



U.S. NAVAL COMMUNICATIONS CHRONOLOGICAL HISTORY

OFFICE OF THE
CHIEF OF NAVAL OPERATIONS
1963

**HISTORICAL HIGHLIGHTS OF
NAVAL COMMUNICATIONS**

- 1776 (1) Continental Navy is organized under Commodore Esek Hopkins, our 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 an American Squadron to take his force to the British West Indies, formulate such signal procedures as required to control his ships in battle, and intercept a British merchant fleet leaving Jamaica.
- 1797 CAPT Thomas Truxtun, USN, issues 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 CAPT 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 basically the same as CAPT Truxtun's but more efficiently organized.
- 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 Navy adopts the Rageus and Black Semaphore Dictionary.
- 1858 Navy Department issues a revision of the signal book of

- 1858**
(continued) 1813. It includes signals for movements under steam and prescribes three orders of steaming. The first is column. The second is groups (similar to the French Group Formation). An illustration shows groups of five; leader and four mates, two on each quarter--the headmost two to five points abaft the leader's beam; the other in the wake of the headmost. The third order of steaming is double column.
- 1862 Navy adopts signal system developed by Army Signal Corps; Navymen attend Army schools pending establishment of instruction in this new system at Naval Academy. Called the Myer System, it is first to use single moving flag and is named for its inventor MAJ A. J. Myer, USA, who later became first Chief Signal Officer of the Army.
- 1869 A telegraphic office is established in the Naval Observatory, Washington, D. C., 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; the Navy is still the Nation's official timekeeper.
- 1875 Navy experiments with electric lights for visual signaling.
- 1876 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 become available in almost every port frequented by the Navy.
- 1898 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

1899
(continued)

telegraph with Marconi as operator. The message is sent from the Steamship CONCE to the Highland station on the New Jersey coast. The transmission is accomplished during a naval parade in honor of ADM George Dewey, USN, 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.

Radio stations are erected at Washington, D. C., and the Naval Academy at Annapolis, Md., to test various communications methods and types of equipment.

Naval officers are given instruction in wireless at the U. S. Navy's Torpedo School, Newport, R. I.

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 battleships USS NEW YORK and USS MASSACHUSETTS and torpedo boat USS PORTER. Out of sight of each other and separated by 36 miles of ocean, these naval ships communicate by radio.

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

- 1902
(continued) throughout the Navy. Sets tested are:
DeForest (American)
Lodge-Muirhead (English)
Rochefort and Ducretet (French)
Slaby-Arco and Braun-Sienens-Halske (German)
- 1902 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 stations at Cape Elizabeth, Me., Cape Anne, Mass., Boston, Mass., Newport, R. I., Montauk, N. Y., Navesink, N. J., Cape Henlopen, Del., and Washington, D. C. The Transmitters are German Slaby-Arco 60 cycle spark sets. Maximum transmission distance is approximately 137 miles.
- Navy establishes "Wireless Division" in Bureau of Equipment and a school at the New York Navy Yard to provide instruction in radio 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.

- 1905
(continued) 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 on 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.
- 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.
- 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.

- 1908
(continued) 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) Stanford 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.

1912
(continued) A Navy General Order establishes the Naval Radio Service, predecessor of the modern Naval Communication System. CAPT W. H. G. Bullard, USN, is first Superintendent.

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.

Off the Azores Islands, 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. Naval communications is put in a state of war readiness.

1915
(continued)

Amateur radio station W2MN at Westfield, N. Y., records coded messages from Sayville, L. I., station informing submarines of ship movements.

U. S. Government assigns Navy personnel to operate ex-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.

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

Naval Communication 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

1917
(continued)

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.

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.

1918 Navy commissions high-power, long-wave station NSS at
(continued) 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.

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.

1920 U. S. Navy commissions Radio Lafayette, near Bordeaux,
(continued) 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.

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.

Pictures of President Warren G. Harding are transmitted

1923 by the Navy from Washington, D. C. , to Philadelphia, Pa. ,
(continued) 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.

1926 (continued) 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 B. 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.

- 1929
(continued) **First attempts are made to apply the radioteletypewriter to Naval Communications.**
- An area communications officer is assigned to the Atlantic, another to the Pacific and a third to the Asiatic area, respectively. The familiarity of these officers with local communication requirements and with various operating conditions in their own areas enables them to improve the rapidity and efficiency of 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.**
- Navy inherits from 15th Infantry Regiment the Army radio stations at Tientsin and Chinwangtao, China; assigns call signs NBD and NCF, respectively, and mans with U. S. Marine Corps personnel.**
- 1939 **Cruiser Division Eight experiments with "The Bell Telephone Laboratories, Inc.," system of transmitting voice by light.**
- Naval communicators and communications equipment accompany RADM Richard E. Byrd, USN (Ret), on antarctic explorations.**
- Naval communications now utilize approximately 1, 500**

1939 naval officers and 10, 500 enlisted men afloat and ashore
(continued) (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.

1939-1940 First contracts for operational Navy radar equipment are let, and units are installed on Navy ships beginning in 1940.

1941 First naval teletypewriter circuit is installed (linking Washington, Norfolk, Philadelphia, New York, New London, Boston, Portsmouth).

Naval Radio Station Cavite, P. I., sustains direct bomb hit - first Navy fixed land station to be subjected to enemy fire in World War II. A 600-foot tower is struck by the first bomb.

Navy abandons Radio Peiping (NPP), originally built to serve as the voice of the American Minister (later Ambassador) to China in consonance with treaty following the Boxer Rebellion. NPP, with its 310-foot tower and its short wave antennas mounted on thousand-year-old Tartar walls, and operated by U. S. Marines, was long an "ether mark" in the Orient; had passed millions of words between China and America. Unique to NPP were its signal halyards fitted to the 310-foot tower. The display of special signal flags and shapes signaled Americans to come to the Embassy area.

1942 Navy establishes Navy Electronics Laboratory at San Diego, Calif.

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.

Communications between Russia, United States and Alaska are established for the exchange of weather information.

- 1944 Navy establishes radio station at Point Barrow, Alaska, to serve oil-seeking expedition.
- Facsimile (radiophoto) facilities are available 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 Pictorial coverage of the Japanese surrender ceremony is transmitted from USS MISSOURI, in Tokyo Bay, to Washington, D. C., by radiophoto mobile unit (facsimile). The U. S. received the pictures within an hour and forty minutes from the time they were taken at the ceremony.
- Navy makes first application of radio relay by Airborne Relay System (AUTOCAT) making possible VHF over-horizon communications.
- 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 The world's record long distance facsimile direct transmission (no relays involved) is made from an

- 1946
(continued) ice breaker, off Shackleton Ice Shelf, Antarctica, to Washington, D. C. using a one-kilowatt transmitter. Pictures and weather maps are transmitted 10, 581 miles by a Navy mobile facsimile unit.
- A joint military decision is made to shift military command voice communications for air-to-air and ship and shore to-air purposes 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, Morocco, is established.
- Navy establishes first radioteletypewriter broadcast to ships at sea.
- 1948 Navy's semiautomatic tape relay system becomes operational on a world-wide basis.
- 1950 Chief of Naval Operations officially establishes the "Naval Communication System."
- A submarine radio rescue buoy is devised. This device, when released from a submerged submarine, surfaces and broadcasts an emergency signal.
- 1951 Naval Research Laboratory discovers that radar pulses beamed to the moon are reflected back to earth from a relatively small central spot on moon's surface, rather than from entire earth-side surface as had been believed. This discovery proves for first time the feasibility of using moon bounce for communications. Navy work on Communication by Moon Relay begins in earnest.
- 1954 Naval Research Laboratory passes the first continuous wave (CW) traffic over a moon reflection circuit.
- The first voice communication circuit is accomplished by Navy on a moon reflection circuit.

1954
(continued) Naval Communications Station NPN, Guam, moves into new permanent quarters with receivers and control at Finegayen, and transmitters at Barrigada.

Naval Communications Facility Port Lyautey, Morocco (NHY), moves into new quarters with receivers and control at Sidi Yahia, and transmitters at Boukanadel.

Most powerful VLF radio transmitter in the world (at this time), Jim Creek Valley station in the state of Washington, is commissioned by the Navy. Jim Creek is powered with 1,200,000-watt radiotelegraph equipment.

1955 First moon relay circuit is established between Washington, D. C., and San Diego, Calif. Carrying single channel radioteletypewriter transmissions, this circuit proves the feasibility of communicating over long distances between two earth terminals by using the moon as a passive reflector.

Navy begins transmission of punched-card data between U. S. Naval Base Norfolk, Va. and Bureau of Naval Personnel in Washington. System is expanded coast to coast within a year.

1956 First messages are passed by moon relay between Honolulu, Hawaii, and Washington, D. C.

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 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 of the antarctic expedition.

Naval Research Laboratory develops the Skyhook, a balloon-supported antenna system for attaining 1200-ft. antenna elevation at sea.

Most powerful, most famous, and first modern high power radio station in the world, Navy's Radio Arlington (Va.) is disestablished at ceremonies attended by thousands.

1956
(continued) 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.

Radio waves emitted by the planet Mars 35 million miles away are detected for the first time by scientists of Naval Research Laboratory.

1957 Naval Research Laboratory employs a radio system known as Minitrack to track earth-circling satellites.

For NATO Exercise STRIKEBACK, U. S. Naval ships for first time employ single sideband voice communications for tactical operations.

Navy expands single sideband circuits from six channels to sixteen.

Navy High Command Radiotelephone Network employing single sideband is inaugurated to link Chief of Naval Operations with Area and Fleet Commanders.

1958 From the original site of Radio Arlington, radio amateurs and professional operators once again hear the famous voice of "NAA." Station is 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. In addition, it has as a counterpart, an amateur radio station operating with radio call "K4NAA."

Navy inaugurates tri-point fleet broadcast in Western

1958
(continued)

Pacific which keys transmitters at NPN Guam, NDT Japan, and NPO Philippines simultaneously.

Naval Communication Facility Philippines (NPO) moves into new quarters at San Miguel, Luzon. Transmitters remain at Bagobantay.

Navy inaugurates automatic teletypewriter switching (82B1) at Trenton, N. J. , resulting in disestablishment of Naval Communications units at Boston, Mass. , New York, N. Y. , Philadelphia, Pa. , and Great Lakes, Ill.

Another Navy milestone is reached by demonstrating the feasibility of meteor burst communication techniques for ship to shore communications. First message is transmitted from USS TULARE (AKA-112) to Naval Electronics Laboratory, San Diego, Calif. , over a distance of approximately 600 nautical miles. The technique utilizes ionized trails produced by meteors as a reflecting medium for very high frequency transmissions. Due to nature of medium, meteor burst communications are not seriously affected by ionospheric disturbances, are relatively secure from unauthorized intercept and difficult to jam.

1959

Navy tests forty-channel telegraph terminal for long haul point-to-point single sideband circuits.

Navy conducts tests and demonstrates feasibility of using single sideband multichannel techniques on low frequency high powered transmitters.

Navy begins installation of militarized version of single sideband equipment in ships of operating fleet.

Head, U. S. Naval Communication System, with Headquarters Activity in Washington, D. C. , is established to operate, coordinate and administer operation of Naval Communication System.

Navy completes cutover to automatic teletypewriter switching (82B1) in continental U. S. with the

1959
(continued)

addition of automatic switching stations at Cheltenham, Md., Norfolk, Va., Stockton, Calif., and San Diego, Calif., resulting in disestablishment of Naval Communications units at Charleston, S. C., and New Orleans, La. The new automatic switching system serves 236 stations in the basic network and connects 85 stations with Trenton, N. J., on a 5,000-mile semiautomatic network.

Navy commences operational testing of radioteletype-writer circuit between Washington, D. C. and Hawaii, using the moon as a passive relay station.

International protection is given to use of 1400-1427 MCS, Hydrogen Line, for radio astronomy, as proposed by Dr. John P. Hagen of Naval Research Laboratory.

As a result of the January, 1959 report of the Committee on Organization of the Department of the Navy (the Franke Report), Director, Naval Communications becomes the Assistant Chief of Naval Operations (Communications)/ Director, Naval Communications.

The moon relay system is successfully employed for passing operational traffic when solar disturbances in the ionosphere disrupt conventional high frequency circuits between Washington and Hawaii.

1960

Naval Communication System begins expansion in Pacific Ocean area to meet requirements of Pacific Missile Range.

Joint agreement is reached and implemented on exchange of communications officers among the Army, Navy and Air Force. Suggested by the Chief of Naval Operations, program is designed to provide opportunity for officers to learn from and participate in communications operations of other services and eventually provide senior officers with multi-service experience.

Final year of construction of NRS (T) Cutler, Maine, before on-the-air January 1961, with world's largest known transmitter (power output 2,000,000 watts with an expected antenna radiating power of 1,000,000 watts); highest radio towers of any Navy radio station

1960
(continued)

(979-ft.); an antenna array covering 1,400 acres using 64 miles of one-inch bronze wire in a unique configuration and a buried ground system covering 2,850 acres using 2,074 miles of No. 6 copper wire--the world's largest known ground system; dual equipment throughout all components existing in sets so that the mate instantly takes over when an equipment fails - the first VLF station known to have such features; and the first known VLF station with a self-contained and self-sufficient electrical power generating system.

Navy successfully transmits messages from Washington, D. C. to New Jersey via the 100-foot ECHO I artificial passive satellite.

USS NORTHAMPTON (CLC-1) is named National Emergency Command Post Afloat (NECPA), made available to National Political Command and Joint Chiefs of Staff, and is put under Navy's command and control system program.

1961

Naval Radio Station (T) Cutler, Maine, (NAA), a \$70,000,000 installation, is dedicated as the Navy's most powerful radio station.

Around the world ship-to-ship relay of a message (in 3 hours and 3 minutes) accomplished from a ship at Norfolk, Va., back to NAVCOMMSTA Washington by CW ship relay. (In 1960 an around-the-world message relay test by SIXTHFLT is completed in 15 minutes. Ship and shore communications activities participate in feat.) (In 1960 USS NORTHAMPTON (CLC-1), flagship of COM-SECONDFLT sends RATT message around the world in 2 seconds, the following Navy shore stations participating: NAVCOMMSTAs Washington, Pearl Harbor, San Juan, Guam and Japan; NAVCOMMFACs Philippines, Port Lyautey and London, and NAVCOMMU Asmara.)

1961
(continued)

Naval Radio Station, NBA, Balboa, Panama, C. Z. , broadcasts 24-hour-a-day transmissions of precise time and constant frequency, accurate to 5 parts in 100,000,000,000. The frequency calibration provided is 10 times as accurate as was formerly possible.

USS OXFORD (AG-159), a new technical research ship, is commissioned. OXFORD is a highly sophisticated and mobile station equipped with the latest antenna systems and measuring devices for research and evaluation coincident with employment of such modern communications methods as satellites, microwave links and tropospheric scatter techniques, and for research into the behavior of phenomena that is inconsistent with available data.

U. S. Naval Research Laboratory's LOFTI (low frequency transionospheric) satellite is launched, opening possibilities for remarkable advances in military communications. By receiving VLF (very low frequency) signals from a ground station, the satellite provided the first data on the degree of VLF penetration into and through the ionosphere and is the initial step in the investigation of the use of satellites for VLF communications.

First shore-to-ship message traffic is passed by Navy's moon relay circuit, from transmitter at Naval Research Laboratory's Stump Neck, Md. , station via "moon bounce" to receiver mounted on board USS OXFORD (AG-159), underway off the Atlantic coast of the United States.

1962

U. S. Naval Communication Station Spain, designed to augment existing facilities in the Eastern Atlantic and Mediterranean areas, is established in development status. Control and receiver facilities are being built at U. S. Naval Station in Rota, on Spain's southwest coast. Other components are a high frequency transmitting facility at Moron, in southern Spain, and a low frequency broadcast facility at Guadamar del Segura, on the eastern coast.

1962
(continued)

The Army's Switched Circuit Automatic Network (SCAN) is inaugurated with 101 Navy and Marine Corps activities affiliated for data requirements — 38 through direct connections to switching centers, 32 through small point-to-point networks and private lines, and 31 through toll telephone service (dataphone). In all, SCAN serves more than 600 Army, Navy and Marine Corps subscribers. Director, Naval Communications, is responsible for allocating or providing systems and networks to meet approved Navy and Marine Corps data transmission requirements.

Work begins on the \$25,000,000 conversion of USS WRIGHT (AVT-7) to a command ship (CC-2) with worldwide communications capabilities. USS NORTHAMPTON (CC-1) was the first ship in this category.

First ship-to-shore messages are transmitted over the moon relay circuit, from USS OXFORD (AG-159) at sea off the Atlantic Coast of South America to the NRL station at Stump Neck, Md.

Conversion of an ex-CVE 105 hull to a Major Communications Ship (AGMR), providing mobile communications for Navy operating forces, is included in the Navy's announced 1963 Shipbuilding and Conversion Program.

USS NORTHAMPTON (CC-1), at sea, sends a message — relayed by Naval Communication System shore stations — that circles the world by radio and is received back on the ship in 0.8 of a second, paring a full second from the previous record set by the same ship in 1960. The following month, USS PROVIDENCE (CLG-6), testing new multi-channel teletypewriters while underway in the Pacific, sends a message that travels around the world and is received back on the ship in less than 0.5 of a second.

Major organizational changes in the Office of Naval Communications bring a realignment of divisional functions to increase coordination of communications actions, insure prime emphasis on problems of operating forces, and assure responsiveness to program management procedures in effect throughout the Department of Defense.

1962
(continued)

After agreement is reached between the governments of the United States and the Commonwealth of Australia, plans are announced for a \$70,000,000 U. S. Naval Communication Station to be built at North West Cape in Western Australia. The station, expected to be completed in early 1966, will provide needed communications improvements for U. S. and allied ships over a wide area of the Indian Ocean and Western Pacific.

U. S. Naval Radio Station (T) Tarlac, in the Philippines, is completed and goes into full on-the-air operations. The new transmitting station replaces and expands the functions of the Navy transmitting station at Bagobantay, Quezon City, which is phased out and disestablished.

Construction begins on a new U. S. Naval Radio Station at Thurso, near Scotland's northern tip. The station, expected to be fully operational by August 1963, will have both transmitting and receiving facilities, and will provide additional communications coverage in northern European waters. It will function as a component of U. S. Naval Communication Station Londonderry, North Ireland.

In Puerto Rico, Navy begins operating a transmitting station at Fort Allen and a receiving station at Salinas, both former Army installations newly designated as Naval Radio Stations following completion of the Navy project for consolidating the island's Defense Communications System facilities. An across-island microwave system, newly installed as a phase of consolidation, also becomes operational.

The world's first satellite communications ship, USNS KINGSPORT (T-AG-164), is completed and formally accepted from the Bureau of Ships by the Military Sea Transportation Service. Complex equipment for tracking, sending messages and commands to, and receiving data from communications satellites is operated by a newly established U. S. Naval Research and Development Satellite Communications Group, assigned to KINGSPORT. KINGSPORT was converted from a Victory-type cargo ship.

1962
(continued)

The Department of Defense announces plans to move radio receiving facilities at Cheltenham, Md. — part of U. S. Naval Communication Station Washington, D. C. — to Sugar Grove, W. Va. The Sugar Grove station is expected to be activated in 1963.

The U. S. Naval Communication Station on Guam sustains major antenna and power line damage when Typhoon Karen rolls over the island. The huge antenna towers at the Ritidian Point scatter station and the antenna "farms" at the Finegayan receiving station and the Barrigada transmitting station are described as "a mess." Rebuilding begins immediately.

The Navy begins building a new radio station at Lewes, Delaware, designed to augment existing command control capabilities of U. S. Naval Communication Station Washington, D. C.

1963

Navy Military Affiliate Radio System (Navy MARS) is formally established. Similar to existing Army and Air Force MARS, Navy MARS stresses training of amateur radio operators in naval communications procedures to provide a source of trained operators for local disaster situations or a general emergency.

New U. S. Naval Communication Units are established at Argentia, Newfoundland, and on Midway Island, as activities of the Naval Communication System. Each involves consolidation into a separate unit of communications and electronics personnel previously attached to departments of the U. S. Naval Stations at the respective locations.

