1995 Army Communicator 20 PB11-95-4 Special Edition Vol. 20 No. 4)

Overview: the Signal Corps in World War II

by George Raynor Thompson

2/6/03

Late in the 1930s, the Signal Corps labs, under Col. Roger Colton working with Armstrong, developed the first pushbutton crystal-controlled FM tactical radios (Armstrong donating his time, his radio equipment and his patents voluntarily). Crystal control of every channel eliminated fussy dial-tuning, so unskilled, harried soldiers could talk over these voice radios simply by pushing a button.

This control, however, meant mining great quantities of rare quartz crystal and producing millions of precisely cut crystal frequency-control units. The radio industry had heretofore never imagined possible the production of more than a few thousand hand-fabricated units a year. The Signal Corps risked the chance that enough crystal units could be produced. More than 100 manufacturing companies, with the Army's aid, attacked and solved the intricate task of mass-producing the crystals and the highly complex pushbutton radios.

Likewise, Col. Grant Williams, signal office of 1st U.S. Army, commented, "I feel every soldier who lived through the war with an armored unit owes a debt he does not even realize to General Colton." For it was Colton who had made the risky decision to commit Army tactical radio to FM and crystal control at a time when there was uncertainty if effective FM radio could be mass produced, if quartz crystal could be found in sufficient quantity, and if precise fabrication of the frequency-control crystal units could be converted to mass production.
http://www.gordon.army.mil/AC/WWII/WWIIINTR.HTM

SCR-299 mobile communications unit

by Ted Wise

2/6/03

The Signal Corps' SCR-299 is the best example of Yankee ingenuity before U.S. entry into World War II. The 299 was the civilian and military communications experts' effort to give a long-range communication advantage to the U.S. Army and its allies.

Military observers were unanimous that the success of modern, fast-moving "blitz" tactics was directly linked to how efficient armies' communications systems were. Up to 1940, communications by messenger, signal flags, telephone and other signal devices had been adequate to meet the challenge of the slower-moving military machinery.

However, Germany's initial successes in a highly mechanized form of warfare were attributed to their efficient and highly reliable communications system — the lightning-like movements of their panzer divisions could be coordinated and timed for split-second action. These tactics produced an ever-changing battle line ranging over distances of many hundreds of miles.

Communications officers could see that if the United States became involved in the war, our army also would have to be equipped with modern communications to coordinate our combined ground, air, sea and armored forces — none could function efficiently without the others' aid.

To meet these demands, a high-powered radio transmitter was required — capable of infallible voice communications over 100 miles; self-powered; sturdy enough to work in all conditions (cold North, hot South, jungle humidity or dry desert heat); flexible enough to cover a wide range of frequencies; and able to operate in motion or at fixed locations. It had to be entirely independent in its mobility-containing repair and replacement parts to ensure its continued operation on detached missions.

"Olmstead's Baby"

The problem to find, procure, test and field such a unit under all conditions — and produce it in time to give our army what it needed —was the concern of Col. Roger Colton, chief of engineering and technical services at Fort Monmouth, N.J.

"Olmstead's Baby," as the project was called (after the Chief Signal Officer at the time), was to find commercial and military parts already produced and make them work together. Colton's program gathered commercially built transmitters with the necessary requirements for Signal Corps adaptation. Out of the various sets sent from U.S. vendors, and after considerable experimentation, Hallicrafters' Standard HT-4 transmitter was chosen as the desired radio's basis.

Production began in early spring 1942. The HT-4 — designed for amateur use and commercially available for several years — was compact and stable. It could deliver 325 watts of power on voice and 450 watts on code. It was crystal-controlled but provided optimal use of the master-oscillator power amplifier and was able to work over a wide range of frequencies.

The Signal Corps' requested changes were achieved by Hallicrafters' engineers working with Army technicians at Fort Monmouth. Adapting the transmitter to military use required incorporating minor changes, augmenting the basic unit with more electronic devices — permitting the transmitter to handle a wider range of frequencies — and standardizing control equipment.

The HT-4 transmitter's new version became known as the BC-610 transmitter. The receivers finally supplied were the BC-312 and BC-342, plus the BC-614 (speech amplifier), BC-729 (tuning unit) and BC-211 (frequency meter), along with the PE-95 (power unit). All these became part of the truck-and- trailer unit called the SCR-299 — later better known as the "mobile communications unit."

The SCR-299 was part of the first equipment to land on the African shores and did yeoman duty during those hectic days when the fate of the United Nations' African campaign was in the balance. For long periods it was the only means of communication linking Oran and England, Oran and Casablanca, Gibraltar, Algiers and Accra.

By this time our allies had heard of this famous equipment that gave such phenomenal results and, through Lend-Lease, gained many complete units. British generals Montgomery and Alexander used the SCR-299 to coordinate their successful efforts against the Germans in North Africa.

Gen. Dwight Eisenhower credited the SCR-299 in his successful reorganization of the American forces and final defeat of the Nazis at Kasserine Pass. In the invasion of Sicily and later Italy, the SCR-299 was used with telling results.

Though the original Signal Corps requirements were for communication points up to 100 miles, under favorable conditions these transmitters made and maintained contact over 2,300 miles of land and sea.

Without adequate communications, the Army's numerous divisions couldn't have been used to their fullest. World War II proved communications and split-second timing were crucial in overpowering Germany's panzer units. The SCR-299 provided the necessary answer to the Blitz.

Greg Goebbel
http://www.vectorsite.net/ttwiz2.html

Col. Roger B. Colton succeeded Col. William R. Blair as Director of the Signal Corps Laboratories in 1938 Transferred in August 1941 to the Office of the Chief Signal Officer in Washington; received promotion to the rank of Brigadier General sometime between that date and March 1942. Served as Chief of Supply and (later) Chief of Research and Development.

ROGER BALDWIN COLTON

Roger B. Colton was born in Jonesborough, North Carolina, on December 15, 1887. He was graduated from Yale University, New Haven, Connecticut, with the degree of Bachelor of Philosophy in 1908. He was commissioned in the Regular Army as a second lieutenant, Coast Artillery Corps, on November 4, 1910.

PROMOTIONS

He was promoted to first lieutenant on July 1, 1916; to captain on May 15, 1917; to major (temporary) on June 28, 1918; and to lieutenant colonel (temporary) on September 19, 1918. He reverted to his permanent rank of captain on February 2, 1920, and was promoted to major on July 1, 1920; to lieutenant colonel on August 1, 1925; to colonel on November 1, 1939; to brigadier general (temporary) on January 30, 1942; to major general (temporary) on August 7, 1942.

SERVICE

He first was assigned to Fort Monroe, Virginia, with Coast Artillery troops until November 1914, when he went to Pensacola, Florida, for duty until August 1915. He transferred to the 3rd Coast Artillery Company at Fort Hamilton, New York, where he remained until November 1916, when he was assigned to the Cable Steamer "Joseph Henry" in Eastern waters. He was detailed in the Ordnance Department at the Port of Embarkation, Hoboken, New Jersey, between August 1917 and January 1918, when he assumed command of Fort H. G. Wright, New York. In May 1918 he enrolled in the Coast Artillery School, Fort Monroe, Virginia, and upon completion of his course in October 1918 went to Fort MacArthur, California, in command of the 2nd Army Artillery Park.

In August 1919 he enrolled in a special course in Electrical Engineering and Gas Engines in the Massachusetts Instituto of Technology, Cambridge, Massachusetts, and received the degree of Master of Science from that school in December 1920. He entered Columbia University, New York City, for special studies in January 1921 and after completing them in June 1921, proceeded to Fort Monroe, Virginia, as an instructor at the Coast Artillery School. He became a member of the Coast Artillery Board at that post in December 1923, serving in that capacity until January 1924, when he began a tour at Fort Mills, Philippine Islands, as a Mine Planter Commander. He assumed command of the 91st Coast Artillery at that post in April 1925.

He joined the 12th Coast Artillery at Fort Monroe, Virginia, in January 1926 and in the following September enrolled in the Advanced Course of the Coast Artillery School, being graduated in June 1927. Later he successfully completed the course at the Command and General Staff School, Fort Leavenworth, Kansas, and joined the Harbor Defenses at Long Island Sound at Fort H. G. Wright, New York, then transferred from Coast Artillery to the Signal Corps on June 21, 1930. Two months later he became Panama Department Signal Officer at Quarry Heights, Panama Canal Zone. He was given charge of the Plant and Traffic Division in the Office, Chief Signal Officer, Washington, D. C., in August 1932 and of the Research and Development Division of that office two years later.

He was Executive Officer at Fort Monmouth, New Jersey, and the Signal Corps Laboratories there between August 1936 and August 1937 when he enrolled in the Army War College, Washington, D. C., from which he was graduated in June 1938. He became Director of the Signal Corps Laboratories at Fort Monmouth, New Jersey. On August 12, 1941, he was ordered to duty in the Office, Chief Signal Officer, Washington, D. C., and became Chief of the

Maj. Roger Baldwin

Signal Supply Services. He was designated Chief of the Engineering and Technical Service, Office of the Chief Signal Officer, in August 1943. He was relieved as Chief, Engineering and Technical Service, in September 1944, and assigned to Army Air Forces Headquarters, Washington, D. C., and was then assigned to the 4020th Army Air Forces Base Unit, (Headquarters, Army Air Forces Technical Service Command), at Wright Field, Dayton, Ohio, and appointed Air Communications Officer, Air Technical Service Command.

He retired in the grade of major general on January 31, 1946.

DECORATIONS

He was awarded the Distinguished Service Medal in December 1945, with the following citation:

"Major General Roger B. Colton distinguished himself from September 1944 to September 1945 by the exceptionally meritorious manner in which he discharged heavy responsibilities as Air Communications Officer of the Air Technical Service Command, Wright Field, and Electronics Advisor to the Assistant Chief of Air Staff-4, Headquarters Army Air Forces. He directed the transfer from the Signal Corps to the Army Air Forces of the research, development, procurement, storage and issue of communications items and other electronic equipment peculiar to the Air Forces. His contributions to many electronic devices, including developments which made possible increased resolution leading to the application of radar to strategic bombing, fire control and guided missiles, were outstanding and brought about the operational use of these implements years ahead of the most optimistic estimates of the scientific world. By his keen vision, professional knowledge, perseverance and tireless efforts, General Colton contributed notably to the successful prosecution of the war.

WAR DEPARTMENT--Up to date as of 12 February 1946.

Washington Post 28 Jan 1978

Major General In Signal Corps, IT&T Executive

Retired Army major general Roger B. Colton, 90, who served in the Signal Corps, died of cardiac arrest Tuesday at Mount Vernon Hospital in Fairfax County.

Gen. Colton served during World War II as director of the Signal Corps Laboratories and director of Signal Corps research, development, procure- Air communuication officers for the Air Corps Technical Service Command.

He received the Legion of Merit and the Distinguished Service Medal.

Gen. Colton's work contributed to the development of both radar and an electronic fire-control system for aircraft.

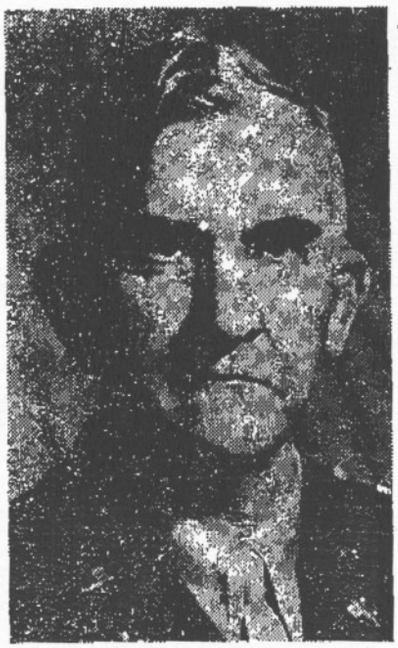
He retired from the Army in 1946. He served as president of the International Telephone and Telegraph Laboratories and as deputy technical director for IT&T during the 1950s. He moved here in 1953.

Gen. Colton was a native of North Carolina. He earned a bachelor's degree from Yale University and a master's degree from the Massachusetts Institute of Technology.

He enlisted in the Army in 1912 and served in the coastal artillery until transferring to the Signal Corps in 1930. He was a graduate of the Command and General Staff School and the Army War College.

He is survived by his wife Ora C., of the home in Alexandria; a daughter Shirley C. Lotz, of Alexandria, three grandchildren and five great-grandchildren.

The family suggests that expressions of sympathy may be in the form of contributions to the Taft School in Watertown, Conn., or the Columbia Lighthouse for the Blind in Washington.



ROGER B. COLTON

Washington Post 27 Jan Deaths 1978

COLTON, ROGER B.
(Maj. Gen. USA Ret.)
On January 24, 1978, at Mt. Vernon Hospital, MAJOR GEN. ROGER B. COLTON, of Alexandria, Va., husband of Ora C. Colton; father of Shirley Colton Lotz; also survived by three grandchildren. Funeral services will be held at Ft. Myer Chapel, on Friday, January 27, at 3 p.m. followed by interment in Arlington National Cemetery with full military honors. ARRANGEMENTS BY THE DEMAINE FUNERAL HOME, ALEXANDRIA. Memorial contributions may be made to Taft School Watertown, Conn., or Columbia Lighthouse for the Blind, Washington, D.C.