DEPARTMENT OF COMMERCE

RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION

Washington, October 1, 1923—No. 78

CONTENTS.

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.
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.
RC=Radio compass station.
P=Private.
O=Government business exclusively.
Hours =Hours of operation:
N=Continuous service.
X=No regular hours.
m=a. m. (12 m=midday).
s=p. m. (12 s=midnight).
Rates =Ship or coast charges in cents: c.=cents. (The rates in the international list are given in francs and centimes.)
I. W. T. Co.=Independent Wireless Telegraph Co.
R. C. A. =Radio Corporation of America.
S. O. R. S. =Ship Owners' Radio Service.
C. w. =Continuous wave.
I. c. w. =Interrupted continuous wave.
V. t. =Vacuum tube.
FX =Fixed station.
U. S. L. =After operating company denotes that the change applies only to the List of Radio Stations of the United States.
Kc. =Kilocycles.

65617—23

NEW STATIONS.

Commercial ship stations, alphabetically by names of vessels.

[Additions to the List of Radio Stations of the United States, edition of June 30, 1923, 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—
Agwipond	KFKP	.....	PG	X	Guaranty Trust Co.	R. C. A.
City of Birmingham	KFKC	8	PG	N	Ocean S. S. Co. of Savannah (Ga.).	
Emery L. Ford	KFKL	.....	PG	X	Franklin S. S. Co.	I. W. T. Co.
Fred G. Hartwell	KFKJ	.....	PG	X	....do.....	
Mars [1]	KFKD	8	PG	X	Diamond Transportation Co.	

[1] Range, 300; system, Kilbourne & Clark, 1000; w. l., 300, 450, 600, 706.

Commercial land and ship stations, alphabetically by call signals.

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

Call signal.	Name.	Call signal.	Name.
KFKC	City of Birmingham.....b	KFKL	Emery L. Ford.....b
KFKD	Mars.....b	KFKP	Agwipond.....b
KFKJ	Fred G. Hartwell.....b		

Broadcasting stations, alphabetically by names of cities.

[Additions to the List of Radio Stations of the United States, edition of June 30, 1923.]

City.	Call signal.	City.	Call signal.
Boston, Mass. (portable)	WTAT	Greentown, Ind.	WJAK
Cambridge, Ill	WTAP	Hastings, Nebr.	KFKX
Carthage, Ill	WCAZ	Kearney, Nebr.	KFJU
Cedar Falls, Iowa	KFJX	Mattoon, Ill.	WTAN
Cleveland, Ohio	WTAM	Milford, Kans.	KFKB
Dexter, Iowa	KFJV	Norfolk, Va.	WTAR
Fort Dodge, Iowa	KFJY	Osseo, Wis.	WTAQ
Fort Worth, Tex.	KFJZ	Towanda, Kans.	KFJW

Stations broadcasting market or weather reports, music, concerts, lectures, etc., alphabetically by call letters.

[Additions to the List of Radio Stations of the United States, edition of June 30, 1923.]

Call signal.	Station operated and controlled by—	Location of station.	Power (watts).	Wave length.	Frequency (kilocycles).
KJFU	Central Power Co.	Kearney, Nebr.	10	234	1,280
KFJV	Thomas H. Warren	Dexter, Iowa	10	224	1,340
KFJW	Le Grand Radio Co.	Towanda, Kans.	10	226	1,330
KFJX	Iowa State Teachers' College	Cedar Falls, Iowa	50	229	1,310
KFJY	Tunwall Radio Co.	Fort Dodge, Iowa	50	246	1,220
KFJZ	Texas National Guard, One hundred and twelfth Cavalry.	Fort Worth, Tex.	20	254	1,189
KFKB	Brinkley-Jones Hospital Association	Milford, Kans.	500	286	1,050
KFKX	Westinghouse Electric & Manufacturing Co.	Hastings, Nebr.	500	286	1,050
WCAZ	Carthage College	Carthage, Ill.	50	246	1,220
WJAK	Clifford L. White	Greentown, Ind.	30	264	1,180
WTAM	Willard Storage Battery Co.	Cleveland, Ohio	1,000	390	770
WTAN	Orndorff Radio Shop	Mattoon, Ill.	100	240	1,250
WTAP	Cambridge Radio & Electric Co.	Cambridge, Ill.	50	242	1,240
WTAQ	S. H. Van Gordan & Son	Osseo, Wis.	100	226	1,330
WTAR	Reliance Electric Co.	Norfolk, Va.	70	226	1,330

Government land stations, alphabetically by name of stations.

[Additions to the List of Radio Stations of the United States, edition of June 30, 1923, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Brownsville, Tex.[1]	NAY	600, 952, *1250, 2400, 3947, 6000.	PG	N	U. S. Navy.

[1] Loc.[illegible](approximately) 0.97° 20' 00", N. 25° 52' 00"; range, 300–600; system, U. S. Navy arc and spark, 1000; rates, ship service 12 cents per word. The time signals and weather reports heretofore transmitted by Point Isabel will be transmitted by Brownsville on the same wave length at noon, 3 and 7 p. m., and midnight.

Government airplane stations, alphabetically by names of stations.

Additions to the List of Radio Stations of the United States, edition of June 30, 1923, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
ZR-1	NERK		O	N	U. S. Navy.
ZR-3	NERM		O	N	Do.

Special land stations, alphabetically by names of stations.

[Additions to the List of Radio Stations of the United States, edition of June 30, 1923.]

Station.	Call signal.	Station controlled by—
Ann Arbor, Mich.	8ZK	Elmer W. Reeve, 1001 West Washington Street.
Atlanta, Ga.	4ZA	Harry F. Dobbs, 427 Peachtree Street.
Berkeley, Calif.	6ZAD	Donald E. Koch, 2043 Berryman Street.
Boise, Idaho	7XT	Boise High School.
Buffalo, N. Y.	8XN	Federal Telephone & Telegraph Co., 1738 Elmwood Street.
Chicago, Ill.	9XAV	City of Chicago.
Cleveland, Ohio.	8XBD	Radiovox Co., 8005 Euclid Avenue.
Do.	8XG	Willard Storage Battery Co., 12651 Taft Avenue.
Do.	8YAJ	Young Men's Christian Association.
Do.	8ZI	Henry Grossman, 12343 Forest Grove Avenue.
East Braintree, Mass.	1ZF	Harry Hanson, 86 Quincy Avenue.
East Lansing, Mich.	8ZL	F. I. Phippeny, 1264 West Grand River Avenue.
Everett, Wash.	7ZC	Glenn Goodie, 2818 Victor Place.
Frackville, Pa.	8XBA	Pennsylvania Power & Light Co.
Galveston, Tex.	5ZG	H. C. Sherrod, jr., 1627 Avenue I.
Hastings, Nebr.	9XW	Westinghouse Electric & Manufacturing Co.
Hauto, Pa.	8XBB	Pennsylvania Power & Light Co.
Hazleton, Pa.	8XBC	Do.
Hubbard, Ohio	8ZJ	Alvin L. Anderson, 17 East Liberty Street.
New Orleans, La.	5ZI	Louis J. N. Du Treil, 480 Audubon Street.
Oakland, Calif.	6XBL	Bernard H. Linden, 2626 Eleventh Avenue.
Do.	6ZAK	Daniel L. O'Brien, 643 Polrer Street.
Do.	6ZG	Bernard H. Linden, 2626 Eleventh Avenue.
Do.	6ZX	Percy W. Dann, 562 Thirty-fifth Street.
Piedmont, Calif.	6ZV	Gerald M. Best, 109 Greenbank Avenue.
Redwood City, Calif.	6ZAN	Charles V. Litton, Eaton Avenue.
Riverside, Calif.	6ZP	Lloyd E. West, 362 Main Street.
San Jose, Calif.	6ZAJ	Harry Engwicht, 405 North Third Street.
San Juan, P. R.	4ZH	Enrique Camunas, Stop 43 Pershing Avenue.
Schenectady, N. Y.	2XAB	Charles N. Nehal, 1234 State Street.
Seattle, Wash.	7XAA	Amateur Radio Club of Seattle (Robert Waskey), 7213 Twenty-eighth Avenue NW.
Do.	7ZG	Robert Waskey, 7213 Twenty-eighth Avenue NW.
Do.	7ZS	Vincent I. Kraft, 6838 Nineteenth Avenue NE.
Selma, Calif.	6ZK	H. R. Shaw.
Southbridge, Mass.	1ZD	John M. Wells, 40 Main Street.

Special land stations, grouped by districts.

Call signal.	District and station.	Call signal.	District and station.
	First district:		Seventh district:
1ZD	Southbridge, Mass.	7XAA	Seattle, Wash.
1ZF	East Braintree, Mass.	7XT	Boise, Idaho.
2XAB	Second district: Schenectady, N. Y.	7ZC	Everett, Wash.
	Fourth district:	7ZG	Seattle, Wash.
4ZA	Atlanta, Ga.	7ZS	Do.
4ZH	San Juan, P. R.		Eighth district:
	Fifth district:	8XBA	Frackville, Pa.
5ZG	Galveston, Tex.	8XBB	Hauto, Pa.
5ZI	New Orleans, La.	8XBC	Hazleton, Pa.
	Sixth district:	8XBD	Cleveland, Ohio.
6XBL	Oakland, Calif.	8XBE	Syracuse, N. Y.
6ZAD	Berkeley, Calif	8XG	Cleveland, Ohio.
6ZAJ	San Jose, Calif.	8XN	Buffalo, N. Y.
6ZAK	Oakland, Calif.	8YAJ	Cleveland, Ohio.
6ZG	Do.	8ZI	Do.
6ZK	Selma, Calif.	8ZJ	Hubbard, Ohio.
6ZAN	Redwood City, Calif.	8ZK	Ann Arbor, Mich.
6ZP	Riverside, Calif.	8ZL	East Lansing, Mich.
6ZV	Piedmont, Calif.		Ninth district:
6ZX	Oakland, Calif.	9XAV	Chicago, Ill.
		9XW	Hastings, Nebr.

ALTERATIONS AND CORRECTIONS.

COMMERCIAL LAND STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1923, and to the International List of Radiotelegraph Stations, published by the Berne bureau.]

BURRWOOD, LA.—W. l., 300, 600, 1,713; rates, limited public service with New Orleans, 10 cents per word.
CHATHAM, MASS. (WIM).—W. l., 300, *600*, 706.
HONOLULU, HAWAII.—Loc. 0.157° 50′ 36″, N. 21° 18′ 12″; service, FX.
LOS ANGELES, CALIF. (KPK).—W. l., 143.
NEGLEY, OHIO.—W. l., 1,689.
NEW LONDON, CONN.—Strike out all particulars.

COMMERCIAL 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 30, 1923, and to the International List of Radiotelegraph Stations, published by the Berne bureau.]

AGWIHAVRE.—W. l., add 706.
AMERICAN LEGION.—W. l., add 706.
ANNISTON CITY.—W. l., add 706.
ASTRAL.—W. l., add 706.
BAYPORT.—United States Shipping Board owner of vessel.
BEARPORT.—Station operated and controlled by I. W. T. Co. (U. S. L.).
BIDWELL.—Sun Shipbuilding & Dry Dock Co. owner of vessel.
BRUSH.—Station operated and controlled by I. W. T. Co.
CADARETTA.—Charles W. Cook owner of vessel.
CASPER.—W. l., add 706.
CITY OF CHATTANOOGA.—Rates, 8 cents per word; station operated and controlled by R. C. A.
CITY OF CLEVELAND III.—W. l., add 706.
CLARE.—W. l., add 706.
COLIN H. LIVINGSTONE.—W. l., add 706.
CONCHO.—Ssytem, R. C. A., 1000. W. l., add 450.
CUBORE.—System, R. C. A., 1000.
CULBURRA.—Pacific Motorship Co. owner of vessel.
DELROSA.—Alaska S. S. Co. owner of vessel.
DEWEY.—Station operated and controlled by I. W. T. Co. (U. S. L.).
DIANA DOLLAR.—W. l., add 706.
DILWORTH.—W. l., add 1800.

DOYLESTOWN.—Station operated and controlled by R. C. A.
ELKHORN.—System, Navy-Kilbourne & Clark, 1000; w. l., add 706.
ELKTON.—W. l., add 706.
FRANKLIN K. LANE.—W. l., 300, 450, *600*, 706.
FREDERIC R. KELLOGG.—W. l., add 706.
GASTON.—W. l., 300, 450, *600*, 706.
GLENPOOL.—W. l., add 706.
GLYMONT.—Charles W. Cook owner of vessel.
G. N. WILSON.—Station operated and controlled by owner of vessel.
HANLEY.—W. l., add 706.
HANOVER.—W. l., add 706.
HEGIRA.—W. l., add 450.
HELEN.—W. l., add 450.
HERMAN FRASCH.—W. l., add 706.
HOXBAR.—W. l., 300, 450, *600*, 706.
I. J. MERRITT.—Rates, 6 cents per word; Merritt & Chapman and Scott Corp. owner of vessel.
INNOKO.—W. l., add 706.
JACOX.—Station operated and controlled by R. C. A.
JAMESTOWN.—W. l., add 706.
JOHN C. KIRKPATRICK.—Rates, 8 cents per word; station operated and controlled by R. C. A.
JOMAR.—W. l., 300, *600*.
JUVIGNY.—W. l., 300, 450, *600*, 706.
KERHONKSON.—W. l., add 706.
KNOXVILLE CITY.—W. l., add 706.
LAKE FILBERT.—Name changed to Nabesna.
LAKE GITANO.—System, R. C. A., 1000.
LASSEN.—Range, 200; system, Gray & Danielson, 1000; w. l., 300, *600*, 706; station operated and controlled by owner of vessel.
LEHIGH.—W. l., add 706.
LIBERTY GLO.—W. l., add 706.
LOUIS R. DAVIDSON.—Rates, Great Lakes service 2 cents per word; station operated and controlled by owner of vessel.
LURLINE.—W. l., add 706.
MARTINIQUE.—W. l., add 706.
MARY WINKLEMAN.—Range, 300; system, R. C. A., 1000; w. l., 300, *600*, 706.
MELVILLE DOLLAR.—W. l., add 706.
MONTEREY.—System, R. C. A., 1000; w. l., add 706.
MUNISLA.—W. l., add 706.
MUNPLACE.—Munplace S. S. Corp. owner of vessel.
NEW BRITAIN.—W. l., add 706.
NOBLES.—System, Navy-Wireless Specialty Apparatus Co., 1000.
NORTHERN STAR.—Name changed to Defacto.
ORIZABA.—W. l., add 706.
OSAGE.—W. l., 300, *600*, 706.
PACHET.—Range, 300; system, Navy-Lowenstein, 1000; w. l., 300, 450, *600*; station operated and controlled by I. W. T. Co.
PRESIDENT HARRISON.—W. l., add 706.
PRESIDENT JACKSON.—System, Federal arc and Navy-Wireless Specialty Apparatus Co., 1000.
PRUSA.—Station operated and controlled by I. W. T. Co. (U. S. L.).
REPUBLIC (KUBJ).—System, Navy-Simon, 1000; w. l., 300, *600*.
RESTORER.—W. l., add 706.
RIPPLE (KDUN).—W. l., add 706; station operated and controlled by R. C. A.
RUTH.—W. l., add 706.
SAN RAMON.—Name changed to Katherine Donovan; New Orleans Coal & Bisso Towboat Co., owner of vessel.
SANTA OLIVIA.—W. l., add 706.
SANTA TECLA.—System, R. C. A., 1000; w. l., 300, 450, *600*, 706.
SARCOXIE.—W. l., add 706.
SATARTIA.—W. l., add 706.
SCHOODIC.—W. l., add 706.
SIDNEY M. HAUPTMAN.—W. l., add 706.
STANLEY.—W. l., add 706.
STUART DOLLAR.—W. l., add 706.

SUDURCO.—W. l., add 706.
SUGILLENCO.—Range, 300; system, Navy-Wireless Improvement Co., 1000; w. l., 300, 450, *600*, 706; rates, 8 cents per word; station operated and controlled by R. C. A.
SUNELSECO.—W. l., add 706.
SUCARESCO.—W. l., add 706.
SUJERSEYCO.—Rates, 8 cents per word; station operated and controlled by R. C. A.
SUNUGENTCO.—Range, 300; system, Navy-Wireless Improvement Co., 1000; w. l., 300, 450, *600*, 706.
SUTERMCO.—W. l., add 706.
SUWARINCO.—Rates, 8 cents per word; station operated and controlled by R. C. A.
SWIFT ARROW.—Station operated and controlled by I. W. T. Co.
TAMARACK IV.—W. l., 146, 300, *600*; service, PR, communicates with stations in emergency; rates, none.
TEXAN.—W. l., 300, 450, *600*, 706.
THOMAS CROWLEY.—Station operated and controlled by R. C. A.
WANDERER.—System, composite, v. t. telephone and telegraph; w. l., 146, 300, *600*.
WARWICK.—W. l., add 706.
WEST CHEROW.—W. l., add 706.
WESTERN WORLD.—W. l., add 706.
WEST HEMATITE.—Station operated and controlled by I. W. T. Co. (U. S. L.).
WEST IVAN.—W. l., 300, 450, *600*, 706.
WEST KATAN.—W. l., add 706.
WESTLAND (KJX).—System, Navy–R. C. A., 1000 ; w. l., add 706.
WEST LOQUASSUCK.—Station operated and controlled by S. O. R. S. (U. S. L.).
WEST MODUS.—Station operated and controlled by I. W. T. Co.
WEST NOTUS.—Range 300; system Federal arc; w. l., 300, *600*, 1800.
WEST QUECHEE.—W. l., 300, 450, *600;* hours, X.
WHEATON.—Hours, N.
WHITE CAP.—Range, 300; system, R. C. A., 1000; w. l., 300, *600*, 706.
WILLIAM H. DOHENY.—W. l., add 706.
WILLIAM T. ROBERTS.—Station operated and controlled by owner of vessel.
Strike out all particulars of the following-named vessels: Cuba (WQU) and Hyannis.

COMMERCIAL LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

KOKC, *read* Defacto; KONV, *read* Nabesna; WNW, *read* Katherine Donovan; strike out all particulars following the call signals, KINC, WLC, and WQU.

BROADCASTING STATIONS, BY CALL SIGNALS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1923.]

KDZQ (Denver, Colo.).—Station operated and controlled by Nichols Academy of Dancing (Hal G. Nichols).
KFAV (Venice, Calif.).—W. l., 224; frequency, kc. 1340.
KFBS (Trinidad, Colo.).—Power, 15.
KFEZ (St. Louis, Mo.).—Power, 100.
KFGJ (St. Louis, Mo.).—Power, 250.
KFIL (Louisburg, Kans.).—Power, 30.
KFZ (Spokane, Wash.).—Station operated and controlled by Doerr-Mitchell Electric Co. & Pacific Telegraph Institute.
WABM (Saginaw, Mich.).—Station operated and controlled by F. E. Doherty Automotive & Radio Equipment Co.
WABN (La Crosse, Wis.).—Power, 250; w. l., 244, frequency, kc. 1230.
WCAD (Canton, N. Y.)—Power, 250.
WCAR (San Antonio, Tex.).—Power, 150.
WCAT (Rapid City, S. Dak.).—Power, 50
WDT (Stapleton, N. Y.).—Changed to New York, N. Y.
WEAA (Flint, Mich.).—Station operated and controlled by Frank D. Fallain, Police Building.
WEAN (Providence, R. I.).—Power, 100; w. l. 273, frequency, kc. 1100.
WHAH (Joplin, Mo.).—Power, 250.
WHAK (Clarksburg, W. Va.).—W. l., 258, frequency, kc. 1160.
WHAP (Decatur, Ill.).—Power, 50.
WIAJ (Neenah, Wis.).—Power, 100.

WJAG (Norfolk, Nebr.).—Power, 200.
WKAA (Cedar Rapids, Iowa).—W. l., 268, frequency, kc. 1120.
WKAN (Montgomery, Ala.).—Power, 15.
WLAJ (Waco, Tex.).—Power, 150.
WMAN (Columbus, Ohio).—Power, 10.
WMAP (Easton, Pa.).—Power, 50.
WNAR (Butler, Mo.).—W l., 231, frequency, kc 1300.
WOAG (Belvidere, Ill.).—Power, 100.
WOAL (Webster Groves, Mo.)—W. l., 229, frequency, kc. 1310.
WOAV (Erie, Pa.).—Power, 100.
WPAJ (New Haven, Conn.).—Power, 10.
WQAE (Springfield, Vt.).—Power, 50.
WQAL (Mattoon, Ill.).—Power, 10.
WRAH (Providence, R. I.).—W. l., 231, frequency, kc. 1300.
WRAO (St. Louis, Mo.).—Power, 100.
WTAL (Toledo, Ohio).—Power, 10; w. l., 252, frequency, kc. 1190.
Strike out all particulars of the following-named stations: KFAQ, San Jose, Calif.; KFDC, Spokane, Wash.; KFHL, Oskaloosa, Iowa; KFHP, Kearney, Nebr.; KFZ, Spokane, Wash.; KMC, Reedley, Calif.; WBAU, Hamilton, Ohio; WDAJ, College Park, Ga.; WHAY, Huntington, Ind.; WKAC, Lincoln, Nebr.; WLAZ, Warren, Ohio; WMAT, Duluth, Minn.; WRAB, Savannah, Ga.; and WTAK, Steubenville, Ohio.

GOVERNMENT LAND 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 30, 1923, and to the International List of Radiotelegraph Stations, published by the Berne Bureau.]

COLUMBIA RIVER LIGHT VESSEL.—Loc. 0.124° 10′ 35″, N. 46° 10′ 45″.
EAGLE HARBOR, MICH.—Issue No. 76 of this publication, page 67, should be corrected to have the call signal read NUG.
GRAND MARIAS.—Correct orthography Grand Marias.
NANTUCKET SHOALS LIGHT VESSEL.—Loc. 0.69° 37′ 06″, N. 40° 37′ 02″.
POINT ISABEL, TEX.—Strike out all particulars.
ST. CROIX, V. I.—Loc. 0.64° 42′ 16″, N. 17° 45′ 09″.
SURFSIDE, MASS.—Read Surfside, Mass. (Nantucket Island).
TATOOSH, WASH.—Service, O.
WASHINGTON, D. C. (NKF).—Read Washington, D. C. (Bellevue).

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 30, 1923, and to the International List of Radiotelegraph Stations, published by the Berne bureau.]

MORRILL.—Rates, Great Lakes service 2 cents per word.
TUSCARORA.—Rates, Great Lakes service, 2 cents per word.
Strike out all particulars of the following-named vessels: Cardinal, New Jersey, and Virginia.

GOVERNMENT LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

NBS, read Surfside, Mass. (Nantucket Island); NKF, read Washington, D. C. (Bellevue); NZT, read Grand Marias; strike out all particulars following the call signals, NAFN, NAY, NMF, and NVR.

SPECIAL LAND STATIONS, BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1923.]

BUENA VISTA, VA. (3ZAA).—Call signal changed to 3ZA; station operated and controlled by J. Frank Key.
FULLERTON, CALIF. (6XAN).—Changed to San Fernando, Calif., 462 Chetsworth Drive.
GLENBROOK, CONN. (1XAK).—Station operated and controlled by Stamford Radio & Electric Co.
OAKLAND, CALIF. (6XA).—Address, 1133 Kirkham Street.

PINE BLUFF, ARK. (5XAI).—Station operated and controlled by Arkansas Light & Power Co.

SEATTLE, WASH. (7XC).—Address 6838 Nineteenth Avenue NE.

SEATTLE, WASH. (7XR).—Address, 2020 Thirteenth Street NW.

Strike out all particulars of the following-named stations: Amston, Conn. (1XAI); Anthony, Kans. (9ZAC); Atlanta, Ga. (4XI); Bala, Pa. (3ZA); Beatty, Pa. (8YAG); Davenport, Iowa (9XE); Douglas, Mont. (7ZG); Ellendale, N. Dak. (9ZX); Helena, Mont. (7ZC); Honolulu, Hawaii (6XAP); Kansas City, Mo. (9XAB); Los Angeles, Calif. (6XAW); Los Angeles, Calif. (6XJ); Los Angeles, Calif. (6ZG); Norman, Okla. (5ZG); Noroton Heights, Conn. (1XAA); Omaha, Nebr. (9YP); Philadelphia, Pa. (3XAI); Provo, Utah (6YD); San Francisco, Calif. (6XAA); San Francisco, Calif. (6XG); St. Louis, Mo. (9ZB); St. Petersburg, Fla. (4ZH); Sunnyvale, Calif. (6XAG); Sunnyvale, Calif. (6ZK); University Place, Nebr. (9YD); and Walnut Grove, Calif. (6ZX).

MISCELLANEOUS.

INFORMATION FROM THE HYDROGRAPHIC OFFICE.

Radio time signal, Mogadiscio.—The radio time signals at Mogadiscio are now made at $5^h\ 56^m$, $5^h\ 58^m$, and 6^h G. M. T. (civil). The method of transmission remains unchanged. Approximate location, latitude 2° 02′ N., longitude 45° 21′ E.

Hydrographic information on Lower Great Lakes.—Dissemination of hydrographic and meteorological information on the lower lakes is now being handled by the commercial station WTK, located at Cleveland, Ohio. These bulltins are transmitted at 10.45 a. m. and 4.45 p. m. (seventy-fifth meridian time) on a wave length of 706 meters, spark. In addition to the broadcasting of these bulletins all messages addressed to "Government Hydro, Cleveland," will be received and transmitted.

NEW RADIO FOG SIGNALS ESTABLISHED.

Radio fog signals have been established on the Nantucket Shoals Light Vessel and the Columbia River Light Vessel. The signal of the first-named station consists of a series of 4 dashes for 30 seconds, silent 25 seconds, transmitted continously during thick or foggy weather on a wave length of 1,000 meters (300 kilocycles, frequentcy). Location, approximately 0.69° 37′ 06,″ N. 40° 37′ 02.″ The signal for the Columbia River Station consists of a series of 3 dashes for 20 seconds, silent 20 seconds. Location, approximately 0.124° 10′ 35″, N. 46° 10′ 45.″ Wave length, 1,000 meters.

ALASKAN STATIONS CLOSED UNTIL NEXT SEASON.

The following-named stations closed until next season on the dates set after their names: Chignik (KNP), September 1; Chisik Island (KUCP), September 20; False Pass (KJL), August 28; King Cove (KJK), August 23; Kusdoff (KKAO), September 3; Pirate Cove (KOXN), September 17; Tenakee (KOSC), September 11.

NEW STATION OPENED AT BEIRUT, SYRIA.

According to information received by this office a new station was opened at Beirut, Syria, on August 20 last. The station is open to general public correspondence on 450, 600, and 800 meters from 6 to 10 a. m. and noon to 4 p. m. G. M. T. Range, 500 miles, ratee 60 centimes (gold) per word, station operated by the "Radio-France."

INSTRUCTIONS REGARDING APPLICATIONS FOR RADIO STATION LICENSES.

Supervisors of radio of this department, radio companies, and others concerned are requested to be very careful in filling in applications for station licenses, especially in regard to the geographical location of land stations and the owners and home ports of ship stations. It is important that the correct geographical location be given, as in some instances the names of certain places where stations are located are not shown on maps. A large percentage of the applications for ship station licenses are corrected in this office due to the failure of radio companies not having the proper owner shown in the application. The owner given in the application should be the same as that given in the outstanding marine document (register, enrollment, or license, of the

ALTERATION IN TIME SIGNALS OF MOGDISHU.

[From Admiralty, London, September 12, 1923.]

Position.—Lat. 2° 02′ N., long. 45° 21′ E. (approximately). Africa, east coast. Italian Somaliland.

Details.—Wireless time signals are now transmitted daily by Mogdishu W/T station at 17h 56m 00s 17h 58m 00s, and 18h 00m 00s, G. M. T. (astronomical), corresponding to 20h 56m 00s, 20h 58m 00s and 21h 00m 00s standard time, instead of at the times stated in the former notice. The procedure is as follows:

G. M. T. (astronomical).						Signal.
H.	M.	S.	H.	M.	S.	
17	52	00	to 17	53	48	ISG ISG ISG etc.
17	54	00	to 17	54	33	"Segnale orario" followed by — . — . — sent four times.
17	55	00	to 17	55	51	— sent every 5 seconds.
17	56	00				. Time signal.
17	57	00	to 17	57	52	—.. sent every 5 seconds.
17	58	00				. Time signal.
17	59	00	to 17	59	53	—. . . sent every 5 seconds.
18	00	00				. Time signal.

DAILY WEATHER BULLETINS TRANSMITTED BY RADIO FROM THE UNITED STATES TO FRANCE.

The United States Weather Bureau sends each evening, Sundays and holidays included, to the French meteorological service, at Paris, a bulletin containing observations taken at a number of stations in the United States, Alaska, and Canada, the position at the same hour of dominating high and low pressure areas, and weather reports from a limited number of ships in the north Atlantic Ocean. All land observations are of hour 0100 G. M. T., and Alaskan reports of hour 2100 G. M. T., current date. The bulletin is addressed to "Angot, Paris," and is forwarded through the United States naval radio station at Annapolis (NSS) to the radio station at Lyons (YN). The transmissions are made on a wave length of 17,145 meters, continuous wave, as the first message in the Annapolis schedule with France. This schedule begins at 0530, G. M. T., and transmission commences as soon thereafter as communication with Lyons (YN) can be established.

The messages are coded in a modified form of the International Meteorological Code, except that a date word is used to show the day of the month and the period of the day (a. m. or p. m.), that the land observations were taken and key letters instead of numerals to designate such places. The date word immediately follows the address (for date words see p. 9, United States Weather Bureau Radiographic Code for Vessel Weather Observers).

The arrangement of the messages are in coded groups, as follows:

Land stations Index letters, BBBDF.

Ship reports: Ship call letters, JQLLL, IIIGG, BBBDF, TTC.

Center of predominating high and low: Name of station, BBBDF.

Meaning of symbols.

BBB=Pressure reduced to sea level, in inches (initial figure, 2 or 3 omitted).

D=Wind direction on scale 0 to 8, in which 0=calm, 1=N, 2=N E, 3=E, 4=S E, 5=S, 6=S W, 7=W, and 8=N W.

F=Wind force in Beaufort scale.

J=Day of week, numbered 1 to 7, beginning with Sunday.

Q=Quarter of globe in which ship is situated (always in north latitude, represented by figure 1, for ship reports included in Angot message).

LLL=Latitude in degrees and minutes. The actual minutes are determined by multiplying the third coded figure by six.

lll=Longitude in degrees and minutes. Minutes are determined in same manner as for latitude.

TT=Temperature in Fahrenheit to nearest even degree.

C=State of sky according to scale in which 1=clear (3 tenths clouds or less), 2=

Example of bulletin.

Following is an example of a bulletin:

(Address), Angot, Paris; (date word), Hoodoo; (St. Johns, Newfoundland), J 02652; (Sydney, Nova Scotia), S 01264; (Father Point, Canada), FP 98662; (Parry Sound, Canada), PN 00000; (White River, Canada), WR 99800; (Winnipeg, Canada), WI 99641; (La Pas, Canada), LP 97861; (Edmonton, Canada), ED 97081; (Nantucket), T 00062; (Washington), WA 00271; (Hatteras), H 00263; (Charleston), C 00471; (Bermuda), B 02852; (Key West), K 00231; (Little Rock, LR 00431; (Nashville), NV 01081; (Cleveland), V 00441; (Chicago), CH 00431; (Duluth), DU 99871; (Huron), HN 00051; (Salt Lake City), SLC 97683; (Helena), HL 98261; (Denver), DV 99211; (Roseburg), RO 98481; (Tatoosh Island), TAT 99453; (San Francisco), SF 99073; (San Diego), DI 98681; (Fort Worth), FW 99411; (El Paso), EP 98431; (Juneau, Alaska), JU 99651; (Tanana, Alaska), TN 98281; (Dutch Harbor, Alaska), DH 98200; KMI, 41389, 73819, 00021, 723; KDE, 41392, 74119, 98800, 703; ZTR, 41386, 74219, 00400, 723; KEGM, 41392, 74219, 00451, 703; (High), Bermuda, 02852; (Low), Father, 98662.

NOTE.—Words in parenthesis are not transmitted.

The following partial translation will serve to illustrate how the messages are decoded:

Hoodoo=29th day of the month, p. m. report.

J 02652.—J=St. Johns, N. S.; 02652=(026) sea level barometer pressure 30.26 inches; (5) winds from S; (2) wind force of 2 in Beaufort Scale.

KMI 41389, 73819, 00021, 723: KMI=steamship *Tivives*. 41389=(4) Wednesday, (1) north, (389) latitude 38° 54′; 73819=(738) longitude 73° 48′, (19) time of observation 1900 G. M. T.; 00021=(000) sea level barometer reading 30.00 inches; (2) wind direction, NE., (1) wind force 1 in Beaufort scale; 723=(72) temperature 72° F.; state of sky, cloudy.

Bermuda 02852: Bermuda=Bermuda Islands, the location of nearest reporting station to center of predominating high; 02852=(028) barometer reading 30.28 inches, center of high, (5) wind direction S.; (2) wind force of 2 in Beaufort scale.

Father 98662: Father=Father Point, Nova Scotia, the location of nearest reporting station to center of predominating low; 98662=(936) barometer reading nearest center of low, 29.86 inches, (6) wind direction SW., and (2) wind force of 2 in Beaufort scale.

Each evening during a period of more than 25 years the United States Weather Bureau has been furnishing the French meteorological service with a bulletin showing current weather from a few stations. The messages formerly were sent by cable. The address "Angot" was utilized because Dr. A. Angot was director of that service. The address was perpetuated in honor of that distinguished meteorologist, who retired several years ago. The bulletin in its present expanded form began in July, 1922, and was the result of arrangements made during a visit to the United States Weather Bureau by Capt. Phillippe Wehrle, assistant director of the French meteorological service, and Prof. Marcel Coyocque, meteorologist of the French training ship *Jacques Cartier*. These arrangements provide for a daily exchange by radio of European and American meteorological reports and were made possible by the cooperation of the office of communication of the French and American Navy Departments.

The American reports are broadcast from the Eiffel Tower (FL) radio station for the benefit of other European meteorological services and ships in western European waters. The broadcasts from Eiffel Tower are the same in form in which the bulletins are transmitted from the United States and follows immediately after the regular European weather report bulletins, which are transmitted at 11.20 G. M. T., on 2,600 meters, spark, and, in case of a breakdown of the spark apparatus, on 6,300 meters, continuous wave.

Although the Angot bulletins are specially addressed to the French meteorological service, they are intended for the general benefit, and shipmasters are at liberty to pick them up during transmission from Annapolis to Lyons and to use the information contained therein.

The bulletins containing European reports that were sent by radio to the United States Weather Bureau in exchange have been interrupted for several months. Consequently, the time of their transmission and the wave length used is not available for publication herein. An announcement giving the details of this bulletin will be made as soon as the messages are resumed.

STANDARD FREQUENCY SIGNALS.

Notice has been issued by the Navy Department to the effect that on the third

will be transmitted from station NPG, Mare Island Navy Yard, at San Francisco, Calif. These signals will be transmitted by the Navy Department and will be somewhat similar to those transmitted from the Bureau of Standards (station WWV). The entire transmission will be on continuous waves (arc transmitting set), and no voice announcements will be made.

The table below gives the complete schedule. The frequencies given in the table are only approximate and may be changed somewhat. During the transmission the frequency will be measured and the exact value will be announced during the three-minute period designated as "Announcements." The notice states that the measured frequencies will probably be correct within two-tenths of 1 per cent. Suitable methods for using these signals for wave-meter calibration were given in the February (1923) issue of this bulletin.

Schedule of standard frequency signals from NPG.

Standard Pacific coast time.[1]	Signal.	Approximate frequency.
	Medium power (Arc).	
8 to 8.04 a. m.	General call, QST de NPG	[2] 64.5 (4650)
8.04 to 8.08 a. m.	Standard frequency	
8.08 to 8.11 a. m.	Announcement	
8.15 to 8.19 a. m.	General call, QST de NPG	76 (3960)
8.19 to 8.23 a. m.	Standard frequency	
8.23 to 8.26 a. m.	Announcement	
8.30 to 8.34 a. m.	General call, QST de NPG	[3] 110 (2725)
8.34 to 8.38 a. m.	Standard frequency	
8.38 to 8.41 a. m.	Announcement	
8.45 to 8.49 a. m.	General call, QST de NPG	125 (2400)
8.49 to 8.53 a. m.	Standard frequency	
8.53 to 8.56 a. m.	Announcement	
	High power (Arc).	
9 to 9.04 a. m.	General call, QST de NPG	28.5 (10500)
9.04 to 9.08 a. m.	Standard frequency	
9.08 to 9.11 a. m.	Announcement	
9.15 to 9.19 a. m.	General call, QST de NPG	[4] 38.0 (7900)
9.19 to 9.23 a. m.	Standard frequency	
9.23 to 9.26 a. m.	Announcement	

[1] For eastern standard time add three hours.
[2] May be changed later to 61.8 kilocycles (4,850 meters).
[3] Will be changed later to probably 66.3 kilocycles (4,525 meters).
[4] Reserved for future arc, installation not yet complete.

BUREAU OF STANDARDS MEASUREMENTS OF RADIO TRANSMITTING STATION FREQUENCIES.

The Bureau of Standards makes daily measurements in its laboratory at Washington on the frequencies of emitted waves from various stations. The purpose of this work is primarily to assist the radio inspection service in maintaining the stations on their licensed frequencies. The measurements to date have been mainly on class B broadcasting stations and on the low-frequency high-power transoceanic stations. The measurements show in general a gratifying degree of adherence to the assigned frequencies. In a few cases where the observation showed stations to be seriously off the assigned frequencies, supervisors of radio have readjusted the stations to the proper frequencies.

In only a few cases are the stations maintaining without exception the assigned frequencies so closely that the wave can be used as a frequency standard. Special attention is being given by the bureau to the stations which do maintain such standards, and an announcement will be made later in the Radio Service Bulletin stating the degree of constancy that has been observed, so that persons may utilize the transmissions from such stations as a frequency standard for the calibration of apparatus.

The method used by the bureau in measuring the frequencies of distant stations involves the use of a local radio-frequency generator. This is adjusted to the same frequency as the received wave from the transmitting station, this adjustment being determined by receiving both frequencies in a receiving set and varying the local generator until a zero beat note is obtained. The frequency of the local generator is then measured with a wave meter. Further details of the method are given in Bureau

Utilization. A limited supply of these is available at the bureau, and a copy may be obtained by a person having actual use for it by addressing the Bureau of Standards, Washington, D. C.

Results of the bureau's measurements of station frequencies are furnished only to the radio inspection service.

REFERENCES TO CURRENT RADIO PERIODICAL LITERATURE.

This is a monthly list of references prepared by the Radio Laboratory of the Bureau of Standards and is intended to cover the more important papers of interest to the professional radio engineer which have recently appeared in technical periodicals. The number at the left of each reference classifies the reference by subject, in accordance with the scheme presented in A Decimal Classification of Radio Subjects—An Extension of the Dewey System, Circular No. 138, a copy of which may be obtained for 10 cents from the Superintendent of Documents, Government Printing Office, Washington, D. C. Further information about these lists, availabilities of previous lists and of the several periodicals, is contained in the extended statement preceding the early lists as published in the Radio Service Bulletin prior to April, 1923, and also in May and September, 1923.

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