

10TH
AMERICAN RADIO RELAY LEAGUE
NATIONAL AMATEUR RADIO CONVENTION
WASHINGTON, D. C.

CHRONOLOGICAL HISTORY
OF
U. S. NAVAL COMMUNICATIONS



COMPLIMENTS U. S. NAVY
AUGUST 1958

HISTORICAL HIGHLIGHTS OF
NAVAL COMMUNICATIONS

- 1776 (1) U. S. Navy is first organized under Ezek Hopkins, the first naval Commander-in-Chief.
(2) Continental Congress issues first naval signal instructions, regarding the manipulation of sails and the positions from which the ensign and other national flags are flown.
- 1777 Maritime Committee of the Continental Congress orders Commander of a Squadron of U. S. ships sent to intercept British Jamaica Fleet and to "fix" signals for discovering the enemy and estimating their force and number.
- 1797 Captain Thomas Truxtun, issues the first known American signal book using numerary system. Ten pennants, made of combinations of red, white, blue and yellow bunting, with flags for repeaters, are used. The volume contains approximately two hundred and ninety signals. (Fog signals are indicated by gun and musket fire, and night signals by lanterns and gunfire.) The Navy officially accepts Captain Truxtun's visual signaling system.
- 1802 The signal book of Commodore John Barry, USN, and CAPT James Barron, USN, replaces Truxtun's signal book. This was known as the Barron Signal Book. It was better organized than Captain Truxtun's but was basically the same.
- 1813 Barron Signal Book is revised, substituting flags for pennants and adding shapes.
- 1824 Secretary of the Navy officially assigns responsibility for Naval Communications to the Board of Commissioners.
- 1847 The Navy adopts the Rageus and Black Semaphore Dictionary.
- 1861 Revised signal book is adopted by the Navy.
- 1862 The Bureau of Navigation, which has cognizance of naval signals, decides that the Navy will adopt the Army wire telegraph system of signals.*

- 1862 (continued) * (The change to the Army system was necessitated by security. A large number of naval officers were southerners who joined the fighting forces of the Confederacy at the outbreak of the Civil War).
- 1869 A telegraphic office is established in the Naval Observatory with lines connecting the Navy Department, the Washington Fire Alarm Telegraphic Office and Western Union for communicating exact time. The expression "Naval Observatory Time" was to become known throughout the land.
- 1875 Navy experiments with electric lights for visual signaling.
- 1876 The Navy adopts the English Morse telegraphic code.
- 1877 LT W. N. Wood, USN, perfects a system of lights for communicating the English Morse telegraphic code.
- 1878 Flash lamp method, perfected by LT W. N. Wood, USN, increases the reading distance of electric light signals to sixteen miles from the previous readable distance of six miles.
- 1890 Telegraphic or cable facilities are now available in almost every port frequented by the Navy.
- 1898 The Secretary of the Navy issues orders to the President of the Naval War College to plan for the establishment of a coastal signaling system on the Atlantic and Gulf coasts. From this original plan the lighthouse, weather reporting and life-saving systems evolved.
- 1899 The first official Navy wireless message is sent via wireless telegraph with Marconi as operator. The message is sent from the Steamship CONCE to the Highland station on the Jersey coast. The transmission is accomplished during a naval parade in honor of ADM George Dewey, returning victoriously from Manila.
- Marconi, who had patented numerous wireless inventions, is invited to the United States to experiment under naval supervision.
- 1898-1901 Navy experiments with homing pigeons as a method of communication between ships and shore stations.
- 1900 Marconi wireless devices are installed in three U. S. naval ships.

- 1900
(continued) Radio stations are erected at Washington, D. C., and the Naval Academy at Annapolis, Md., to test various methods and types of equipment.
- At Newport, R. I., naval officers are given instruction in wireless at the U. S. Navy's Torpedo School.
- 1901 The Navy makes its first wireless installation on a battleship.
- 1902 Navy appoints a board to determine the type of radio apparatus best suited to meet naval requirements. Historic tests made by this Navy board are so successful that major ships of the U. S. Fleet are equipped with German Slaby-Arco wireless equipment.
- Guglielmo Marconi supervises installation of his wireless telegraph system in USS NEW YORK, USS MASSACHUSETTS and USS PORTER. Out of sight of each other and separated across 36 miles of ocean, these naval ships communicate by radio, exchanging wireless messages.
- The Navy establishes its first "wireless" test stations ashore. These are located at Annapolis, Md., and Washington, D. C. Their primary mission is to test and evaluate equipment of various types for use throughout the Navy. The sets tested are:
- DeForest (American)
 - Lodge-Muirhead (English)
 - Rochefort and Ducretet (French)
 - Slaby-Arco and Braun-Sienens-Halske (German)
- 1903 During a mock sea battle, forces of Fleet which are equipped with radio defeat opposing Fleet forces not radio-equipped. The victors, not limited to daylight and visual signaling procedures, move against the theoretical enemy during the night and destroy him.
- Navy establishes first naval shore radio stations at Cape Elizabeth, Cape Anne, Boston, Newport, Montauk, N. Y., Navesink, Cape Henloper and Washington, D. C. The transmitters are German Slaby-Arco 60 cycle spark sets. Maximum transmission distance is approximately 137 miles.
- Navy establishes a "Wireless Division" in the Bureau of Equipment.

- 1903 (continued) A school is established at the New York Navy Yard to provide instruction in radio techniques for electrician's mates.
- 1904 President Theodore Roosevelt assigns responsibility for a major portion of the government's use of radio to the Navy.
- By mid-year twenty-four ships are fitted with radio equipment and nineteen shore radio stations are established.
- Navy Department instructs its shore radio stations to transmit promptly all weather reports and storm warnings provided by the Weather Bureau and directs all ships fitted out with radio equipment to transmit meteorological observations to the Weather Bureau at least once daily.
- First naval radio instructions go into effect (Instructions for the Transmission of Messages by Wireless Telegraphy).
- At year's end Navy has thirty-three ships and eighteen shore stations equipped with radio.
- 1905 Navy's Bureau of Equipment issues first international call book of wireless stations.
- Navy establishes an electrical and radio school at the New York Navy Yard.
- 1906 First disaster use of the Navy's radio followed the disastrous San Francisco earthquake of 18 April when the radio-equipped USS CHICAGO is the only reliable means of quick communications with the outside world from the disaster area.
- LT S. S. Robinson, USN, prepares "Manual of Wireless Telegraphy for Use of Naval Electricians", which is recognized as the Navy's standard textbook on the subject.
- U. S. Atlantic Fleet receives first fleet radio officer, LT J. M. Hudgins, USN, aboard the USS KENTUCKY.
- Navy completes its west coast chain of radio stations.
- 1908 Antenna masts are improved by the Navy.

- 1908 (continued) High-frequency wireless apparatus is introduced into the commercial market. Navy buys adapter-quenched spark-gap equipment for tests on naval ships and shore stations.
- Navy Radio Station at Cordova, Alaska, commissioned during the first Alaskan expedition.
- U. S. Navy Radio Laboratory, predecessor of the Naval Research Laboratory, is established.
- USS OHIO makes the first naval broadcast of music, while visiting Rio de Janeiro, Brazil.
- RADM Robert Peary's polar expedition provides new challenges for naval communications.
- USS CONNECTICUT, enroute from Hawaii to New Zealand, establishes trans-Pacific communications by exchanging messages with Navy Radio Point Loma--a distance of 2,900 miles.
- First successful use of radiotelephone on board a naval ship is achieved.
- Navy installs improved deForest radiotelephone sets in ships of the Great White Fleet for "round the world" naval cruise.
- Navy Radio Laboratory tests deForest's "audion" tube.
- 1909 Navy contracts for its first high-power transmitter, a Fessenden 100-kw synchronous rotary spark apparatus, for installation at "Radio Virginia", better known as "NAA", at Arlington, Va.
- Navy experiments with higher frequencies as the USS SALEM and USS BIRMINGHAM conduct tests during their cruise across the Atlantic.
- 1910 Portable radio apparatus is tested under mock battle conditions in USS NORTH CAROLINA, USS MONTANA and USS CHESTER. The equipment tested has a maximum range of 20 miles.
- 1911 Radio is installed in a naval aircraft for the first time.
- Navy issues first instructions for use of wireless for battle signals.

1912

LT (later RADM) Stanley C. Hooper, USN, becomes the first U. S. naval officer to be assigned the title "Fleet Wireless Officer."

Naval aircraft equipped with radio set, succeeds in transmitting a message from a height of 300 feet to the USS STRINGHAM over a distance of 3 nautical miles. Contact is also made by the same aircraft with the USS BAILEY and the Radio Station at Annapolis, Md.

Congress passes legislation providing for the regulation of radiotelegraphy.

Navy opens its radio facilities to commercial traffic.

Navy modernizes its coastal radio stations.

Navy establishes the Office of the Superintendent of Radio under the Bureau of Navigation. Technical aspects of radio communications are assigned to the Naval Bureau of Steam Engineering.

A Navy General Order establishes the Naval Radio Service, predecessor of the modern Naval Communication System.

Navy is first to change the name of its "wireless stations" to the new term, "radio stations", a term to be adapted by the entire communications industry.

Navy submarine, equipped with radio signaling equipment, receives and transmits signals off Newport, R. I., at a range of four miles.

The U. S. Navy establishes a "transmitter" laboratory at the New York Navy Yard and a "receiver" laboratory at the Navy Yard in Washington, D. C.

1913

The cruiser USS SALEM tests naval radio communications by maintaining continuous contact with the U. S. mainland during a voyage across the Atlantic Ocean.

Navy commissions a high-power, long-wave station, NAA, at Arlington, Va., 100 kw spark.

Experiments are conducted on the velocity of ether waves, from the Navy's NAA at Arlington, Va., to the Eiffel Tower in Paris, France.

- 1913
(continued) Off the Azores Island, USS DELAWARE, equipped with a spark transmitter and receiver having a crystal detector, establishes radio contact with the newly-constructed 100 kw spark station at NAA, Arlington, Va.
- 1914 U. S. Navy commissions high-power, long-wave station at Colon, Canal Zone, using 100 kw, spark equipment.
- 1915 Congress creates the Office of the Chief of Naval Operations. Operation of the Naval Radio Service and many other means of communications are included among the responsibilities of the new office.
- The Naval Radio Service is reorganized and the Navy Department establishes the Office of Communications.
- Outbreak of World War I results in formation of the Naval Communication Service. Navy appoints the first Director of Naval Communications--CAPT William H. G. Bullard, USN--directly responsible to the Chief of Naval Operations. Naval communications is put in a state of war readiness.
- Amateur radio station W2MN at Westfield, N. Y., records coded messages from Sayville, L. I., station informing submarines of neutral ship movements.
- U. S. Government assigns Navy personnel to operate German wireless station at Sayville, L. I.
- Navy commissions radio station NBA at Darien, Canal Zone, using 200 kw arc equipment.
- 1916 Navy installs and operates the world's first distant-controlled radio station from the State, War and Navy Building in Washington, D. C.
- Communications are established by telephone between the Secretary of the Navy, Josephus Daniels, at his desk in Washington, D. C., and the commanding officer of USS NEW HAMPSHIRE, operating off the New Jersey coast.
- Naval Radio Laboratory for aircraft is established at Pensacola, Fla.
- By means of a new system of telegraphic communications, the New York Navy Yard conducts official correspondence with the Navy Department in Washington, D. C.

1916 Signals are transmitted to USS NORTH CAROLINA from
(continued) a naval aircraft over a distance of 20 miles.

Naval Communications Service is established, under a Director of Naval Communications, by General Order No. 226 of 28 July.

U. S. Navy commissions high-power, long-wave station NPM at Pearl Harbor, T. H., with 300 kw arc equipment.

1917 With U. S. entry into World War I, President Woodrow Wilson directs that the Navy Department take over control of coastal commercial radio stations necessary to naval communications and that all others be closed.

The U. S. Navy controls communications stations on board naval ships at sea and in port and communications with U. S. merchant ships.

U. S. Navy commissions high-power, long-wave stations NPL at San Diego, Calif., 100 kw. arc; NPO at Cavite, P.I., 350 kw. arc, and NPG San Francisco, Calif., 100 kw. arc.

Navy installs a radiophone fog-warning device, the forerunner of the radio beacon, at Point Judith, R. I.

On entering World War I, the U. S. Government takes over almost all commercial radio stations in the United States. One of these is the Marconi station at New Brunswick, N. J., which features both wireless and radiophone service. New Brunswick, N. J., becomes Navy station NFF.

Navy begins experiments in radio-controlled aircraft.

1918 By installing a 200 kw. alternator, NFF New Brunswick, N. J., becomes the most powerful transmitting station in the world. Navy ships in all parts of the world hear NFF as do the field receivers at the front in France.

NFF New Brunswick, N. J., flashes President Woodrow Wilson's "Fourteen Points" to Nauen, Germany.

U. S. enters into an agreement with France for the U. S. Navy to construct a high-power, long-wave station in France.

1918
(continued) Director of Naval Communications is assigned responsibility for the administration and operation of the shore communication system.

Naval Communication Service operates low-frequency radio direction finder stations on the Atlantic and Pacific coasts.

Navy commissions high-power, long-wave station NSS at Annapolis, Md., with 350 kw. arc equipment.

World War I German Peace Note is first received by Navy radio station at Otter Cliffs, Bar Harbor, Maine.

First air control radio system is established (4-course radio ranges) to furnish guidance to aircraft.

Submerged Navy submarine receives and sends radio signals. Reception is found possible from overseas stations in a submarine whose periscope is 21 feet below the surface.

1919 Navy develops sleet-melting device for antennas at Annapolis and other high-power radio stations.

Navy successfully transmits radio voice communications from air to ground for the first time.

With the Navy's aid, the Radio Corporation of America, the first wholly U. S. -owned radio communications company is formed. Foreign interests are purchased and their radio operations in the U. S. are dissolved. This corrected a situation unhealthy to the Nation's security.

Navy flying boats use radio on transatlantic flight and succeed in reaching Lisbon, Portugal, and Southampton, England, by radio.

The first attempt to "broadcast" by a President is made by President Woodrow Wilson, returning from the Geneva Peace Conference aboard the USS GEORGE WASHINGTON July 4 in an address to the crew. Wilson's voice is heard in a broadcast to shore on the 126 meter band.

1920 Radio voice communications are established between a Navy flying boat and a partially submerged submarine.

1920 (continued) The DNC Office Bulletin, forerunner of the Naval Communications Bulletin, makes its initial appearance.

Congress passes an act authorizing the use of naval radio stations for the transmission of commercial messages, including press, for a period of two years.

U. S. Navy commissions Radio Lafayette, near Bordeaux, France, the world's first 1,000 kw. long-wave radio station.

Navy seaplane equipped with a radio compass obtains accurate bearings from a battleship off the Virginia coast.

Navy begins scheduled broadcasting at NSF, Naval Air Station, Anacostia, Washington, D. C., one of the first broadcasting stations in the Nation.

1921 Navy installs first radio set in the White House during the administration of Warren G. Harding.

1922 Navy is first to detect a moving ship by radio waves, an historical landmark in the development of radar accomplished entirely by naval personnel.

New sounding device (sonar) is tested on the destroyer USS STEWART.

Navy makes the first public broadcast of a presidential address when President Warren G. Harding dedicates the Lincoln Memorial, in Washington, D. C.

Navy develops an antenna system permitting the simultaneous transmission of two or more messages from one antenna.

1923 For the first time, a target ship, USS IOWA, is operated by radio remote control from another ship.

Navy is developing radio-controlled torpedo.

Naval Research Laboratory is founded in Washington, D. C.

Naval Research Laboratory achieves radio control of aircraft by controlling the flight of an obsolete Navy seaplane entirely by radio remote control.

- 1923
(continued) Pictures of President Warren G. Harding are transmitted by the Navy from Washington, D. C., to Philadelphia, Pa., by radio facsimile, producing an acceptable likeness.
- Naval Research Laboratory installs first airborne high-frequency transmitter and receiver in the rigid airship SHENANDOAH for her flight across the continent and back. With this equipment the SHENANDOAH maintains practically continuous communication with NRL.
- 1924 The Naval Research Laboratory builds and installs the world's first high-power crystal-controlled transmitter.
- Navy accomplishes first regular daylight transcontinental communications on high frequencies.
- Vacuum tube transmitters replace the original transmitter installation at NAA, at Arlington, Va. The original transmitter installation consisted of 100 kw spark, 100 kw arc, and 5 kw arc sets.
- 1925 Mechanical television apparatus using rotating scanning disc is demonstrated between Anacostia Naval Air Station and the laboratory of C. Francis Jenkins in Washington, D. C.
- Naval Research Laboratory completes development of radio transmitting equipment embodying the electronic "pulse" principle, later used in radar.
- Naval Research Laboratory and the Carnegie Institution of Washington, D. C., (Department of Terrestrial Magnetism) measure the height of the ionosphere.
- Reliable wireless communications are maintained by Donald B. MacMillan on the 1925 polar expedition to the North Pole with the U. S. Naval Communications Service on high frequencies. On the voyage to and from the Arctic, the naval radio station at Bar Harbor, Maine, is successful in communicating with the SS BOWDOIN and SS PEARY after the ships reached higher latitudes.
- 1926 LCDR Richard E. Byrd, USN (Ret.), flies to the North Pole from Spitzbergen, Norway, carrying a 44-meter radio transmitter.
- An 80 kw high-power, vacuum-tube transmitter is installed at Radio San Diego.

1927

Federal Radio Commission is established. RADM W.H.G. Bullard, USN, John F. Bellou, Judge E. O. Sykes, O. H. Caldwell and H. A. Bellows comprise the first Commission.

The International Radio Convention of 1927 adopts Navy plan for world-wide frequency allocation.

Congress passes Radio Act of 1927, giving the Secretary of the Navy authority, under stipulated conditions, to use all radio stations owned by the U. S. and under control of the Navy for the transmission and reception of commercial messages. It also authorizes SECNAV to prescribe reasonable rates for these messages

1928

CDR Richard E. Byrd, USN (Ret.), heads an aerial exploration expedition to the antarctic, which includes a flight over the South Pole. The U. S. Naval Communications Service renders signal aid through its wireless communication service for the historic expedition. Malcolm Hansen, a naval radio engineer, is assigned to the expedition by the Navy Department. He rigs wireless telephone on the ships SS BOLING and SS NEW YORK CITY, making it possible to maintain excellent communications between the two ships. He also sets up an antarctic radio laboratory. One of the most notable accomplishments of this expedition is the success of wireless communications between the U. S. and the antarctic. More than 300,000 words of press reporting are sent to the New York Times via Naval Communications.

The first successful cross-country radio transmission from an airplane is achieved by the Naval Research Laboratory.

Navy accomplishes the first application of vertically and horizontally polarized beacons for the landing of aircraft.

1929

CDR Richard E. Byrd's flight over the South Pole is announced via short-wave radio from Little America, Antarctica.

First attempts are made to apply the radioteletypewriter to Naval Communications.

- 1929 (continued) An area communications officer is assigned to the Atlantic, another to the Pacific and a third to the Asiatic area, thus dividing the command to bring about more rapid naval communications.
- 1931 Laurence A. Hyland at Anacostia Naval Air Station in Washington, D. C., discovers that rebound radio waves could reveal the presence and location of aircraft.
- 1932 The first high-power vacuum-tube transmitters come into use. The first of these transmitters is installed at Radio Cavite, in the Philippines.
- 1934 The world's first radar apparatus is developed at the Naval Research Laboratory.
- 1936 Navy accomplishes first transmission and reception of wave pulses by one radar antenna.
- 1938 First operational radar installation on a U. S. ship is placed in USS NEW YORK.
- Naval Reserve radio drills are conducted by nearly 2,700 government and private radio stations.
- 1939 Naval communicators and communications equipment accompany RADM Richard E. Byrd, USN (Ret.), on antarctic explorations.
- Naval communications now utilize approximately 1,500 naval officers and 10,500 enlisted men afloat and ashore, (an over-all Navy of approximately 122,000 enlisted men).
- Expenditure in the U. S. Navy for the purchase and maintenance of naval communications equipment is \$1,500,000.
- Navy commissions radio station NRS at Cheltenham, Md.
- 1939-40 First contracts for naval radar service equipment are let and, beginning in 1940, units are installed on naval ships.
- 1941 First naval teletypewriter circuit is installed (linking Washington, Norfolk, Philadelphia, New York, New London, Boston, Portsmouth).
- 1942 Navy establishes Navy Electronics Laboratory at San Diego, Calif.

- 1942
(continued) The Security Section of Naval Communications is created, with the office of Deputy Director of Naval Communications, within the Naval Communications Division of the Navy Department.
- 1943 First shells equipped with radio proximity fuzes are reported fired by USS HELENA in Pacific combat actions.
- 1944 Facsimile (radiophoto) facilities are by now installed at Naval Communications Stations at Washington, D. C., San Francisco, Pearl Harbor and Guam.
- Tests of radioteletypewriter equipment are successfully conducted on board various Navy ships.
- After the Leyte, P. I., landings in World War II, a concerted effort is made to utilize radioteletypewriters on shipboard. As far back as the late 1920's and early 1930's, attempts had been made to apply radioteletypewriter to naval communications.
- 1945 Navy transmits photographs of the Japanese surrender aboard the USS MISSOURI via facsimile (radiophoto) to the United States a distance of more than 5,000 miles.
- At height of World War II, there are, in naval communications, more than 22,000 officers and 225,000 enlisted men or a total of about 250,000 in a 3,400,000-man Navy.
- Of the 22,000 naval officers, approximately 15,000 are technically trained for communications. About 140,000 of the enlisted personnel in naval communications are trained specialists assigned to duty as radiomen, radio technicians, aviation radiomen and aviation radio technicians.
- 1946 A joint military decision is made to shift military command voice communications for air-to-air and ship and shore to-air purpose to the UHF band.
- Naval Research Laboratory studies microwave radiations from the sun, moon and stars to aid improvement of long-range communications.
- 1947 Naval Communication Facility Port Lyautey, F. M., is established.

- 1950 A submarine radio rescue buoy is devised. This device, when released from a submerged submarine, surfaces and broadcasts an emergency signal.
- Chief of Naval Operations officially establishes the "Naval Communication System".
- 1954 Most powerful VLF radio transmitter in the world, Jim Creek Valley station in the state of Washington, is commissioned by the Navy. Jim Creek is powerful with 1,200,000-watt radiotelegraph equipment.
- 1956 Radio-equipped manless balloons are released from Japan to gather weather data.
- Navy establishes radio stations in the antarctic at Little America (KC4USA), McMurdo Sound (KC4USV) and Marie Byrd Land (KC4USB). The latter is first radio station in history to be at the South Pole.
- U. S. Navy and the Dominion of New Zealand establish a communication network between New Zealand and Antarctica in support of scientists in the antarctic expedition.
- Naval Research Laboratory develops the Skyhook, a balloon-supported antenna system for attaining 1200-ft. antenna elevations at sea.
- Navy amateur radio operators aboard the USS ELDORADO (AGC-11) in arctic waters establish communications with the Navy-sponsored amateur station in Little America, Antarctica.
- Navy is appropriated funds to purchase transmitter for world's most powerful very low frequency radio station--2,000,000 watts--to be located in Washington County, Maine.
- Contact is made with the planet Mars, a distance of 35,000,000 miles, by the reception of radio waves at the Naval Research Laboratory.
- 1957 Naval Research Laboratory employs a radio tracking system known as Minitrack to track the earth-circling satellite.
- Navy inaugurates data processing and transmission at Naval Communication Station, Washington, D. C.

1958

From the hallowed grounds of this radio station the radio amateurs and professional operators will once again hear the famous voice of "NAA". This station will be reactivated as a Naval Reserve Master Control Radio station for operational control and training in the over 500 Naval Reserve Radio Stations throughout the United States. It will additionally have as a counterpart, an amateur radio station operating with radio call "K4NAA".