

RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, November, 1915—No. 11

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DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
Washington, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the List of Radio Stations of the United States and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the List of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the List of Radio Stations of the United States and the List of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:

E. F. SWEET,
Acting Secretary.

NEW STATIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

Additions to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Longitude and latitude (approximate).	Call signal.	Range.	System.	Wave lengths.
Great Lakes, Ill., ^{1, 2}	O 87° 50' 00'' N 42° 18' 30''	NAJ	800	U. S. Navy..	300,600,1000
Heald Bank Lightship ^{3, 4}	O 94° 13' 00'' N 29° 06' 00''	NLP	60	.....do.....	300,600
Indianhead, Md., ⁵	O 77° 10' 55'' N 38° 38' 00''	NBG		.....do.....	300,600,750
Steamship Premier ^{6, 7}	O 158° 28' 00'' N 58° 45' 00''	KMP	20		300,450,600

* Radio station operated and controlled by the United States Naval Radio Service, Radio, Va.

¹ Great Lakes training station.

² Service, O; hours, N.

³ Off Galveston, Tex.

⁴ Service, O; hours, 8m 10s.

⁵ Service, O; hours, every hour on half hour from 8.30m. to 4.30s.

⁶ Moored schooner.

⁷ Hours, X; radio station operated and controlled by the Alaska Packers' Association. The station is limited to correspondence with Nushagak and Clark's Point, Alaska.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Vessel.	Call signal.	System.	Wave lengths.	Service.	Hours.
General John M. Schofield ¹	WXW	U. S. Army.....	600	O	
Gold Shell ²	WIB	Marconi.....	300,600		
Pioneer (WPM) ³	WPM	Kilbourne & Clark, 120.....	300,600	PG	X
Tyee ³	WPC	Kilbourne & Clark, 120.....	300,600	PG	X

¹ Radio station operated and controlled by the United States Signal Corps, War Department, Washington, D. C.

² Rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Gold Shell Steamship Co., owner of vessel.

³ Range, 100; rates, 4 c. per word, 40 c. minimum per radiogram. Radio station operated and controlled by the Puget Sound Tugboat Co., owner of vessel.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, only.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by--
Battle Creek, Mich.....	8ZC	200,425	P	X	Bert E. Clough.
Schenectady, N. Y. (2YU).....	2YU	300,2000	P	X	Walter L. Upson (Union College).

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b=ship station; c=land station.]

Call signal.	Name.	Call signal.	Name.
KMP	Premier.....c	WIB	Gold Shell.....b
NAJ	Great Lakes, Ill.....c	WPC	Tyee.....b
NBG	Indianhead, Md.....c	WPM	Pioneer.....b
NLP	Heald Bank Lightship.....c	WXW	General John M. Schofield.....b

ABBREVIATIONS.

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

Name =Name of station.

G. loc. =Geographical location: O=west longitude, N=north latitude.

Call =Call letters assigned.

System =Radio system used and sparks per second.

Range =Normal range in nautical miles.

W. L. =Wave lengths assigned: Normal wave length in italics.

Service =Nature of service maintained:

PG=General public.

PR=Limited public.

P=Private.

O=Government business exclusively.

Hours =Hours of operation:

N=Continuous service.

X=No regular hours.

m=a. m. (12m=midday).

s=p. m. (12s=midnight).

Rates =Ship or coast charges, in cents: c=cents. (The rates in the international list are given in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent).

Notes =Refer to notes in the Berne list.

OTHER ABBREVIATIONS.

Marconi Co.=Marconi Wireless Telegraph Co. of America.

ALTERATIONS AND CORRECTIONS.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, and to the List of Radiotelegraph Stations, published by the Berne bureau.]

ADMIRAL EVANS.—Range, 100; system, Kilbourne & Clark, 120; hours, N; strike out rates. Note, Radio station operated and controlled by the Pacific-Alaska Navigation Co., owner of vessel.

ANTILLES.—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

BATON ROUGE.—System, Marconi, 1000.

BRINDILLA.—System, Marconi. Notes, Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.

CADDO.—System, Marconi, 1000. Notes, Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.

CAMAGUEY.—Range, 300; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

CAROLINA (KGB).—Range, 300; system, Marconi, 1000; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

CITY OF BUFFALO.—Hours, X.

CITY OF MACON.—Range, 300; system, Marconi, 1000.

CITY OF ST. LOUIS.—Range, 300; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

COMMUNIPAW.—System, Marconi.

COPPENAME.—Range, 500.

CROPTON HALL.—System, Marconi, 1000; W. L., 300, 450, 600; hours, N.

CUSHING (KSC).—System, Marconi. Notes, Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.

- CYPRUS.**—Service, P; strike out rates. Note, Radio station operated and controlled by Daniel C. Jackling, owner of vessel (yacht).
- DAYTON.**—System, Marconi. Notes, Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.
- DIAMOND HEAD.**—Strike out all particulars.
- ESSEX (KQE).**—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- EXCELSIOR (KKO).**—Range, 300; system, Marconi, 1000; W. L., 300, 465, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- FAVORITE.**—System, Marconi, 240.
- GLENPOOL.**—System, Marconi, 1000. Notes, Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.
- HERBERT G. WYLIE.**—Range, 200; system, Marconi, 1000; service, PG; hours, X.
- HEREDIA.**—System, National Electric Signaling Co., 1000.
- JUNIATA (KQJ).**—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- KOREA.**—Notes, Radio station operated and controlled by the Marconi Co. Atlantic Transport Co., owner of vessel.
- LAMPASAS.**—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- LOUISIANA (KUL).**—Range, 300; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- MARACAIBO.**—Range, 300; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- MERRIMACK.**—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- MOMUS.**—Range, 300; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- MORENI.**—System, Marconi, 1000.
- MORRO CASTLE.**—Range, 300; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- NAVAJO (WNJ).**—Range, 150; system, Marconi, 480; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- NORWOOD.**—Strike out all particulars.
- OLIVETTE.**—W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- ONTARIO (KQO).**—Range, 150; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- PERSIAN.**—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- PHILADELPHIA (KDA).**—Range, 300; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- PIONEER.**—System, Marconi, 1000; hours, X. Notes, Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.
- POLARINE.**—System, Marconi, 1000. Note, Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.
- SABINE.**—Range, 300; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- SAN JUAN (KGJ).**—Range, 300; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- STATE OF OHIO.**—System, Marconi, 120.

- SUWANNEE.—Range, 150; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- S. V. LUCKENBACH.—Name, Omega. Note, Radio station operated and controlled by the Marconi Co. Barber & Co., owner of vessel.
- TILLICUM.—Strike out all particulars.
- WILLIAM O'BRIEN.—Range, 200; system, Marconi, 240; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

KGU, read, Omega, b. Strike out particulars following the call signals WNL, WSG, and WPT.

MISCELLANEOUS.

LIST OF RADIO STATIONS OF THE UNITED STATES.

The Bureau announces the completion of the 1915 edition of the List of Radio Stations of the United States, containing a list of 5,073 stations. The table given below shows the number of land, ship, special land, and amateur stations contained in this list as compared with the 1914 list:

Station.	1914	1915	Increase.
Government and commercial land stations.....	189	224	35
Government and commercial ship stations.....	895	895	.....
Special land stations.....	54	118	64
General and restricted amateur stations.....	2,796	3,836	1,040
Total.....	3,934	5,073	1,139

The appendix to this list contains several articles of interest to radio operators. These books may be procured from the Superintendent of Documents, Government Printing Office, Washington, D. C, at 15 cents per copy.

Copies of the Radio Communication Laws and Regulations of the United States may also be procured from the Superintendent of Documents at 15 cents per copy.

INTERNATIONAL LIST OF RADIOTELEGRAPH STATIONS.

The Director of the International Bureau of the Telegraph Union, Berne, Switzerland, has announced the completion of the fourth French edition of the Official Nomenclature of Radiotelegraph Stations of the World. The English and German editions of this list are now in the hands of the printer and will be available within a very short time.

CASUALTY REPORT.

The steamship *Mariposa*, of the Alaska Steamship Co., bound from Seattle, Wash., to southern Alaskan ports, grounded at 4.36 a. m., October 6, on the rocky shore off Pointer Island, Llama Passage, about 8 miles from the Indian village of Bella Bella, British Columbia.

SOS signals were transmitted at 4.40 a. m., and were answered by the steamship *Despatch*, of the Border Line Transportation Co., 30 miles distant, the steamship *Senator* of the Pacific Coast Co., 270 miles distant, and the Canadian land station at Triangle Island, British Columbia, approximately 150 miles distant.

The *Despatch* immediately hastened to the scene of the disaster, and after taking off all persons on board the *Mariposa*, remained near by until she could be of no further assistance.

The distress call was transmitted on the emergency radio equipment of the vessel, which was installed on the main deck and which remained above water for six hours, when the vessel slid into deeper water and the apparatus was submerged by the rising tide.

TAHITI RADIO STATION.

The radio station now being built by the French Government on Tahiti Island, Society Islands, will be ready to receive and transmit commercial messages before the close of 1915.

The temporary station, now in course of erection, will be followed by a much more powerful plant. The plans of the temporary station contemplate a 10-kilowatt installation of the type used by the French Government, with a wave length of 600 meters. The towers, two in number, will be 100 meters in height. The station will be expected to reach Awanui, New Zealand; Suva, Fiji; and the Samoan Islands.

Immediately upon the completion of the temporary station, work will begin on a permanent station of much greater power. This permanent 300-kilowatt station will be operated by a 500-horsepower gasoline engine, and will use a wave length of 2500 meters. There will be eight towers, each 100 meters high, erected in parallel rows of four towers. The space between the towers will be 250 meters, and 200 meters between parallels. There will be two antennæ, one of 600 meters wave length, the other of 2500 meters.

With the permanent station it is expected that communication will be established with stations in Cochin-China; South America; Honolulu, Hawaii; San Francisco, Cal.; Sydney; Australia; and even in Martinique and Guadeloupe, West Indies. All material used in the construction of these stations is supplied by the French Government and is shipped from France.

Call letters have not been assigned to the station and rates are not obtainable at the present time.

TEST OF AUXILIARY RADIO EQUIPMENT.

[Test of an Edison storage battery, type B-4-H, W. S., consisting of 100 cells rated at 80 ampere-hour capacity, used as an auxiliary source of power supply for a radio transmitter of the Marconi Wireless Telegraph Co. of America, known as the type P-5, one-half kilowatt (input to transformer primary), 500 cycle, quenched and rotary synchronous gaps. Height of antenna above load line, 95 feet; fundamental wave length, 293 meters.]

Because of the difference of opinion and the absence of any official information as to whether or not certain types of auxiliary apparatus and their source of auxiliary power supply fully comply with section 1 of the act of June 24, 1910, amended July 23, 1912, the Department believes it to be necessary that the various types of apparatus and auxiliary power be officially submitted to a test from time to time, which will furnish the information desired. In view of the above, the Department authorized that such a test be conducted in connec-

tion with the auxiliary equipment installed aboard the Merchants & Miners' Transportation Co.'s steamship *Howard*, plying between Baltimore, Norfolk, and Boston.

This test was conducted from July 13 to 19, 1915, en route from Norfolk to Boston and return from Boston to Baltimore by F. A. Kolster, of the Bureau of Standards, and R. Y. Cadmus, radio inspector, of the Bureau of Navigation, assisted by representatives of the Edison Storage Battery Co. and the Marconi Wireless Telegraph Co. of America.

The Edison battery installed on the steamship *Howard* consists of 100 cells type B-4-H, W. S., rated at 80 ampere hours. This battery supplies power to run a 110-volt motor, which drives the one-half kilowatt, 500-cycle generator of the radio transmitting equipment, and also supplies power for 25 or more deck lights, as illustrated in figure 1.

The voltage of the battery when fully charged is 140. It is necessary, therefore, to have a resistance in series with the battery in order to cut down the voltage at the terminals of the motor to 110. The

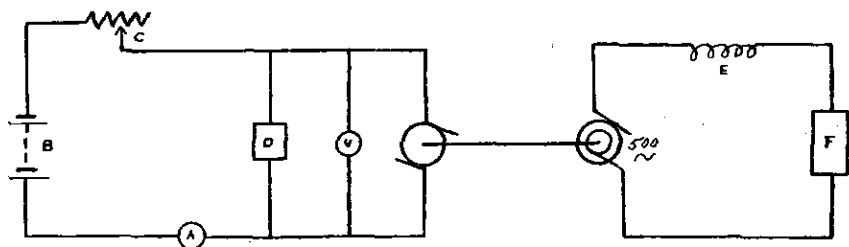


FIG. 1.

A, ammeter; B, 100-cell storage battery; C, variable resistance; D, deck lights; E, reactance; F, 500-watt load; V, voltmeter.

resistance supplied for this purpose is adjustable so that as the battery voltage gradually drops the voltage at the motor terminals can be kept at 110 by decreasing this resistance.

The first test of the battery was started at 6.20 p. m. on July 15, after the battery had been given an overcharge, as recommended by the representative of the Edison company who was present at the tests.

The test was conducted in the following manner: An artificial load of 500 watts was connected to the 500-cycle generator and a bank of about 25 lights was connected to the battery, these lights representing the deck lights proposed in case of emergency. An automatic sending key was connected in the generator circuit so that the load could be thrown on intermittently, as when sending at the rate of 15 to 20 words per minute. The curve shown in figure 2 indicates the behavior of the battery during the time of this test.

The arrangement of 100 cells gave an initial voltage of 140, a series resistance being used to reduce this voltage to 110, which is the voltage for which the motor is designed. This arrangement makes it possible to maintain the required voltage of 110 over a considerable length of time by adjusting the series resistance.

This arrangement is open to criticism, however, because of the fact that it is possible, through carelessness or otherwise, to throw the

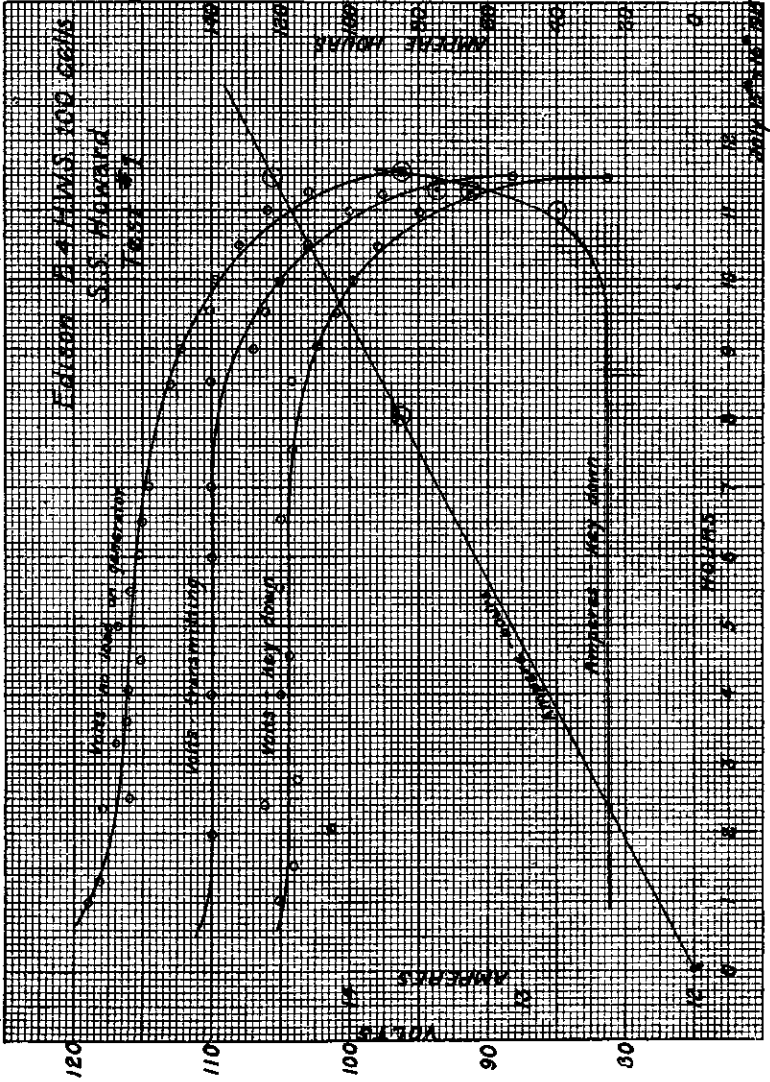


FIG. 2.

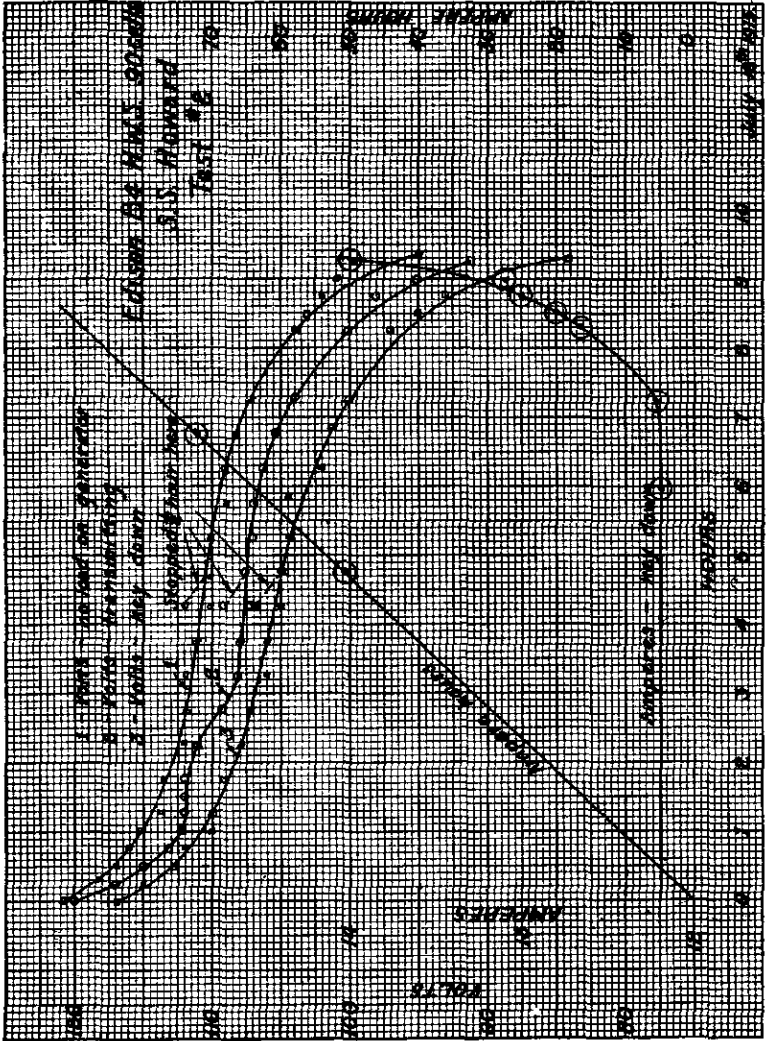


FIG. 3.

entire 140 volts across the motor terminals, in which case the motor would probably be burned out.

A second test of the battery was therefore made on July 18, using only 90 cells instead of 100 cells. The initial voltage of these 90 cells after charge was about 125. No resistance was used in series and the voltage across the motor terminals was not sufficiently in excess of 110 during the first part of the test to cause any motor trouble. The curve shown in figure 3 indicates the behavior of the battery during the time of this test.

It will be noted that the 90-cell battery apparently meets the four-hour and six-hour service requirements of the act of June 24, 1910, amended July 23, 1912, and the London International Convention, respectively, particularly when it is considered that the tests were made under continuous sending conditions, no time being taken for receiving.

Although at no time during the tests did the temperature of the electrolyte show an excessive rise, it has been recommended that proper ventilation be provided in battery compartments.

The motor generator set furnished with this equipment is of the inductor type. Small motor generator sets generally require careful attention, and since these machines must be depended upon in emergency cases frequent inspection is necessary. Therefore radio inspectors should make a careful examination of these motor generator sets at each inspection, particularly of the motor brushes, bearings, and oil chambers.

The radio transmitter furnished is of modern design, efficient, and easily operated. Provision has been made for the use of wave lengths of 300, 450, and 600 meters. The transmitter may be set for any of these wave lengths by means of a simple switch. The antenna current was found to be about 6 amperes for 450 and 600 meters and about 4 amperes for 300 meters.

Under these conditions it is believed that the requirement of 100 miles communication will be fulfilled, as indicated in the range tests given below, conducted while en route from Norfolk to Boston and return to Baltimore.

Date.	Time. ¹	Position of steamship Howard.	Receiving stations.	Distance in nautical miles.
1915.				
July 14...	4.55 a. m.	21 miles NE. of Winter Quarter Light.	Virginia Beach, Va.....	105
July 14...	5.00 a. m.	22 miles NE. of Winter Quarter Light.	S. S. Juniata, 3 miles NE. of Cape Charles.	110
July 14...	5.27 a. m.	28 miles NE. of Winter Quarter Light.	Cape Hatteras, N. C.....	211
July 14...	5.45 a. m.	33 miles NE. of Winter Quarter Light.	S. S. Juniata, abreast of Smith Island.	101
July 14...	6.22 a. m.	42 miles NE. of Winter Quarter Light.	S. S. Juniata, off Virginia Capes...	117
July 14...	4.00 p. m.	7 miles E. of Fire Island.....	S. S. Gloucester, lat. 39° 12' N., long. 73° 27' W.	87
July 15...	9.00 a. m.	5 miles NNE. of Sluce Lightship..	Nantucket Lightship.....	83
July 18...	5.15 a. m.	Off Cape Henry.....	S. S. Juniata, 18 miles NE. of Winter Quarter Light.	100
July 18...	5.45 a. m.	.....do.....	S. S. Juniata, 25 miles NE. of Winter Quarter Light.	107
July 18...	6.45 a. m.	Near Old Point Comfort.....	S. S. Juniata, 40 miles NE. of Winter Quarter Light.	127
July 18...	7.00 a. m.	.....do.....	S. S. Powhatan, off Sparrows Point	160

¹ Weather clear, static medium, during all tests.

The receiving apparatus is of modern type and much more efficient than the older types. It has been recommended that means be provided in these receivers for connecting the detector and telephones in the antenna or primary circuit for "listening in" purposes, and the inductance position with the series condenser short circuited should be plainly marked for 600 meters. This would enable the operator more quickly to hear calls without disturbing the secondary circuit of his receiver and the coupling position of his coils.

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