chiefly his typescript diaries as military attaché, London, WWI.

-The first published Army radio manual appeared in 1914 as a Signal Corps circular, namely:

U.S. War Dept. Office, Chief Signal Officer. Radiotelegraphy, U.S. Signal Corps, 1914: Circular No. 1. Wash, DC: GPO, 1914. 122 p. UJ190.R32.

-According to the 1914 Report of the Chief Signal Officer (UJ23.A1), p. 53, the manual's circular form anticipated revisions and enlargement. The circular was dated 1 Jan 1914. As anticipated, it was soon revised in a second edition 9 May 1915 (UJ190.R32). Another edition (2d revised, 135 pages) appeared in Oct 1916 as a manual, not a circular.

-The US Navy Dept appears to have issued its first radio manual several years earlier, in 1907. At least two revisions had been published by the time the Army's 1914 manual appeared. See:

Robinson, S.S. Manual of Wireless Telegraphy for the Use of Naval Electricians. (2nd revised) Annapolis: US Naval Inst, 1911. 212 p. TK5741.R7.

-Precursors of the first War Dept radio manual and other official or semi-official instructional materials were available before 1914, indicated by these items:

U.S. War Dept. Office, Chief Signal Officer. Drill Regulations for Field Companies of the Signal Corps (Provisional). Wash, DC: GPO, 1911. pp. 180-89. UJ23.A2.O75.

Russel, Edgar. Wireless Telegraphy, Signal Corps, U.S. Army: Principles--Field and Station Equipment. Fort Leavenworth, KS: Army Service Schools, 1910. 44 p. UJ190.72.R87.

Wieczorek, George A. Notes on Wireless Telegraph Stations. Fort Wood, NY, 18 Feb 1909. 12 p. UJ190.W53.

-Commercial manuals and treatises were available, such as the following publications:

Maver, William, Jr. Maver's Wireless Telegraphy: Theory and Practice. NY: Maver, 1904. 206 p. TK5742.M43.

Tunzelmann, G.W. de. Wireless Telegraphy: A Popular Exposition. London: Office of Knowledge, 1902. 104 p. TK5742.T82.

Zammarchi, Angelo. La Telegrafia Senza Fili di Guglielmo Marconi. Bergamo, Italy: Istituto Italiano D'Arti Grafiche, 1904. 154 p. TK5115.Z3.

WORLD WAR II

Childs, Harwood L., & Whitton, John B., editors. Propaganda by Short Wave. NJ: Princeton, 1942. 355 p. D810.P6.P76.

Fechet, James E. Radio in Airmanship. NY: National Aeronautics Council, 1942. 124 p. TL695.F4.

Franco, Arnold. "In December 1944, a Small Radio Code-Breaking Unit Intercepted a Message That Should Have Tipped Off SHAEF to the Battle of the Bulge Attack." Military Heritage (Aug 2000): pp. 26 & 28-31. Per.

Meo, L.D. Japan's Radio War on Australia, 1941-1945. London: Melbourne University, 1968. 300 p. D810.P7.J362.

Morley, Patrick. "This is the American Forces Network": The Anglo-American Battle of the Air Waves in World War II. Westport, CT: Praeger, 2001. 174 p. UH855.M67.

Rolo, Charles J. Radio Goes to War. NY: Putnam's, 1942. 293 p. D798.R6.

Soley, Lawrence C. Radio Warfare: OSS and CIA Subversive Propaganda. NY: Praeger, 1989. 249 p. D810.P7.U643.

U.S. Army. 2d Mobile Radio Broadcasting Co. History-Second Mobile Radio Broadcasting Company, December 1943-May 1945. n.p., n.d. 89 p. #2101-2MRB.1945.

_____. Signal Corps. Walkie-Talkie-Past, Present and Future Ft. Monmouth, NJ: Signal Corps Engineer Lab, 1951. 10 p. UG610.U6.

- U.S. War Dept. German Radio Communication Equipment: Technical Manual 11-227, dated Jun 1944. 55 p. MilPub-TM.
- _____. Radio Set SCR-593-A: Technical Manual 11-859, dated 2 Mar 1943. 83 p. MilPub-TM.
- _____. Signal Communication Equipment Directory, Radio Communication Equipment. Technical Manual 11-227, dated 10 Apr 1944. 124 p. MilPub-TM.
- _____. US War Department Call Sign List: War Dept Pamphlet 11-4, dated Dec 1944. 417 p. MilPub-Pams.
Nontactical four-letter station identifications; also Pam 11-6, dated 1945 (47 p.)
- _____. Gen Staff, G-2. "Electronic Countermeasures." Intell Rev (No. 26, 8 Aug 1946): pp. 49-58. UB250.R484.
Survey of WWII ops.

See also:

- War Dept index to pubs (FM21-6, 1945-48) & bib on Electronic Warfare

SINCE 1945

- Briscoe, Charles H. "U.S. Armed Forces Radio Stations in Postwar Japan and Korea." Veritas Vol. 7, No. 2 (2011): pp. 41-42. Per.

NOTE: RADIO MINIATURIZATION & TRANSISTORS, WWII

A search of sources uncovered no indication that the 82nd Airborne Division used miniaturized vacuum tubes or other small-scale radio components during Operation MARKET-GARDEN. The signal equipment of US airborne divisions at that time appears standard and non-miniaturized, even though the pertinent technology existed, having already been proven in the proximity fuze program.

Published and unpublished histories of the 82nd and 101st Airborne Divisions, XVIII Airborne Corps and First Allied Airborne Army contain no details of actual signal equipment used; instead, they concentrate on operations and combat. The same holds true for the pertinent published memoirs and biographies. Even the microfilm records of the 82nd Division on file here lack detailed reports of the G-4 and Signal Section.

The radios used by the airborne divisions are listed in General Board Report No 16, pp. 8-9, 30 & 32 (D769.A5no16). See also Technical Manuals 11-242 (Feb 1946), 11-235 (May 1945), and 11-615 (Apr 1945), which reveal ordinary tubes in several of those standard radios. No hint of miniaturization appears in the descriptions and illustrations of the radio sets in pertinent articles, from Signal Corps Technical Information Letter No 23 (Oct 1943), pp. 37-38 & 42-45, and No 30 (May 1944), pp. 25-28.

Miniaturization of some electronic equipment did occur during the war, most notably in the British-initiated variable time or proximity fuze, which was, in effect, a miniaturized radar set and included miniaturized vacuum tubes. However, commensurate miniaturization did not apparently take place in other wartime electronics. Although the war's radios progressively became more lightweight and small, no tactical model appears to have been sufficiently reduced to be considered miniaturized.

Furthermore, a monograph by William Stevenson, "Miniaturization and Microminiaturization of Army Communications-Electronics, 1946-1964" (US Army Material Command, 1966) asserts that wartime miniaturization technology was limited electronically to the proximity fuze. (The monograph is not on file here, but its contents were reported by Archivist Simchick, Historians Office, Communications-Electronics Research Command, Ft Monmouth, NJ). In short, radio miniaturization awaited postwar development.

SOURCES:

Baldwin, Ralph B. The Deadly Fuze. San Rafael, CA: Presidio, 1980. UL400.71.P7.B34.

Baxter, James P. Scientists against Time. Boston: Little Brown, 1947. pp. 226, 232-33, & 241. Q127.U6.B34.

Johns Hopkins Univ. Operations Research Office. Effectiveness of Miniature Radios in Small Infantry Units. Chevy Chase, MD, 1956. pp. 7 & 97. UJ190.E33.

Smith, Merritt Roe. Military Enterprise and Technological Change: Perspectives on the American Experience. Cambridge, MA: MIT, 1985. UL170.M55.
See Chap 6 on transistor development.

Thompson, George R., and Harris, Dixie R. The Signal Corps: The Outcome. In the USAWWII series. Wash, DC: OCMH, 1966. pp. 504-505. D769.A533v6pt5v3.

U.S. Army. Signal Corps Engineering Laboratories. Walkie-Talkie: Past, Present & Future. Ft Monmouth, NJ, 1950s. UG610.U6.

Although no US tactical radio became miniaturized during the war, the SCR 695 was indeed a lightweight model. It replaced the SCR 284 in the airborne divisions. One can compare the two radio sets in the War Dept's Radio Communication Equipment: Technical Manual 11-227, (Apr 1944), pp. 58 & 115. The SCR 694's tubes themselves appear standard size, as seen in depictions of its internal components in TM 11-230c, (Aug 1944) pp. 51, 53, 63, & 66. The 694 model appears to be little more than a compressed version of the 284.

We can be reasonably certain that the 82nd Airborne actually used SCR 694s during operations in Holland. According to the division's G-4 Journal (on microfilm WWII Docs, Box 2041, item 2063) such sets were items of resupply.

Incidentally, the British B Mark II wireless, which was used during the war by SOE for clandestine operations, appears to be about the same weight but more compact than the US SCR 694. The British set is described on p. 102 of Foot's SOE in France (London: HMSO, 1966; D802F8F6). Could it be that British lightweight radio technology was borrowed by the US Signal Corps to develop a lightweight tactical radio, such as the SCR 694?

Incidentally, no information was found in sources on file here of any significant radio communications problems experienced by US airborne divisions during Operation MARKET-GARDEN, which contrasts with those that plagued the British 1st Airborne Division. See:

Galvin, John R. Air Assault: The Development of Airmobile Warfare. NY: Hawthorne, 1969. pp. 188-89. UD480.G3.

Golden, Lewis. Echoes from Arnhem. London: Kimber, 1984. 197 p. D759.6.G65.
Participant focuses on signal aspects.

Hibbert, Christopher. The Battle of Arnhem. NY: Macmillan, 1962. pp. 95-97. D763.N4.H48.

MacDonald, Charles B. The Siegfried Line Campaign. In the USA WWII series. Wash, DC: OCMH, 1963. D769.A533v3pt6.
See index under "Radio."

Ryan, Cornelius. A Bridge Too Far. NY: Simon & Schuster, 1974. D763.N4.R9.
See index under "Operation Market-Garden: Communications Problems."

Additionally, the diary of GEN Floyd L. Parks (Oct 1944, Arch) notes aspects of the British communications difficulties. See pertinent passages in the Oct 10, 14, 15 & 28 entries.