U.S. Navy Wireless Telegraphy,

on the West Coast, circa 1908

Floyd E. Dunklee, U.S.N., of the Mare Island Naval Shipyard, Vallejo, California edited and possibly wrote this memorandum.

This is a copy of a typescript (see Archivist's note, below), edited (lightly) by Bart Lee, K6VK, California Historical Radio Society Archivist and Fellow, and AWA Fellow, and Bob Rydzewski, Deputy Archivist and Fellow, for the Society of Wireless Pioneers (a program of CHRS); all graphics have been inserted by CHRS archivists for this version. Vallejo, March 12, 1908: In view of the recent reported success (not yet verified) of the Mare Island wireless telegraph station in intercepting a part of a message from the battleship *Maine* of the Atlantic fleet some 2600 miles to the southward, it may be of interest to review briefly the history of Naval wireless telegraphy on the Pacific coast.

The first station to be established was on Mare Island, opening for business on April 30, 1904, with Chief Electrician R.B. Stuart U.S.N., in charge. The instruments are of Slaby-Arco make, 15kilowatt capacity, and were sent out from the New York Navy Yard. (N.B. Input power did not exceed 2 K. W. F.E.D.)¹



Mare Island First Station, 1904. (See endnotes).

¹ All parenthetical () insertions seem to have been made by Floyd E. Dunklee.



Mare Island 1904, Interior (L). (See endnotes).



Mare Island 1904, Interior (R). (See endnotes).

 $[\P 2 >]^2$ Prior to the receipt of the instruments, Master Electrician George E. Hanscom of the equipment department, Mare Island, (under whom wireless work was to come as additional duty) had been busily engaged in making experiments with instruments and kites of his own make, and in the pursuit of knowledge relating to the progress of wireless on the Atlantic coast and in Europe, as found in various scientific publications — subscriptions for which the Navy Department provides — thus preparing himself for the important work soon required of him.

At first the Mare Island station was provided with a rotary transformer, (a turbine interrupter) receiving its power (direct current) from the Navy Yard, but later this was changed to a static transformer, which reduces to the required voltage, the A.C. current now being supplied by the Bay Counties Power Company, which company supplies the Navy Yard.

² Numbers here in brackets [] seem to be the original page numbers of an earlier version, likely transcribed by Dunklee, and here placed at the beginning of the paragraph.



Mare Island Station, 1906. (See endnotes).

[¶3 >] The station on Goat Island³ was established soon afterward, also with Slaby-Arco instruments and, in order properly to develop operators and increase the efficiency of wireless, the Navy Department sent two sets of instruments and some wireless experts from the New York Navy Yard to Panama, where wireless installations were made onboard the *U.S.S. Boston* and *New York*, the vessels then coming north.

³ In San Francisco bay, now Yerba Buena Island.

The Farallon station followed soon afterwards, then the Point Arguello, Point Loma, Table Bluff, Cape Blanco, North Head and lastly Sitka. The station on Tatoosh island at Cape Flattery was installed by a working party from the Puget Sound yard, as was also the navy yard station there. These two stations are under the jurisdiction of the Commandant of the Puget Sound yard and the Goat Island station under the Commandant of the San Francisco Naval Training Station, all other stations being under the Commandant, Mare Island, with the Equipment Officer in direct charge as to care, maintenance and inspection of stations (made quarterly) and the detailing of operators.

 $[\P4 >]$ So far as known the Navy Department contemplates installing but one more station on this coast and that is to be at Valdez, (Cordova) Alaska. Two steel towers are now at the yard, ostensibly for this purpose, but as the season is now too far advanced to procure the materials, engines and instruments for the installation of the station this year it will have to be postponed until the next.

It is probable that the Navy Department will, as soon as funds are available, install a powerful station at Honolulu. At present the Government business is handled by a private company, free of expense, for the privilege of having no interference.

The Farallon station is fitted temporarily with a set of instruments almost all of which [were] made up on the Mare Island yard. It is of 10 k.w. capacity, duplicate gas engines, also an Exide storage battery.

 $[\P5>]$ It was the original intention to use Exide batteries in all wireless station on the coast; the gas engine, direct connected to generator, to be used only for charging the batteries, but this proved very expensive and the danger of destroying the batteries by short-circuiting (?) while charging, being very great, unless especially skilled workmen were in attendance, experience at once indicated that with certain modifications the output of the gas engine-generators should be utilized for transmission purposes direct. These are Union gas engines, Oakland, burning No.1 distillate as fuel; with a Westinghouse generator. This battery is now used only for lighting the Farallon station.

The Point Loma station, on the point across the bay from the city of San Diego, is now fitted with a permanent installation consisting of a Massie sending set of 10 k.w. capacity. There is installed but one engine-generator (with spare armature) as it is expected within the next year to obtain power from the electric company supplying the city of San Diego.

 $[\P 6 >]$ It is necessary in all wireless work to use an alternating current and in the event of a breakdown in the present engine a rotary

interrupter is used while repairs are being made. In view of the increased business to be done at this station while the fleet is at Magdalena⁴ the Navy Department has increased the complement of the station by another expert operator.

It is the practice at Point Loma, while vessels are at Magdalena bay, to forward to one vessel each night a summary of the important news of the day, copies being made and passed to each vessel thus keeping the officers and men informed of the doings at home. This station has telephone and telegraph connection with San Diego and during the stay of the fleet at Magdalena a great volume of official business and press dispatches will be handled. It is expected that a Western Union operator will also be placed at Point Loma temporarily to handle the commercial business received by the wireless operators.

⁴ Magdnalena Bay is 570 miles south of San Diego on Baja California's west coast

 $[\P7 >]$ The Point Arguello station, located near Santa Barbara, has but recently been thoroughly overhauled by the Navy Yard workmen. It has a Massie set, 3 k.w. duplicate engine-generators. It has shore connection with the Western Union line and is the reporting station for the Dollar line of steamers.

The Table Bluff station is on the coast not far from the city of Eureka. It is a 5 k.w. Massie set, one gas engine-generator held in reserve, and power is supplied by the Fortuna Lighting Company at so much per kilowatt-hour, a minimum of \$50 per month being charged. This has proved highly satisfactory. The Table Bluff station is of great service to the city of Eureka in reporting vessels, being supplied with a powerful telescope and having telegraphic land connection. It is expected soon to have telephone connection as well.

[¶8 >] Work with commercial steamers, fitted with wireless, is constantly increasing, the importance of the work being apparent in a recent message stating that the steamer *Roanoke*, via the steamer *Rose* *City*, had spoken [to] a vessel short of fuel, the captain wishing the matter reported to the owners and to state that he was proceeding slowly.

The Cape Blanco station on the coast of Oregon has a Massie set, 5 k.w. As yet there is no land connection but it is expected ere long to have a telegraph line constructed from the station to Port Oxford, some 12 miles distant. Should the station be placed out of commission by some accident the fact could not be made known without walking into Port Oxford. (Navy furnished saddle horses.)

The North Head wireless station, at the mouth of the Columbia river in the state of Washington, has proven one of the best on the coast, though the instruments were made up on the Mare Island yard and are of a temporary nature. $[\P9>]$ Its power is 5 k.w. As soon as funds are available it is expected to purchase a duplicate engine-generator and send the party from Mare Island to make the permanent installation of a Massie set. This station has both telegraph and telephone land connection and does considerable business with commercial steamers fitted with wireless plying between San Francisco and Portland. Messages destined to San Francisco are usually relayed to Mare Inland, thence to Goat Island, where they are 'phoned over to San Francisco.

The Sitka station, the last to be installed, is situated on Japonski Island, across the channel from Sitka. It is under the direct supervision of the commanding officer of the U.S. Marine Barracks at Sitka, which officer makes the quarterly inspection of the station as required by the Bureau of Equipment, and annual inspection being made by the Equipment Officer, Mare Island. $[\P 10 >]$ The station has telephone and telegraph connection, the Army Signal Corps having laid a cable across the channel from Sitka, which gives direct communication with Seattle.

The Tatoosh and Puget Sound stations have Shoemaker sets, installed by workmen from that Navy Yard. Great difficulty was experienced in getting materials to the Tatoosh station, the Siwash Indians and their canoes being used to good advantage.

All of the wireless stations now have two wooden masts, fitted with wire stays, properly insulated at intervals with pieces of seasoned oak, to render them non-conductive. Some of the first stations installed had solid masts, with top-masts, the prevailing sectional mast being adopted later as a matter of convenience in transporting and erecting. [¶11 >] At the Puget Sound yard the branches were trimmed from two big trees thus providing a natural support for the aerial better than could possibly be made, requiring no stays. Neither is there danger of destruction except by lightning. The height of wireless masts averages about 185 feet. The cage type of serial was used at first, but the flat top soon replaced it, the present aerial ranging from 4 to 11 wires — this for sending purposes only. One wire is quite sufficient for receiving.

Each station has been supplied with a Pierce wave meter, an instrument which indicates the wavelength used when sending. The nominal length of wave of Pacific coast stations is 425 meters, though no two stations are exactly the same, due to difference in each respective installation and to the magnetic conditions surrounding each station, (and personal whim of the Chief in Charge). The Sitka station is tuned to 900 meters, due principally to the desire to increase the radius of the station as much as possible. !!

 $[\P 12 >]$ One Pierce wave tuner (a variable inductance) was recently received from the New York yard and was given a thorough test by the working party while at Point Arguello. It was then taken to Point Loma by Mr. Hanscom to be used in working with the fleet. This is really a wonderful instrument and others have been requested for the important stations. The greatest obstacle to contend with in wireless work is "interference" and the new Pierce wave tuner reduces this to a minimum. When an operator begins to "fish" for a message and then locates the call he can immediately cut in a sufficient resistance (?) [attenuation] to exclude every sound but the one desired. By the use of this tuner the operator can also cut out the static (?) — the natural electricity, so trying at times — which frequently entirely prevents a station from doing any business.

 $[\P13 >]$ It is believed that with the use of these instruments three different stations can be sending simultaneously to one station and by placing three tuners in series, in the receiving station, the three operators will be able to receive the different messages through the same aerial at one and the same time. While this would be a marked advance in wireless it will hardly compare with the quadruplex land telegraph, where two messages are going in both directions at the came time over one wire. However, it would greatly facilitate the handling of business and increase the volume of work that can be done at each station, as well as ensuring greater accuracy.

As referred to above, several of the stations are fitted with the Massie type of sending apparatus, though the Massie receiver is not used, but in its stead a Navy type detector, with double head electrolytic receivers. (Electrolytic detector and pair of cans [headphones] is meant).

 $[\P14 >]$ These receivers are much like those in central telephone offices except that they are wound to a resistance of from 1500 to 2000 ohms, which increases their efficiency in

detecting sound. The best detectors on the market are carefully protected by patents and the Massie people seem thus far not to have been able to perfect this part of their apparatus with an entirely new design.

The complement of wireless stations is three operators (usually a Chief Electrician in charge) but recently the Navy Department has increased the Farallones, Point Arguello and Table Bluff stations by the addition of a cook, who will assist also in the housework and keeping up the grounds, planting the garden, etc. This will give the operators more time at the key, thus resulting in increased efficiency. One operator is constantly on watch "listening in."

 $[\P15>]$ One of the greatest problems in the wireless work on this coast has been the training of the enlisted men to become operators. An electrical school is maintained at Mare Island navy yard under the Equipment Officer and in direct charge of Chief Electrician J. C. Maxon, U.S.N. Enlisted men having certain qualifications and desiring to take up general electricity and wireless are given six months instruction, while attached to the receiving ship *Independence*, in general electricity and wireless, and the output of the school is scarcely sufficient to meet the demands from vessels and shore stations. But few of the men become expert in the work unless they enlist a second time, as it requires much skill and practice. There is a set of instruments at the school and one on the *Independence*, which the boys use for instruction purposes.

The buildings at all the stations are very similar in appearance and equipment; M. W. N. Concanon of Oakland, being the successful contractor for all stations.

[¶16 >] The buildings are very comfortable, well furnished, a good assortment of library books, etc. for the operators. The Department occasionally permits the wife of an operator-in-charge to live at the station, doing her share of the household duties, which adds much, in the mind of the sailor lads, to "all the comforts of home." While the record with the *Maine* is excellent it does not equal the message picked up at Point Loma more than a year ago by Chief Electrician Millison. This message was from the *Rhode Inland* lying in the eastern part of the West Indies, it being directed to the Pensacola navy yard wireless station, the distance being in the neighborhood of 3000 miles, and across the of Arizona and New Mexico. This was an exceptional case due considerably to the atmospheric conditions prevailing, though the operator should receive great credit for his skill. This message was verified and is authentic. Nothing has been heard from the Naval wireless stations on the Atlantic coast which surpasses this record.

 $[\P17 >]$ This same operator, while at Sitka, heard the Army transport *Sherman* calling Honolulu when she was but 150 miles out of that port, the distance being about 1700 miles (nautical). The operators on the coast are hopeful that the Atlantic fleet will cross the Pacific in order that they may make an effort to keep in communication with them until they reach Honolulu. This has not yet been accomplished.

There are more than twice the number of Government wireless stations on the Atlantic coast than on the Pacific, yet we seem to have a sufficient number for all purposes, as the greater the number the more the confusion and interference.

 $[\P18 >]$ It is presumed that the average layman is familiar with the fact that wireless telegraphy is simply the atmosphere set in motion by a pulsating electric current, and that the waves thus created go out in all directions like the action of the water on the surface of a smooth mill pond when a pebble is dropped into it. Only small success has been met with, in attempting to direct the message to but one particular point.

Wireless telegraphy its still in its experimental stage yet it has been sufficiently developed to ensure its permanency as a means of accurate communication with vessels at sea, and the time is not far distant when all commercial vessels of any consequence throughout the world will be so fitted, if they expect the traveling public to patronize them. [End of typescript] ##

Archivist's note:

As of 1925, Floyd E. Dunklee served on a Navy Day committee of the Reserve Fleet Association (*Oakland Tribune*, Oct. 7, 1925).

As late as 1940, a Floyd E. Dunklee of Vallejo is noted as a "Gunner" — *i.e.*, a materiel-managing Warrant Officer in the Marine Corps. (Register of Commissioned and Warrant Officers of the United States Navy ... 1936 1940).

There follows the transmittal letter for this text, which provides further background information.

Sonoma, Ca. Nov. 1, 1992

Dear Mr. Lee,

Here is the material I mentioned on the telephone. As I said, it was given to me along with a bunch of stuff by Floyd E. Dunklee of Vallejo upon his retirement from Mare Island Navy Shipyard about 1952. At that time he was one of the senior engineers, and my immediate superior, in what was then called the "Shore Electronics Section" of the Navy Yard's Electronics Department.

My memories or what he told me of his life have become hazy, but I believe he had been a sailor before WWI and at some point became a wireless operator with duty during WWI and after at several of the shore stations mentioned in this material. I also recall his mentioning having to climb the 700 ft. towers at Cavite, Philippines and once having an

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iron ladder rung break and leave him hanging. I think he is also the operator mentioned in Par. 17. After retiring from the Navy about the mid-Twenties he became a civilian radio engineer at Mare Island.

Yours truly,

s/ Sam Sullivan

Sam Sullivan 20565 Fifth St. East Sonoma, Ca. 95476

P·S. Your use of 73 to sign your ad leads me to surmise you are a ham. I am W6WXU.

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The inserted photographs come from Navy archives.

The first (with loft) is noted:

Title: Mare Island Naval Radio Station Caption: Pigeon loft, the first wireless shack at the Hill Station, Mare Island Naval Radio Station. Image is from UG 21, US Naval California Radio Station Collection. Accession #: UG 21 Catalog #: UG 21-02.06 **Donor:** Found in collection

Copyright Owner: Naval History and Heritage Command **Original Format:** Glass negative

The interior with the sailor (R) is noted:

Title: Mare Island Naval Radio Station Caption: Naval personnel at the Mare Island Naval Radio Station, Hill Station. Image is from UG 21, US Naval California Radio Station Collection. Accession #: UG 21 Catalog #: UG 21-02.04 Donor: Found in collection Copyright Owner: Naval History and Heritage Command Original Format: Glass negative

The interior without the sailor (L) is noted:

Title: Mare Island Naval Radio Station Caption: Radio instruments at the Mare Island Naval Radio Station, 1904 or 1906. Image is from UG 21, US Naval California Radio Station Collection. Accession #: UG 21 Catalog #: UG 21-03.03 Donor: Found in collection Copyright Owner: Naval History and Heritage Command Original Format: Glass negative

The photograph of the station as of 1906 is noted:

Title: Mare Island Naval Radio Station Caption: Sailors outside the Mare Island Naval Radio Station, 1906. Image is from the UG 21, US Naval California Radio Station Collection.

Accession #: UG 21

Catalog #: UG 21-03.02 Donor: Found in collection Copyright Owner: Naval History and Heritage Command Original Format: Glass negative

In publishing these photographs, the Navy says:

Mare Island Naval Radio Station

The US Naval Radio Station at Mare Island was the first naval radio station on the West Coast. This station, commonly referred to as the "Hill Station", was commissioned 27 April 1904. The original site was located on a hill southward of the shipyard proper. An abandoned pigeon cote was moved to the site and fitted up as an operating and transmitting room. In addition to the pigeon cote, one ship type mast, 130 feet high, was erected. Under the command of officers with such titles as Equipment Officer, Officer in Charge Wireless Telegraph Station, Pacific Coast Radio Officer, Electronics Officer, and Industrial Manager, people based at Mare Island had been engaged in shore electronics installation work since 1904.

"One of the puzzling items (boondoggling?) was the expensive camera which was purchased each year in order that the progress photographs could be taken at each station. Those were the days when wireless people were a law unto themselves, because how could any other naval engineer understand this new-fangled operation? They never submitted a request for funds- they simply submitted bills and someone paid them." - from the personal recollection of Mr. E. D. Wichels at Mare Island, who served as Secretary in the Commandant's office.

The Mare Island location served as a transmitter station to ships at sea as well as to shore commands in the Pacific. In May 1904 the first radio message transmitted to the Pacific was sent from Mare Island to the hospital ship USS Solace as she steamed out through the Golden Gate. Contact was lost at seventy-five miles. The station's mission during the early years was to provide the then new Marconi wireless circuits to fill the Navy's requirements in the San Francisco Bay area. By 1915, Mare Island had built all of the radio stations that spanned the Pacific Coast from Point Loma at San Diego to the Pribilof Rocks in the Bering Sea, as well as the Lafayette Station at Bordeaux, France. In 1919, the Mare Island team went to Siberia to build the first station erected in Vladivostok. In 1917, Naval Communication Station San Francisco moved its headquarters and receiver site from Mare Island to Yerba Buena Island; the transmitter site remained at Mare Island.

In 1915, 30 KW arc transmitters were installed at Mare Island. A decision was made to establish the Yerba Buena Station as the control station and Mare Island as the transmitter station for the communication complex. At that time the Mare Island station was changed from a transmitting/receiving station to a transmitting station only, with control (keying) of the transmitters accomplished by the Yerba Buena Station (NPG). The San Francisco District consisted of the stations at Yerba Buena Island (District Center), Mare Island, Farallon Island, Eureka, Marshfield and a station at Monterey which had been authorized but was never built.

1904 - Radio Station (Call sign TG) established with Slaby-Arco transmitter at the HILL location

1912 - 5 KW quenched spark gap transmitter installed 1915 - 30 KW arc transmitter installed - call sign changed to NPG

since Yerba Buena became the control station.

https://www.arcgis.com/apps/MapSeries/index.html?appid=2809d9b17a6b4b2 b8bdb878b56f23764

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