

RADIO SERVICE BULLETIN

U. S.

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, July 1, 1920—No. 39

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DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
Washington, August 1, 1919.

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

This publication, which was discontinued during the war, 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.

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 Aug. 15, 1919) 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:

WILLIAM C. REDFIELD,
Secretary of Commerce.

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NEW STATIONS.

COMMERCIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of June 15, 1919, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Avalon, Calif.	KUXV				Pacific Telephone & Telegraph Co.
Batangas, P. I.	KUXK				Philippine Insular Government.
Cebu, P. I.	KUXJ				Do.
Cheboygan, Mich.	KUXM	300, 450, 600	PR	X	Warren W. Kathan.
Chicago, Ill.	WGO	300, 600, 3000	PR	(1)	Inter-City Radio Co.
Dallas, Tex. ²	KUXP	300, 425, 600, 1650	PR	N	Continental Radio Telegraph & Telephone Co.
Fairport, Va.	KDAH				C. E. Davis Packing Co.
Hog Island, Pa.	KDAB		P	X	American International Shipping Corporation.
Iloilo, P. I.	KUVM				Philippine Insular Government.
Johnswood, Mich.	KUVQ	300, 450, 600	PR	X	Kreetan Co.
Jordan, Mont. ³	KUVR	500	PR	(1)	Miles City-Jordan Wireless Co.
Kaunakakai, Hawaii ⁷	KHO	300, 400, 600	PR	(9)	Mutual Telephone Co.
Kawaihae, Hawaii ⁸	KHN	300, 500, 600	PR	(9)	Do.
Lahaina, Hawaii ⁸	KHL	300, 500, 600	PR	(9)	Do.
Lihue, Hawaii ⁸	KHM	300, 500, 600	PR	(9)	Do.
Long Beach, Calif.	KUXT				Pacific Telephone & Telegraph Co.
Malangas, P. I.	KUXG				Philippine Insular Government.
Miles City, Mont. ³	KUXN	500	PR	(1)	Miles City-Jordan Wireless Co.
New York, N. Y.	KUVS	300, 400, 600	PR	N	Police department of New York City.
New York, N. Y. ³	WNY	300, 450, 600	PG	N	Radio Corporation of America.
Wichita Falls, Tex. ²	KUXQ	1750	PR	N	Continental Radio Telegraph & Telephone Co.

¹ Hours, 8.30 a. m. to 5 p. m.

² Rates, 3 cents per word, minimum 30 cents for 10 words.

³ Rates, 5 cents per word, minimum 75 cents; day letter of 50 words, \$1.50, each additional 10 words 25 cents; night letter of 50 words, 75 cents; for each additional 10 words, 15 cents.

⁴ Hours, 8 a. m. to 6 p. m.

⁵ Rates, interisland, 15 cents per word, no minimum; interisland night letter of 24 words, \$1; each additional word, 4 cents; ship messages sent through Wahiawa only, 4 cents per word.

⁶ Hours, 7 a. m. to 5.30 p. m.

⁷ Rates, interisland, 15 cents per word, no minimum; interisland night letter of 24 words, \$1; each additional word 4 cents; ship messages sent through Wahiawa and Lahaina, 4 cents per word.

⁸ Rates, ship service, 6 cents per word.

⁹ Hours, 7 a. m. to 12 p. m.

B. of J.
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COMMERCIAL SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of June 15, 1919, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Name of vessel.	Call signal.	Rates.		Service.	Hours.	Owner of vessel.	Station controlled by—
		North and South American service.	Trans-oceanic service.				
		Cents.	Cents.				
Agron.....	KUVJ	4	4	PG	X	U. S. Shipping Board.	
Agwisun.....	KDAD			PG		Atlantic, Gulf & West Indies S. S. Co.	
Agylla.....	KUXS			PG			
Anahuac.....	KUZL	4	4	PG	X	U. S. Shipping Board.	
Argus.....	KUVD			PG		Nafra Co.	
Broxton.....	KDAL			PG			
Capulin.....	KUZR	4	4	PG	X	U. S. Shipping Board.	
Cardonia.....	KUVV	4	4	PG	X	do.	
Carib.....	KUZX	4	4	PG	X	Carib Trading Co.	S. O. R. S.
Cayo Mambi.....	KUZZ			PG			
City of Weatherford.....	KUVC	4	4	PG	X	U. S. Shipping Board.	
Cristina.....	KUZB	4	4	PG	X	Vincent Astor.	R. C. of A.
Cuyamaca.....	KUXD	4	4	PG	X	U. S. Shipping Board.	
Domingo Nazara 1.....	KUVN			PG			
Dungannon.....	KUZV	4	4	PG		U. S. Shipping Board.	
Eastern Sailor.....	KUZT	4	4	PG		do.	I. W. T. Co.
Eastern Tempest.....	KUVG	4	4	PG	X	do.	S. O. R. S.
Ensely City.....	KUZS			PG			
Fish Cannerns No. 1.....	KDAK			PG		Fish Cannerns' Co.	
Hahira.....	KUZC	4	4	PG	X	U. S. Shipping Board.	
Half Moon.....	KUVX	4	4	PG	N	do.	
Hastnai.....	KUVP			PG		National Oil Transport Co.	
Hayden.....	KUZP	4	4	PG		U. S. Shipping Board.	
Honnedaga.....	KUXZ	4	4	PG	N	do.	
Jim Sid.....	KUZD			PG	X	Gulf Barge & Towing Co.	
John Jay.....	KUXR	4	4	PG		U. S. Shipping Board.	I. W. T. Co.
Jolee.....	KUVT	4	4	PG	X	do.	
Loretta.....	KUXF	4	4	PG			R. C. of A.
Manuel Rionda.....	KUXX			PG	X	Sinclair Navigation Co	
M. Mitchell Davis.....	KDAG					C. E. Davis Packing Co.	Owner of vessel.
N. & K. No. 2.....	KDAJ					Fish Cannerns' Co.	
Pansa.....	KUZN	4	4	PG		U. S. Shipping Board.	R. C. of A.
Peconic.....	KDAF					C. E. Davis Packing Co.	Owner of vessel.
Quillwark.....	KUZM	4	4	PG		U. S. Shipping Board.	
Salina.....	KUZQ	4	4	PG	X	do.	
San Pasqual.....	KUXG	4	4	PG	X	do.	
Sebonac.....	KUVF	4	4	PG	X	Thomas A. Howell.	Owner of vessel.
Sinasta.....	KDAC	4	4	PG		U. S. Shipping Board.	
Steel Mariner.....	KUVK			PG	N	U. S. Steel Products Co.	
Steel Trader.....	KUVL			PG	N	do.	
Suelco.....	KUZJ			PG		Submarine Boat Corporation.	
Suholco.....	KUZF			PG		do.	
Suportco.....	KUZK			PG		do.	
Sutransco.....	KUZG			PG		do.	
Tippecanoe.....	KUXL	4	4	PG	N	U. S. Shipping Board.	
West Holbrook.....	KUXB	4	4	PG	X	do.	
West Kebar.....	KDAN	4	4	PG	N	do.	
West Kedron.....	KDAP	4	4	PG	N	do.	
West Norranus.....	KUVZ	4	4	PG	X	do.	
West Notus.....	KDAM	4	4	PG	X	do.	
William B. Livingstone.....	KDAQ			PG		Montreal Transit Co.	R. C. of A.

COMMERCIAL LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

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

Call signal.	Name.	Call signal.	Name.		
KDAB	Hog Island, Pa.....	c	KUXD	Cuyamaca.....	b
KDAC	Sinasta.....	b	KUXF	Loretta.....	b
KDAD	Agwisun.....	b	KUXG	Malangas, P. I.....	c
KDAF	Peconic.....	b	KUXJ	Cebu, P. I.....	c
KDAG	M. Mitchell Davis.....	b	KUXK	Batangas, P. I.....	c
KDAH	Fairport, Va.....	c	KUXL	Tippecanoe.....	b
KDAJ	N. & K. No. 2.....	b	KUXM	Cheboygan, Mich.....	c
KDAK	Fish Cannery No. 1.....	b	KUXN	Miles City, Mont.....	c
KDAL	Broxton.....	b	KUXP	Dallas, Tex.....	c
KDAM	West Notus.....	b	KUXQ	Wichita Falls, Tex.....	c
KDAN	West Kebar.....	b	KUXR	John Jay.....	b
KDAP	West Kedron.....	b	KUXS	Agylla.....	b
KDAQ	William B. Livingstone.....	b	KUXT	Long Beach, Calif.....	c
KHL	Iahaina, Hawaii.....	c	KUXV	Avalon, Calif.....	c
KHM	Lihue, Hawaii.....	c	KUXX	Manuel Rionda.....	b
KHN	Kawaihae, Hawaii.....	c	KUXZ	Honnedaga.....	b
KHO	Kaunakakai, Hawaii.....	c	KUZB	Cristina.....	b
KUVC	City of Weatherford.....	b	KUZC	Hahira.....	b
KUVD	Argus.....	b	KUZD	Jim Sid.....	b
KUVF	Sebonac.....	b	KUZF	Suholco.....	b
KUVG	Eastern Tempest.....	b	KUZG	Sutranseo.....	b
KUVJ	Agron.....	b	KUZJ	Suelco.....	b
KUVK	Steel Mariner.....	b	KUZK	Suportco.....	b
KUVL	Steel Trader.....	b	KUZL	Anahuac.....	b
KUVM	Iloilo, P. I.....	c	KUZM	Quillwark.....	b
KUVN	Domingo Nazara I.....	b	KUZN	Pansa.....	b
KUVP	Hastnal.....	b	KUZP	Hayden.....	b
KUVQ	Johnswood, Mich.....	c	KUZQ	Salina.....	b
KUVR	Jordan, Mont.....	c	KUZR	Capulin.....	b
KUVS	New York, N. Y.....	c	KUZS	Ensely City.....	b
KUVT	Jolee.....	b	KUZT	Eastern Sallor.....	b
KUVV	Cardonia.....	b	KUZV	Dungannon.....	b
KUVX	Half Moon.....	b	KUZX	Carib.....	b
KUVZ	West Norranus.....	b	KUZZ	Cayo Mambi.....	b
KUXB	West Holbrook.....	b	WGO	Chicago, Ill.....	c
KUXC	San Pasqual.....	b	WNY	New York, N. Y.....	c

GOVERNMENT SHIP STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of June 15, 1919.]

Name of ship.	Call signal.	Name of ship.	Call signal.
Bainbridge.....	NUQL	Pillsbury.....	NUQG
Cadmus.....	WUAB	Tacony.....	WUAE
Ford.....	NUQJ	Torpedo Test Barge No. 3.....	NIFX
Gwalla.....	WUAD	Torpedo Test Barge No. 4.....	NIFZ
Gypsum Prince.....	WUAC	U. N. Truxtun.....	NUQK
Hopkins.....	NUQM		

GOVERNMENT LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

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

Call signal.	Name of station.	Call signal.	Name of station.
NIFX	Torpedo Test Barge No. 3.....b	NUQM	Hopkins.....b
NIFZ	Torpedo Test Barge No. 4.....b	WUAB	Cadmus.....b
NUQG	Pillsbury.....b	WUAC	Gypsum Prince.....b
NUQJ	Ford.....b	WUAD	Gwalla.....b
NUQK	U. N. Truxtun.....b	WUAE	Tacony.....b
NUQL	Bainbridge.....b		

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of June 15, 1919, only.]

Station.	Call signal.	Station controlled by—
Bear Creek, Mont.....	7ZG	Winfred E. Slauson.
Brooklyn, N. Y.....	2XT	Lowenstein Radio Co.
Burley, Idaho.....	7YF	Burley High School.
Burrwood, Ia.....	5XE	Tropical Radio Telegraph Co.
Cambridge, Mass.....	1XM	Massachusetts Institute of Technology.
Cincinnati, Ohio.....	8ZJ	Hughes High School.
Dearborn, Mich.....	8XD	Henry Ford.
Detroit, Mich.....	8ZN	George W. Carter.
Fresno, Calif.....	6XU	San Joaquin Light & Power Corporation.
Houston, Tex.....	5YI	Rice Institute.
Kansas City, Mo.....	9ZZ	Walter M. Aronson and Albert R. Perkins.
La Crosse, Wis.....	9ZY	Ben A. Ott.
Lewisburg, Pa.....	8XJ	Bucknell University.
Los Angeles, Calif.....	6ZG	Forbes W. Van Why.
Mesilla Park, N. Mex.....	5ZJ	R. W. Goddard.
Middletown, Conn.....	1XN	Walter G. Cady.
Norfolk, Va.....	3YD	Norfolk Radio School.
Northville, Mich.....	8XL	Henry Ford.
Omaha, Nebr.....	9YP	High School of Commerce.
Philadelphia, Pa.....	3XI	Lester R. Damon.
Pittsburgh, Pa.....	8ZO	Frank Moore, jr.
Portland, Ore.....	7YG	Young Men's Christian Association.
Portland, Ore.....	7ZI	Charles L. Austin.
San Francisco, Calif.....	6XT	Baruch Research Laboratories.
San Gabriel, Calif.....	6XS	R. B. Ashbrook.
Seattle, Wash.....	7XK	Kilbourne & Clark Manufacturing Co.
Seattle, Wash.....	7YE	City of Seattle School District.
Staunton, Va.....	3YE	Staunton Military Academy.
Urbana, Ill.....	9XJ	University of Illinois.

SPECIAL LAND STATIONS GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
1XM	First district:		Seventh district:
1XN	Cambridge, Mass.	7XK	Seattle, Wash.
2XT	Middletown, Conn.	7YE	Seattle, Wash.
	Second district: Brooklyn, N. Y.	7YF	Burley, Idaho.
	Third district:	7YG	Portland, Ore.
3XI	Philadelphia, Pa.	7ZG	Bear Creek, Mont.
3YD	Norfolk, Va.	7ZI	Portland, Ore.
3YE	Staunton, Va.		Eighth district:
	Fifth district:	8XD	Dearborn, Mich.
5XE	Burrwood, La.	8XJ	Lewisburg, Pa.
5YI	Houston, Tex.	8XL	Northville, Mich.
5ZJ	Mesilla Park, N. Mex.	8ZJ	Cincinnati, Ohio.
	Sixth district:	8ZN	Detroit, Mich.
6ZG	Los Angeles, Calif.	8ZO	Pittsburgh, Pa.
6XS	San Gabriel, Calif.		Ninth district:
6XT	San Francisco, Calif.	9XJ	Urbana, Ill.
6XU	Fresno, Calif.	9YP	Omaha, Nebr.
		9ZY	La Crosse, Wis.
		9ZZ	Kansas City, Mo.

ALTERATIONS AND CORRECTIONS.

COMMERCIAL SHIP STATIONS. ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 15, 1919, and to the International List of Radiotelegraph Stations, published by the Berne bureau.]

- BALCATT.—Pacific Motorship Co., owner of vessel.
 CALLABASAS.—Callabasas S. S. Corporation, owner of vessel.
 CUBA.—Station operated and controlled by Federal Telegraph Co.
 DEFENDER.—Name changed to Montana.
 GLYNDON.—Glyndon S. S. Corporation, owner of vessel.
 JAMESTOWN.—Station operated and controlled by owner of vessel.
 KATRINA LUCKENBACH.—Luckenbach S. S. Co., owner of vessel.
 LAKE LILLIAN.—International Coal Transportation Corporation, owner of vessel.
 LAKE TULARE.—International Coal Transportation Corporation, owner of vessel; station operated and controlled by I. W. T. Co.
 MERIDEN.—General S. S. Corporation, owner of vessel.
 MILLER COUNTY.—U. S. Shipping Board, owner of vessel.
 NEPTUNE.—Hours, X; rates, 8 cents per word for all classes of service; station operated and controlled by Wireless Service Co., care of John Beninato, 209 Whitney Building, New Orleans, La.
 PENTHIS.—*Read* Pinthis; station operated and controlled by Cutting & Washington.
 RESCUE.—Rates, North and South American, 4 cents per word.
 RICHMOND BORO.—Name changed to Willfaro.

THE STATIONS OF THE FOLLOWING-NAMED VESSELS ARE OPERATED AND CONTROLLED BY THE SHIP OWNERS RADIO SERVICE (INC.).

Astmahco III.	Lake Elsah.	Okiya.
Fonduco.	Lake Galien.	Quinnipiac.
Kickapoo.	Moosabee.	Rainier.
Lake Elmott.	Noddle Island.	Schuylkill Bridge.

THE STATIONS OF THE FOLLOWING-NAMED VESSELS ARE OPERATED AND CONTROLLED BY THE RADIO CORPORATION OF AMERICA.

Anthracite Bridge.	Lake Flag.	Santa Elisa.
City of Vernon.	Lake Floravista.	Sepulga.
Eastern Maid.	Lake Gert.	Sioux Falls.
Fargo.	Lake Geyser.	Sophie Frankel.
Glen White.	Miller County.	Springfield.
Haxtum.	Oronoke.	West Camak.
Himoto.	Pittsburgh Bridge.	West Nomentum.
La Crosse.	Rochester.	

THE STATIONS OF THE FOLLOWING-NAMED VESSELS ARE OPERATED AND CONTROLLED BY THE INDEPENDENT WIRELESS TELEGRAPH CO.

Arcturus.	Greenwood.	Neshobee.
Biran.	Henry County.	Occidental.
Castlewood.	Hukey.	Pallas.
Chappaqua.	Kehuku.	Pinellas.
City of Joliet.	Lake Elva.	Richconcal.
Coosa.	Lake Fenn.	Wheeling Mold.
Delco.	Lake Filbert.	Yellowstone.
Eastern Glen.	Lake Treba.	Yuma.
Franklin County.	Maddequet.	

Strike out all particulars of the following-named vessels:

Augusta.	Lynchburg.	Santa Isabel.
Berwyn.	Nanquitt.	Vigo.
Fire Island.		

COMMERCIAL LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

KITX, *read* Willfarø; KOJF, *read* Montana; KUPC, *read* Pinthis. Strike out all particulars following the call signals, KMC, KMO, KODJ, KUQV, WFUO, WHN, and WLIE.

GOVERNMENT 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 June 15, 1919.]

Charles.—Strike out all particulars.
 Gloucester.—Strike out all particulars.
 Jupiter.—*Read* Langley.
 Montana.—*Read* Missoula.
 North Carolina.—*Read* Charlotte.
 Rockport.—Strike out all particulars.
 South Dakota.—*Read* Huron.

GOVERNMENT LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

NBH, strike out all particulars; NKM, *read* Missoula; NMN, *read* Charlotte; NNC, *read* Langley; NSL, strike out all particulars; NSX, *read* Huron, and NAXV, strike out all particulars.

MISCELLANEOUS.

OPERATOR'S LICENSE SUSPENDED.

License No. 19046, issued at New York, September 14, 1919, has been suspended for a period of three months on account of the holder of the license violating Article VI of the service regulations of the International Convention. The offending operator in this case caused superfluous signals to be transmitted, and had it not been for his previous good record he would not have been dealt with so leniently.

REPETITION OF PRESS TRAFFIC.

The Bureau is in receipt of information and extracts of logs that indicate that one of the greatest sources of interference with commercial traffic at sea is the repetition of press originally transmitted by American stations. From the information received it is apparent that much of this interference is caused by operators not listening in at the proper time, as they should do. In cases where press can not be received on account of interference or other causes an operator may request a station near by to repeat the message on 300 meters. If this is not possible, then 450 meters may be used; but 600 meters should never be used for this purpose.

Herewith is printed a joint resolution of Congress for the information of all concerned:

[PUBLIC RESOLUTION—No. 48—66TH CONGRESS.]

[S. J. Res. 170.]

Joint Resolution To authorize the operation of Government owned radio stations for the use of the general public, and for other purposes.

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That all land, ship, and airship radio stations, and all apparatus therein owned by the United States may be used by it for receiving and transmitting messages relating to Government business, compass reports, and the safety of ships.

SEC. 2. That the Secretary of the Navy is hereby authorized, under terms and conditions and at rates prescribed by him, which rates shall be just and reasonable, and which, upon complaint, shall be subject to review and revision by the Interstate Commerce Commission, to use all radio stations and apparatus, wherever located, owned by the United States and under the control of the Navy Department—(a) for the reception and transmission of press messages offered by any newspaper published in the United States, its Territories or possessions, or published by citizens of the United States in foreign countries, or by any press association of the United States, and (b) for the reception and transmission of private commercial messages: *Provided*, That the rates fixed for the reception and transmission of commercial messages, other than press messages, shall not be less than the rates charged by privately owned and operated stations for like messages and service: *Provided further*, That the right to use such stations for any of the purposes named in this section shall terminate and cease as between any countries or localities or between any locality and privately operated ships, whenever privately owned and operated stations are capable of meeting the normal communication requirements between such countries or localities or between any locality and privately operated ships, and the Secretary of Commerce shall have notified the Secretary of the Navy thereof, and all rights conferred by this section shall terminate and cease in any event two years from the date this resolution takes effect.

SEC. 3. That all stations owned and operated by the Government, except as herein otherwise provided, shall be used and operated in accordance with the provisions of the Act of Congress entitled "An Act to regulate radio communication," approved August 13, 1912.

Approved, June 5, 1920.

HYDROGRAPHIC INFORMATION.

Information concerning wrecks, derelicts, ice, and other dangerous obstructions to navigation whenever received from the Hydrographic Office or from a branch hydrographic office or other reliable source is sent broadcast four times daily, viz, at 8 a. m., noon, 4 p. m., and 8 p. m., local (standard) time of station. Ships within range of a naval radio station should be prepared to receive these hydrographic messages at the hours mentioned and should avoid sending radio messages at these times. One vessel sending may prevent several others receiving information necessary to their safety.

Naval radio stations will furnish this information to passing vessels on request, whenever practicable, at other hours than those mentioned above. Should it not be practicable to send out this information on one of the hours scheduled it will be held until the next scheduled time and sent out as soon as practicable after each hour scheduled.

Each day at noon and 10 p. m., seventy-fifth meridian, immediately following the time signal, the Naval Radio Station at Washington, D. C., will broadcast such information relating to safe navigation as may be furnished it by the Hydrographic Office during the preceding 24 hours. The same wave length, 2,500 meters, used in the time signal will be employed.

TRANSMISSION OF WEATHER REPORTS BY NAVAL RADIO STATIONS.

Through cooperation with local offices of the United States Weather Bureau, weather forecasts are sent broadcast to sea through naval coast radio stations at certain times, varying with the locality, as described below. Coast stations are generally prepared to give local forecasts to passing vessels without charge, on request.

ATLANTIC COAST.

Sent by Washington (NAA) on 2,500 meters wave length and Key West (NAR) on 1,500 meters wave length immediately following 10 p. m. time and hydrographic information (seventy-fifth meridian time).

The coast line is divided as follows:

North Atlantic, Halifax to New York; middle Atlantic, New York to Hatteras; south Atlantic, Hatteras to Key West; east Gulf, Key West to mouth of Mississippi; west Gulf, mouth of Mississippi to mouth of Rio Grande.

This bulletin consists of two parts, the first part containing code letters and figures expressing the actual weather conditions at 8 p. m., seventy-fifth meridian time, on the day of distribution at certain points along the eastern coast of North America, one point along the coast of the Gulf of Mexico, and one at Bermuda. The second part contains a special forecast of the probable winds to be experienced a hundred miles or so offshore. The second part of the bulletin also contains certain warnings of severe storms along the coast whenever occasion arises.

The points for which weather conditions are furnished by the above bulletin are designated respectively by their initial letter, except in the case of Nantucket, for which the letter T is used; accordingly, S=Sydney, T=Nantucket, DB=Delaware Breakwater, H=Hatteras, C=Charleston, K=Key West, P=Pensacola, and B=Bermuda.

GREAT LAKES.

Sent by Great Lakes (NAJ) on 1,512 meters and Washington (NAA) on 2,500 meters immediately following 10 p. m. time and hydrographic information (ninetieth meridian time).

This bulletin is sent in a similar manner to the one sent out for the Atlantic coast, except the first part expresses the actual weather conditions at 7 p. m., ninetieth meridian time, on the day of distribution at certain points on the Great Lakes. These points are designated as follows: Du=Duluth, M=Marquette, U=Sault Sainte Marie, G=Green Bay, Ch=Chicago, L=Alpena, D=Detroit, V=Cleveland, and F=Buffalo.

This grouping begins on Lake Superior and ends on Lake Erie.

The second part contains a special forecast of the probable winds to be experienced on the Lakes.

Lakes Superior, Michigan, and Huron are considered the upper lakes, and Lakes Erie and Ontario the lower lakes.

All bulletins begin with the letters U. S. W. B. (United States Weather Bureau) and the weather conditions follow. The first three figures of a report represent the barometric pressure in inches (002=30.02); the next figure, the fourth in sequence, represents the direction of the wind to the eight points of the compass: 1=north,

2 = northeast, 3 = east, 4 = southeast, 5 = south, 6 = southwest, 7 = west, 8 = northwest, and 0 = calm. The fifth figure represents the force of the wind on the Beaufort scale following:

Beaufort scale of wind force.

Number and designation.	Statute miles per hour.	Nautical miles per hour.
0 Calm.....	0 to 3	0 to 2.6
1 Light air.....	8	6.9
2 Light breeze.....	13	11.3
3 Gentle breeze.....	18	15.6
4 Moderate breeze.....	23	20.0
5 Fresh breeze.....	28	24.3
6 Strong breeze.....	34	29.5
7 Moderate gale.....	40	34.7
8 Fresh gale.....	48	41.6
9 Strong gale.....	56	48.6
10 Whole gale.....	65	56.4
11 Storm.....	75	65.1
12 Hurricane.....	90 and over.	78.1 and over.

In order to simplify the code, no provision has been made for wind force greater than 9, strong gale, on the Beaufort scale. Whenever winds of force greater than 9 occur the number representing them is given in words instead of figures, thus: Ten, eleven, etc.

EXAMPLES OF CODE.

U S W B S 96465 T 91674 DB 94686 H 99886 C 01214
K 02622 P 03613 B 00065.

Translation.

United States Weather Bureau.

Station.	Pressure.	Wind.	
		Direction.	Force. ¹
Sydney.....	29.64	SW	5
Nantucket.....	29.16	W	4
Delaware Breakwater.....	29.46	NW	6
Hatteras.....	29.98	NW	6
Charleston.....	30.12	N	4
Key West.....	30.26	NE	2
Pensacola.....	30.36	N	3
Bermuda.....	30.00	SW	5

¹ See Beaufort scale.

U S W B Du 95826 M 97635 U 00443 G 96046 Ch 95667
L 00644 D 00842 V 01054 F 01656

Translation.

United States Weather Bureau.

Station.	Pressure.	Wind.	
		Direction.	Force. ¹
Duluth.....	29.58	NE	6
Marquette.....	29.76	E	5
Saulte Ste. Marie.....	30.04	SE	3
Green Bay.....	29.60	SE	6
Chicago.....	29.56	SW	7
Alpena.....	30.06	SE	4
Detroit.....	30.08	SE	2
Cleveland.....	30.10	S	4
Buffalo.....	30.16	S	6

¹ See Beaufort scale.

PACIFIC COAST.

Weather bulletins are obtained from the Weather Bureau, San Francisco, by the San Francisco Naval Radio Station at about 8.30 a. m. and 6 p. m. and forwarded by radio to North Head and San Diego as soon as practicable. Same is broadcasted by San Francisco, North Head, and San Diego at noon and 10 p. m. on 952 meters immediately after transmission of time signals. Hydrographic information and storm warnings are broadcasted immediately upon receipt by Tatoosh, Puget Sound, North Head, Marshfield, San Francisco, and Point Arguello on 600 and 952 meters in succession, and also after broadcasting local weather report. Local weather reports broadcasted by Tatoosh, North Head, San Francisco, and San Diego at 8 a. m. and 4 p. m. on 600 meters and at noon and 10 p. m. 952 meters; and at noon and 10 p. m. by Puget Sound, Marshfield, and Point Arguello on 600 meters. Total weather report from Farallones Islands is forwarded to San Francisco for Marine Exchange at 8 a. m., noon, and 5 p. m.

The daily bulletin broadcasted by San Francisco, North Head, and San Diego will consist of two parts. The first part will contain code words and figures which will express the actual weather conditions at 5 p. m. (one hundred and twentieth meridian time) on the day of distribution at certain points along the western coast of the United States. The second part of the bulletin will contain a special forecast of the probable winds to be experienced a hundred miles or so offshore, made by the United States Weather Bureau, San Francisco, for distribution to shipmasters by naval radio as above. The second part of the bulletin will also contain warnings of severe storms along the coast as occasion may arise.

The points on the Pacific coast from which weather conditions will be furnished will be designated, respectively, by their initial letter:

- T=Tatoosh.
- NH=North Head.
- E=Eureka.
- SF=San Francisco.
- SD=San Diego.

The bulletin will begin with the letters "U S W B S F," signifying United States Weather Bureau, San Francisco, and the weather conditions will follow. The first three figures of a report will represent the barometric pressure in inches ($964 = 29.64$); the next figure, the fourth in sequence, will represent the direction of the wind to eight points of the compass:

- 1=North.
- 2=Northeast.
- 3=East.
- 4=Southeast.
- 5=South.
- 6=Southwest.
- 7=West.
- 8=Northwest.
- 0=Calm.

The fifth figure will represent the force of the wind on the Beaufort scale.

If the weather conditions for any station can not be supplied, the initial of the station will be given, followed by the word "Missing"; and if any portion of a report can not be furnished, such portion will be replaced by an equivalent number of letters, X.

The coast line of the western part of the United States will be divided as follows:

Northern Pacific, Tatoosh to Cape Blanco.
 Central Pacific, Cape Blanco to Point Arguello.
 Southern Pacific, Point Arguello to San Diego.

The forecast and warning will be in ordinary language, and will cover a period of 24 hours from 5 p. m., date of issue. At the end of the forecast a statement will be made in regard to the location and movement of any barometric depression that may be likely to affect the winds over the ocean.

Example of forecast and warnings:

Northern Pacific missing Central Pacific Wednesday rain heavy southeast winds
 Southern Pacific moderate southerly winds period Southeast storm warnings displayed Pointarguello to Capeblanco.

HAWAII.

Weather bulletins obtained from the United States Weather Bureau at Honolulu are broadcasted daily by the Pearl Harbor Radio Station at 8 a. m., noon, 4 p. m., and 8 p. m., local time.

TUTUILA, SAMOA.

Local weather bulletins preceded by the letter "T" are broadcasted by the Tutuila Naval Radio Station at 8 a. m., noon, 4 p. m., and 8 p. m., local time.

TRANSMISSION OF TIME SIGNALS BY NAVAL RADIO STATIONS.

The transmission of time signals to vessels at sea by means of radiotelegraphy was first accomplished in the United States in 1905, and this service, enlarged and extended, has continued to the present time. This service is of the greatest value to mariners, as it furnishes a means by which the time, as given by the transmitted signals, may be compared with a ship's chronometer and the error of the chronometer found. Similar comparisons over a number of days enable data to be obtained by which not only the error may be found but also the chronometer rate; that is, the rate at which it is gaining or losing.

The noontime signals on the Atlantic coast are sent out through the coast radio stations by connection with Western Union telegraph lines from the United States Naval Observatory at Washington, D. C. By the operation of proper relays in electrical circuits, the beats of the seconds of a standard clock in the observatory are sent out broadcast as a series of radio dots, commencing five minutes before the time of the final signal. By omitting certain dots in a series, the comparison between the dots and the beats of the chronometer seconds can be checked until the instant of local noon (seventy-fifth meridian time) is reached. This is marked by a longer dot, which gives the time of exact noon. A comparison with the chronometer time at that instant gives its error referred to the

seventy-fifth meridian time. Applying the difference in longitude, namely, five hours, between the seventy-fifth meridian and Greenwich, which is the standard meridian (or 0° longitude), the error of the chronometer referred to Greenwich time is determined.

According to information received from the Director of Naval Communications, time signals are being transmitted by the United States Naval Radio Stations as follows:

Station.	Call letters.	Wave length.	When sent.
Washington.....	NAA	<i>Meters.</i> 12,500	Daily at 11.55 a. m. to noon, and 9.55 to 10 p. m., standard time, seventy-fifth meridian.
Annapolis.....	NSS	17,000	Daily at 11.55 a. m. to noon, and 9.55 to 10 p. m., standard time, seventy-fifth meridian.
Key West.....	NAR	11,500	Daily at 11.55 a. m. to noon, standard time, seventy-fifth meridian.
New Orleans.....	NAT	11,000	Daily at 11.55 a. m. to noon, standard time, seventy-fifth meridian.
Balboa, Panama.....	NBA	7,000	Daily at 4.55 to 5 a. m., and 12.55 to 1 p. m., standard time, seventy-fifth meridian.
Colon, Panama.....	NAX	11,500	Daily at 4.55 to 5 a. m., and 12.55 to 1 p. m., standard time, seventy-fifth meridian.
Cavite, P. I.....	NPO	952 5,000	Daily at 10.55 to 11 a. m., and 9.55 to 10 p. m., standard time, one hundred and twentieth meridian, east.
North Head, Wash.....	NPE	12,800	Daily at 11.55 a. m. to noon, standard time, one hundred and twentieth meridian, west.
Eureka, Calif.....	NPW	12,000	Daily at 11.55 a. m. to noon, standard time, one hundred and twentieth meridian, west.
Point Arguello, Calif.....	NPK	11,512	Daily except Sundays and holidays at 11.55 a. m. to noon, standard time, one hundred and twentieth meridian, west.
San Diego, Calif.....	NPL	9,800 12,400	Daily except Sundays and holidays at 11.55 a. m. to noon, standard time, one hundred and twentieth meridian, west.
San Francisco, Calif.....	NPH	4,800 12,400	Daily at 11.55 a. m. to noon, standard time, one hundred and twentieth meridian, west.
Great Lakes, Ill.....	NAJ	11,512	Daily except Sundays and holidays at 10.55 a. m. to 11 a. m., standard time, nineteenth meridian.
Pearl Harbor, Hawaii.....	NPM	11,200 1,600	Daily at one hundred and eightieth meridian, mean noon.

¹ Spark.

² Arc.

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, S=south 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 lengths 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.)
I. W. T. Co.	=Independent Wireless Telegraph Co.
R. C. of A.	=Radio Corporation of America.
S. O. R. S.	=Ship Owners Radio Service.
Co.	=Company.
Corpn.	=Corporation.
&	=And.

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