

DEPARTMENT OF COMMERCE

RADIO SERVICE BULLETIN

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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. FS=Fog signal. 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.
PX	=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.

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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 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—
Bowling Green, Ky. ¹	WJAV	1,790	FX	X	Indian Pipe Line Corp.

¹ Loc. (approximately) 0.86° 30' 00", N. 35° 59' 00"; range, 300; system, DeForest telephone and telegraph; rates, none.

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—
B. H. Taylor.....	KFLK		PG	X	Bradley Transp. Co.	R. C. A.
Blossom ¹	KFLG	8	PG	X	Cleveland Museum of Natural History.	Do.
Columbia.....	KFLI		PG	X	Chesley Tug & Barge Co.	
Frontenac ²	KFLJ		PG	X	Cleveland Cliffs S. S. Co.	Owner of vessel.
Ishpeming ³	KFLK		PG	X	do.....	Do.
J. H. Sheadle ³	KFLM		PG	X	do.....	Do.
Michigan ³	KFLN		PG	X	do.....	Do.
Peter White ³	KFLO		PG	X	do.....	Do.
Ripple ³	KFLP	8	PG	X	Clifford M. Leonard...	Do.

¹ Range, 300; system, R. C. A., 1000; w. l., 300, 450, 600, 706.

² Range, 150; system, Navy R. C. A., 1000; w. l., 300, 600, 706; rates, Great Lakes service, 2 cents per word.

³ Range, 150; system, R. C. A., 1000; w. l., 300, 450, 600, 706; rates, Great Lakes service, 2 cents per word.

Commercial land and ship stations, alphabetically by call signals.

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

Call signal.	Name.	Call signal.	Name.
KFLP...	Ripple.....	b	KFLK... Ishpeming.....
KFLG...	Blossom.....	b	KFLM... J. H. Sheadle.....
KFLI...	Columbia.....	b	KFLN... Michigan.....
KFLJ...	Frontenac.....	b	KFLO... Peter White.....
KFLK...	B. H. Taylor.....	b	WJAV... Bowling Green, Ky.....

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.
Albuquerque, N. Mex.....	KFLR	Little Rock, Ark.....	KFLQ
Butte, Mont.....	KFKV	Menominee, Mich.....	KFLB
Do.....	KFLA	Oak Park, Ill.....	WTAY
Colorado Springs, Colo.....	KFKZ	Pomeroy, Ohio.....	WSAZ
Conway, Ark.....	KFKQ	Port Chester, N. Y.....	WSAY
Cedar Rapids, Iowa.....	KFLP	Salt Lake City, Utah.....	KFLH
Franklinton, La.....	KFLD	Streator, Ill.....	WTAX

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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 (kilo-cycles).
KFKQ	Conway Radio Laboratories (Ben H. Woodruff).	Conway, Ark.	150	224	1,340
KFRV	F. F. Gray	Butte, Mont., 3200 Richardson Street.	50	283	1,060
KFKZ	Nassour Bros. Radio Co.	Colorado Springs, Colo.	10	234	1,260
KFLA	Abner R. Willson	Butte, Mont., 1321 West Platinum Street.	5	283	1,060
KFLB	Signal Electric Manufacturing Co.	Menominee, Mich.	20	248	1,210
KFLD	Paul E. Greenlaw	Franklinton, La.	20	234	1,260
KFLH	Erickson Radio Co.	Salt Lake City, Utah.	50	261	1,150
KFLP	Everette M. Foster	Cedar Rapids, Iowa.	20	240	1,250
KFLQ	Bizzell Radio Shop	Little Rock, Ark.	20	261	1,150
KFLR	University of New Mexico	Albuquerque, N. Mex.	100	254	1,180
WABA	Lake Forest College	Lake Forest, Ill.	100	266	1,130
WSAY	Irving Austin (Port Chester Chamber of Commerce).	Port Chester, N. Y.	100	233	1,290
WZAZ	Chase Electric Shop	Pomeroy, Ohio	50	255	1,160
WTAX	Williams Hardware Co.	Streator, Ill.	20	231	1,300
WTAY	Iodan-Oak Leaves Broadcasting Station.	Oak Park, Ill.	15	236	1,330
WTAZ	Thomas J. McGuire	Lambertville, N. J.	15	293	1,060
WWAB	Hoenig, Swern & Co. (John Rasmusson).	Trenton, N. J.	10	236	1,330

Government land 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—
Boston Light Vessel ¹	NADX	1,000.....	FS	.....	Lighthouse Service, Department of Commerce.
Pellicoek Rip Blue Light Vessel. ²	NAFT	300, 378, 476 600, 756, 852.	.....	.....	Do.
Schenectady, N. Y.	WWS	.....	FX	X	Post Office Department.

¹ Loc. 0.70° 45' 28", N. 42° 20' 22"; service, this station is used as a fog signal only.

² Loc. 0.69° 53' 47", N. 41° 39' 40"; service, this station is open to relaying public correspondence in emergencies; hours, first 15 minutes every hour between 8 a. m. and 9.15 p. m.

Government ship 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 length.	Service.	Hours.	Station controlled by—
Basilan.....	KZAF	.....	O	X	Philippine Insular Government.
Culebra.....	WYCL	.....	O	X	U. S. Army.

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.
KZAF	Basilan..... b	WWS	Schenectady, N. Y..... c

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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—
Berkeley, Calif.....	6ZAE	C. V. Steffen and C. H. Romander, 1615 Arch Street.
Boseman, Mont.....	7XBC	H. E. Cutting, 430 West Koch Street.
Brookline, Mass.....	1ZG	Robert P. Siskind, 1136 Beacon Street.
Butte, Mont.....	7XBA	Abner H. Willson, 1821 West Platinum Street.
Do.....	7XBB	F. F. Gray, 3200 Richardson Street.
Cranford, N. J.....	2XV	Radio Corporation of America, 16 Johnson Avenue.
Dover, Ohio.....	8XBF	Henry J. Partridge, 135 Broadway.
East Pittsburgh, Pa.....	8ZM	Edward B. Landon, 130 Avenue F.
Fresno, Calif.....	6ZJ	Carlos S. Mundt, 1501 Palm Avenue.
Hartford, Conn.....	1XAQ	S. Kruse, 18 Rodney Street.
Kalamazoo, Mich.....	8XF	Kalamazoo College.
Lansing, Mich.....	8ZR	Roy R. Palmer, 331 North Pennsylvania Street.
Little Rock, Ark. (portable).....	5XAR	O. L. Carrington, 1415 Barker Avenue.
Los Angeles, Calif.....	6XO	Westinghouse Electric & Manufacturing Co., 420 South San Pedro Street.
Los Gatos, Calif.....	6ZAH	Burton R. Cole, 16 Ellenwood Street.
Do.....	6ZAR	Charles C. Whysall, Harnaudy Street.
Medford, Oreg.....	7XAC	W. J. Virgin.
New York, N. Y.....	2XW	Radio Corporation of America, 450 West End Avenue.
Oakland, Calif.....	6ZAP	James F. Brown, 295 Perkins Street.
Do.....	6ZAP	Ray H. Cornell, 5923 Whitney Street.
Pasco, Wash.....	7ZX	Loren C. Maybee, 110 South Seventh Street.
Paterson, N. J.....	2ZA	George O. Milne, 142 Totowa Road.
Portland, Oreg.....	7XAD	Benson Technical School Student Body.
Rye, N. Y.....	2XH	Radio Corporation of America, 276 Purchase Street.
San Francisco, Calif.....	6ZAO	Charles A. Gaal, 15 Hoffman Avenue.
Schenectady, N. Y. (portable).....	2XAZ	General Electric Co.
Walla Walla, Wash.....	7XAB	Frank A. Moore, 707 Baker Building.

Special land stations, grouped by districts.

Call signal.	District and station.	Call signal.	District and station.
1XAQ	First district:	6ZAO	Sixth district—Continued.
1ZG	Hartford, Conn.	6ZAR	San Francisco, Calif.
	Brookline, Mass.	6ZJ	Los Gatos, Calif.
2XAZ	Second district:		Fresno, Calif.
2XH	Schenectady, N. Y. (portable).	7XAB	Seventh district:
2XV	Rye, N. Y.	7XAC	Walla Walla, Wash.
2XW	Cranford, N. J.	7XAD	Medford, Oreg.
2ZA	New York, N. Y.	7XBA	Portland, Oreg.
5XAR	Paterson, N. J.	7XBB	Butte, Mont.
	Fifth district: Little Rock, Ark. (portable).	7XBC	Do.
6XO	Sixth district:	7ZX	Bosman, Mont.
6ZAE	Los Angeles, Calif.	8XBF	Pasco, Wash.
6ZAF	Berkeley, Calif.	8XF	Eighth district:
6ZAH	Oakland, Calif.	8ZM	Dover, Ohio.
6ZAP	Los Gatos, Calif.	8ZR	Kalamazoo, Mich.
	Oakland, Calif.		East Pittsburgh, Pa.
			Lansing, Mich.

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.]

BOLINAS, CALIF. (KPII).—Add this note: Remotely controlled from San Francisco, Calif.

CLEARWATER, CALIF. (KNR).—W. l., 3320, 3786, 5500.

CLEVELAND, OHIO (WTK).—Loc. (approximately) 0.81° 41' 30", N. 41° 30' 00"; w. l., add 1800.

LOS ANGELES, CALIF. (KWH).—W. l., 143.

NEW YORK, N. Y. (KUVS).—W. l., 300, 450, 600.

SAN FRANCISCO, CALIF. (KPH).—Add to list with this note: See Bolinas, Calif., for particulars.

Strike out all particulars of the following named stations: Butte, Mont.; Jordan

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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 Berns bureau.]

- A. C. BEDFORD.—W. l., add 706.
 ADMIRAL GOODRICH.—Name changed to Noyo; National Steamship Co. owner of vessel.
 AGWIDALE.—System, Navy-R. C. A., 1000; w. l., 300, 600.
 AGWILAKE.—W. l., add 706.
 AGWISEA.—Range, 200; system, I. W. T. Co., 1000; w. l., 300, 450, 600.
 AGWISMITH.—W. l., add 706.
 AGWIWORLD.—W. l., add 450.
 ALA.—W. l., add 706.
 ALABAMA (WRAE).—W. l., 300, 450, 600, 706.
 ALBERT E. WATTS.—W. l., add 706.
 ALGIC.—System, Navy-R. C. A., 1000; w. l., add 706.
 AMERICA.—W. l., add 450.
 AMERICAN LEGION.—Station operated and controlled by I. W. T. Co.
 ANTIETAM.—W. l., add 706.
 AQUARIUS.—Station operated and controlled by S. O. R. S.
 ASHBER.—New York Shipbuilding Corp. owner of vessel.
 BANTU.—W. l., add 706.
 BEARPORT.—System, Navy-R. C. A., 1000; w. l., 300, 450, 600, 706.
 BENJ. F. PACKARD.—W. l., 300, 450, 600.
 BIRMINGHAM CITY.—W. l., add 706.
 BLAIR.—Station operated and controlled by S. O. R. S.
 BREMERTON.—W. l., add 706.
 BROOKINGS.—W. l., add 706.
 BRUSH.—System, Navy-Wireless Specialty Apparatus Co., 1000; w. l., 300, 450, 600, 706.
 CALAMARES.—W. l., add 706.
 CANANOVA.—W. l., add 706.
 CAPE COD.—W. l., add 706.
 CAPILO.—W. l., add 706.
 CARPLAKA.—Station operated and controlled by S. O. R. S.
 CASCADE (KDIS).—Station operated and controlled by owner of vessel.
 C. A. SNIDER.—W. l., add 706.
 CATHERINE.—W. l., 300, 450, 600, 706; hours, N.
 CATHERINE, G. SIDDEN.—Range, 200; system, Gray & Danielson, 240; w. l., 300, 600; rates, 8 cents per word; station operated and controlled by owner of vessel.
 CETHANA.—Pacific Motorship Co., owner of vessel.
 CHARLES E. HARWOOD.—System, R. C. A., 1000; w. l., add 706.
 CHATTANOOGA CITY.—W. l., add 706.
 CITY OF EVERETT.—System, Cutting & Washington, 1000; w. l., 300, 600, 706; station operated and controlled by I. W. T. Co.
 CITY OF FAIRBURY.—Station operated and controlled by S. O. R. S.
 CITY OF LOS ANGELES.—Los Angeles Steamship Co., owner of vessel.
 CITY OF WEATHERFORD.—Station operated and controlled by S. O. R. S.
 CLEARWATER.—Station operated and controlled by S. O. R. S.
 CLEMENCE C. MORSE.—Station operated and controlled by S. O. R. S.
 COASTWISE.—W. l., add 706.
 COLDBROOK.—Station operated and controlled by S. O. R. S.
 COLD HARBOR.—W. l., add 706.
 COLORADO SPRINGS.—Station operated and controlled by S. O. R. S.
 COMAL.—System, R. C. A., 1000; w. l., add 450.
 CONNEAUT.—System, R. C. A., 1000; Wyandotte Transportation Co., owner of vessel.
 CORNELIA.—System, Navy-R. C. A., 1000; w. l., 300, 450, 600, 706.
 CORNING.—System, R. C. A., 1000; w. l., add 706.
 CORSON.—W. l., add 706.
 CUSHNET.—Range, 300; system, Navy-Wireless Improvement Co., 1000; w. l., 300, 450, 600.
 DELROSA.—W. l., add 706.
 DEVOLENTE.—Name changed to Beaconil; system, Navy-Liberty, 1000; w. l., add 706; station operated and controlled by R. C. A.
 DOYLESTOWN.—W. l., add 450.
 EAGLE.—W. l., add 706.

- EASTERN PILOT.—W. l., add 706.
 EASTERN SUN.—W. l., add 706.
 EAST WIND.—W. l., add 706.
 EDGAR BOWLING.—W. l., add 706.
 EDGEFIELD.—Station operated and controlled by I. W. T. Co. (U. S. L.).
 EDITH.—W. l., 300, 450, 600, 706.
 EFFNA.—Station operated and controlled by S. O. R. S.
 EGREMONT.—W. l., add 706.
 EL ALMIRANTE.—W. l., 300, 600, 706.
 EL CAPITAN (WNB).—W. l., add 706.
 ELKRIDGE.—W. l., add 706.
 EMORY L. FORD.—Range, 150; system, Simon, 1000; w. l., 300, 600, 706; rates, Great Lakes service, 2 cents per word; station operated and controlled by owner of vessel.
 EMPIRE.—Range, 300; system, Navy-Lowenstein, 1000; w. l., 300, 600, 706; rates, 8 cents per word; station operated and controlled by I. W. T. Co.
 EVERGREEN CITY.—Station operated and controlled by S. O. R. S.
 FAIRFIELD CITY.—W. l., add 706.
 FRANKLIN K. LANE.—System, R. C. A., 1000.
 FRED G. HARTWELL.—Range, 150; system, Navy-Simon, 1000; w. l., 300, 600, 706; rates, Great Lakes service, 2 cents per word; station operated and controlled by owner of vessel.
 HAGOOD.—W. l., add 706.
 HAMILTON.—Old Dominion Steamship Co. owner of vessel.
 HATTERAS.—W. l., add 706; station operated and controlled by S. O. R. S.
 HAYMON.—Range, 300; system, Federal arc; w. l., 300, 600, 1800.
 HENRY CLAY.—Range, 300; system, R. C. A., 1000; w. l., 300, 600.
 HENRY M. FLAGLER.—W. l., add 450.
 HICKMAN.—W. l., add 706.
 HIGHO.—Station operated and controlled by S. O. R. S.
 HOVEN.—Station operated and controlled by I. W. T. Co. (U. S. L.).
 HOWICK HALL.—W. l., add 706.
 HULACO.—System, Navy-Lowenstein, 1000; station operated and controlled by Federal Telegraph Co.
 HUMBOLDT.—James K. Nelson owner of vessel.
 ILLINOIS (KDSZ).—W. l., add 706.
 INVINCIBLE.—Station operated and controlled by S. O. R. S.
 JEFFERSON (KOD).—Old Dominion Steamship Co. owner of vessel.
 JIM SID.—W. l., 300, 450, 600; rates, 8 cents per word; station operated and controlled by owner of vessel.
 JOHN D. ARCHBOLD.—W. l., add 450.
 JOHN F. HYLAN.—Range, 150; system, R. C. A., 1000; w. l., 300, 450, 600.
 JOHN JAY.—Range, 300; system, Federal arc; w. l., 300, 600.
 JOMAR.—W. l., add 450.
 JOSIAH MACY.—System, R. C. A., 1000; w. l., 300, 450, 600, 706.
 KAMESIT.—Station operated and controlled by S. O. R. S.
 KATHERINE DONOVAN.—Donovan Lumber Co. owner of vessel.
 LAKE CLEAR.—Construction Materials Co. owner of vessel.
 LAKE FARLIN.—Range, 200; system, Navy-Wireless Specialty Apparatus Co., 1000; w. l., 300, 600.
 LAKE FLATONIA.—Range, 200; system, Navy-R. C. A., 1000; w. l., 300, 600.
 LAKE GANDO.—Range, 200; system, R. C. A., 1000; w. l., 300, 450, 600.
 LAKE GEORGE.—Davidson Steamship Co. owner of vessel.
 LAKE WEIR.—System, Navy-Simon, 1000; Construction Materials Co. owner of vessel.
 LEBEC.—System, Federal arc, 1000 with chopper; w. l., add 706.
 LENAPE.—System, R. C. A., 1000; w. l., add 450.
 LORRAINE CROSS.—Station operated and controlled by S. O. R. S.
 MATINICOCK.—W. l., 300, 450, 600, 706.
 M. F. ELLIOTT.—W. l., add 450.
 MITCHELL.—Range, 300; system, Navy-R. C. A., 1000; w. l., 300, 600.
 MOMUS.—System, R. C. A., 1000; w. l., add 450.
 MOUNT CARROLL.—System, Telefunken, 1000; hours, X.
 MUNCOVE.—W. l., add 706.
 MUNSOMO.—W. l., add 706.
 MUSKOGEE.—W. l., add 706.
 NABESNA.—W. l., 300, 600, 706.

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NOBLES.—W. I., add 706.
 ORCUS.—W. I., add 706.
 ORLEANS.—System, Navy-R. C. A., 1000.
 OSSINING.—W. I., add 706.
 PANSA.—Range, 300; system, Navy-R. C. A., 1000; w. I., 300, 450, 600.
 PARIA.—System, Navy-Wireless Improvement Co., 1000; w. I., add 706.
 PERE MARQUETTE.—System, R. C. A., 1000.
 POINT LOMA.—Hart-Wood Lumber Co., owner of vessel.
 POLYBIUS.—System, Navy-Liberty, 1000; w. I., 300, 450, 600, 706; hours, X; station operated and controlled by I. W. T. Co. (U. S. L.).
 PRESIDENT FILLMORE.—Station operated and controlled by I. W. T. Co.
 PRESIDENT LINCOLN.—Station operated and controlled by R. C. A.
 PRESIDENT MADISON.—Station operated and controlled by R. C. A.
 PRESIDENT MONROE.—Station operated and controlled by I. W. T. Co.
 PRESIDENT ROOSEVELT.—Station operated and controlled by I. W. T. Co.
 RELIEF.—Range, 150; w. I., 300, 450, 600, 706; rates, 8 cents per word.
 REPUBLIC (WSU).—W. I., add 706.
 RESOLUTE (KRM).—W. I., add 706.
 ROBIN GRAY.—W. I., add 706.
 RUSHVILLE.—Range, 200; system, Navy-Simon, 1000; w. I., 300, 450, 600.
 SAC CITY.—W. I., add 706.
 SAGO.—System, Navy-Wireless Specialty Apparatus Co., 1000.
 SAMUEL L. FULLER.—W. I., 300, 450, 600, 706.
 SAN JOSE.—W. I., add 706.
 SEEBANDKE.—Range, 150.
 SEVERANCE.—W. I., add 706.
 SOCONY 84.—W. I., add 706.
 SOUTHERN CROSS.—Station operated and controlled by I. W. T. Co.
 STEEL INVENTOR.—W. I., add 450.
 STEEL RANGER.—W. I., add 706.
 STEEL SCIENTIST.—W. I., add 706.
 STEEL TRADER.—W. I., add 706.
 SUDAWSONCO.—System, Navy-Wireless Specialty Apparatus Co., 1000; w. I., add 706.
 SUEDECO.—W. I., add 706.
 SUJERSEYCO.—Range, 300; system, Navy-Wireless Improvement Co., 1000; w. I., 300, 450, 600, 706.
 SUMANCO.—W. I., add 706.
 SUREMICO.—Range, 300; system, Navy-Wireless Specialty Apparatus Co., 1000; w. I., 300, 450, 600, 706.
 SUTRANSCO.—W. I., add 706.
 SUWARINCO.—Range, 300; system, Navy-Wireless Improvement Co., 1000; w. I., 300, 450, 600, 706.
 SWIFT ARROW.—System, Cutting & Washington, 1000; w. I., add 706.
 THOMAS CROWLEY.—Range, 200; system, Navy-Simon, 1000; w. I., 300, 450, 600, 706; rates, 8 cents per word.
 TORRES.—System, R. C. A., 1000; w. I., 300, 600.
 TRIPP.—Station operated and controlled by S. O. R. S.
 TULSAGAS.—W. I., add 706.
 TUSCALOOSA CITY.—W. I., add 450.
 TUXPANOIL.—W. I., add 706.
 VESTA.—W. I., add 706.
 VICTORIOUS.—Station operated and controlled by S. O. R. S.
 VIRGINIA.—System, R. C. A., 1000; Texas S. S. Co., owner of vessel.
 WASHINGTON.—Walters Navigation Corp., owner of vessel.
 WELLINGTON.—W. I., add 706.
 WEST CAMARCO.—W. I., add 706.
 WEST CANON.—Station operated and controlled by S. O. R. S. (U. S. L.).
 WEST CATANACH.—Name changed to Atlantic; Edgerton Parsons owner of vessel.
 WEST CHESWALD.—W. I., add 706.
 WESTERN OCEAN.—System, Navy-Kilbourne, 1000; w. I., 300, 450, 600, 706; hours, X.
 WEST HENSHAW.—Range, 300; w. I., 300, 600, 706.
 WEST IRA.—Station operated and controlled by S. O. R. S.
 WEST KEENE.—System, Navy-Lowenstein, 1000.
 WEST LOQUASSUCK.—W. I., add 706.
 WEST NILUS.—System, Navy-Kilbourne & Clark, 1000; w. I., add 706; station operated and controlled by R. C. A. (U. S. L.).

WEST TONANT.—Station operated and controlled by S. O. R. S.

WHEATLAND MONTANA.—W. l., add 706.

WILLIAM PERKINS.—W. l., add 706.

WILLIAM BOYCE THOMPSON.—W. l., add 706.

W. S. RHEEM.—W. l., add 706.

YANKEE ARROW.—Range, 300; system, R. C. A., 1000; w. l., 300, 450, 600, 706.

Strike out all particulars of the following-named vessels: Alpha, Callabassa, City of Everett, City of Rockland, Henry J. Biddle, Mary, Pelillo, and Tamesi.

COMMERCIAL LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

KEE, *read* Atlantic; KIVR, *read* Beaconoil; KPH, *read* Bolinas, Calif. (remotely controlled from San Francisco, Calif.); WRJ, *read* Noyo; strike out all particulars following the call signals, KDVB, KDWO, KLL, KLQ, KMN, KRI, KTOE, KTQ, KUVB, KUXN, WJAV, WOW, WPUI, WSC, and WTE.

COMMERCIAL AIRPLANE 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.]

BUCKEYE.—Strike out all particulars.

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.]

KFAY (Medford, Oreg.).—Power, 50; w. l., 283, frequency, kc. 1060.

KFCK (Colorado Springs, Colo.).—W. l., 258, frequency, kc. 1160.

KFCY (Le Mars, Iowa).—Power, 50; w. l., 252, frequency, kc. 1190.

KFGQ (Boone, Iowa).—Power, 10.

KPHA (Gunnison, Colo.).—W. l., 252, frequency, kc. 1190; station operated and controlled by Western State College of Colorado.

KFHD (St. Joseph, Mo.).—Power, 100.

KPIX (Independence, Mo.).—Power, 250.

KFJK (Bristow, Okla.).—Frequency, kc. 1290.

KFLE (Denver, Colo.).—Power, 25.

KMJ (Fresno, Calif.).—W. l., 273, frequency, kc. 1100.

KYW (Chicago, Ill.).—Power, 1000; w. l., 536, frequency, kc. 560.

WABH (Sandusky, Ohio).—Power, 20.

WABO (Rochester, N. Y.).—Power, 10.

WBAH (Minneapolis, Minn.).—W. l., 417, frequency, kc. 720.

WBAP (Fort Worth, Tex.).—Power, 750.

WDAY (Fargo, N. Dak.).—Station operated and controlled by Radio Equipment Corp.

WEAH (Wichita, Kans.).—Power, 50; station operated and controlled by Wichita Board of Trade.

WEV (Houston, Tex.).—Power, 50.

WFAH (Port Arthur, Tex.).—W. l., 236, frequency, kc. 1270.

WFAV (Lincoln, Nebr.).—Power, 500; w. l., 275, frequency, kc. 1090.

WGAZ (South Bend, Ind.).—Power, 50.

WGR (Buffalo, N. Y.).—W. l., 319; frequency, kc. 940.

WHAR (Atlantic City, N. J.).—Power, 10.

WIAD (Ocean City, N. J.).—Station operated and controlled by Howard R. Miller, 6318 Park Avenue.

WIAH (Newton, Iowa).—W. l., 258, frequency, kc. 1160.

WIAO (Milwaukee, Wis.).—Power, 100.

WIL (Washington, D. C.).—Power, 10.

WKAR (East Lansing, Mich.).—Power, 250.

WKAU (Laconia, N. H.).—W. l., 254, frequency, kc. 1180.

WKAY (Gainesville, Ga.).—Power, 10; w. l., 280, frequency, kc. 1070.

WLAV (Pensacola, Fla.).—Power, 15, w. l., 254, frequency, kc. 1180.

WMAF (Dartmouth, Mass.).—Power, 100-500.

WMAL (Trenton, N. J.).—Power, 50.

WMAQ (Chicago, Ill.).—Power, 250.

WNAO (Boston, Mass.).—W. l., 278, frequency, kc. 1080.

WNAO (Springfield, Ohio).—W. l., 221, frequency, kc. 1300.

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- WNAQ (Charleston, S. C.).—Power, 10.
 WNAT (Philadelphia, Pa.).—Power, 100.
 WNAV (Knoxville, Tenn.).—W. l., 236, frequency, kc. 1270.
 WOAC (Lima, Ohio).—Power, 50.
 WOAF (Tyler, Tex.).—Power, 10.
 WOAP (Kalamazoo, Mich.).—W. l., 240, frequency, kc. 1250.
 WQAK (Dubuque, Iowa).—Power, 100; w. l., 268, frequency, kc. 1120.
 WQAN (Scranton, Pa.).—Power, 100.
 WQAQ (Abilene, Tex.).—Station operated and controlled by West Texas Radio Co. (Abilene Daily Reporter).
 WRAN (Waterloo, Iowa).—Power, 10; w. l., 236, frequency, kc. 1270.
 WRAY (Scranton, Pa.).—Power, 100.
 WRW (Tarrytown, N. Y.).—Power, 150.
 WSAD (Providence, R. I.).—Power, 100.
 WSAT (Plainview, Tex.).—Station operated and controlled by Donohoo-Ware Hardware Co.
 WSAW (Canandaigua, N. Y.).—Station operated and controlled by John J. Long, jr.
 WTAD (Carthage, Ill.).—Power, 10.
 WTAR (Norfolk, Va.).—Power, 100; w. l., 280, frequency, kc. 1070.
 WTAW (College Station, Tex.).—W. l., 280, frequency, kc. 1070.
 Strike out all particulars of the following-named stations: KFGY, Baudette, Minn.; KFHI, Wichita, Kans.; KFHY, Trinidad, Colo.; KFJQ, Grand Forks, N. Dak. (portable); WAAP, Wichita, Kans.; WBAF, Moorestown, N. J.; WEAK, St. Joseph, Mo.; WGF, Des Moines, Iowa; WHAO, Savannah, Ga.; WIAY, Washington, D. C.; WMAM, Beaumont, Tex.; WOAB, Grand Forks, N. Dak.; WOAR, Kenosha, Wis.; WPAF, Council Bluffs, Iowa; WQAK, Dubuque, Iowa; WRAR, David City, Nebr.; WRAS, McLeansboro, Ill.; and WSAU, Chesham, N. H.

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.]

- AMBROSE CHANNEL LIGHT VESSEL.—Loc. $0.73^{\circ} 50' 02''$, N. $40^{\circ} 27' 59''$.
 BLUNTS REEF LIGHT VESSEL.—Loc. $0.124^{\circ} 30' 14''$, N. $40^{\circ} 26' 04''$.
 BRUNSWICK LIGHT VESSEL.—Loc. $0.81^{\circ} 09' 35''$, N. $31^{\circ} 00' 10''$.
 CAPE CHARLES LIGHT VESSEL.—Loc. $0.75^{\circ} 41' 00''$, N. $37^{\circ} 04' 55''$.
 CAPE LOOKOUT SHOALS LIGHT VESSEL.—Loc. $0.76^{\circ} 24' 18''$, N. $34^{\circ} 18' 27''$.
 CORNFIELD POINT LIGHT VESSEL.—Loc. $0.72^{\circ} 22' 15''$, N. $41^{\circ} 12' 56''$.
 DIAMOND SHOALS LIGHT VESSEL.—Loc. $0.75^{\circ} 19' 44''$, N. $35^{\circ} 05' 18''$.
 FENWICK ISLAND SHOAL LIGHT VESSEL.—Loc. $0.74^{\circ} 45' 52''$, N. $38^{\circ} 25' 10''$.
 FIVE FATHOM BANK LIGHT VESSEL.—Loc. $0.74^{\circ} 34' 33''$, N. $38^{\circ} 47' 57''$.
 FRYING PAN SHOALS LIGHT VESSEL.—Loc. $0.77^{\circ} 48' 49''$, N. $33^{\circ} 34' 04''$.
 GRAND MARIAS, MICH.—Correct orthography Grand Marais, Mich.
 HEAD BANK LIGHT VESSEL.—Loc. $0.94^{\circ} 12' 27''$, N. $29^{\circ} 06' 05''$.
 NORFOLK, VA.—W. l., add 507 and 1395, v. t. c. w.
 NORTH EAST END LIGHT VESSEL.—Loc. $0.74^{\circ} 29' 34''$, N. $38^{\circ} 57' 45''$.
 SAN JUAN, P. R.—W. l., 000, 2400, 2750, spark and 3950, 4850, 8875, 9145, 10110, arc.
 SWIFTSURE BANK LIGHT VESSEL.—Loc. $0.125^{\circ} 00' 00''$, N. $48^{\circ} 31' 44''$.
 UMATILLA REEF LIGHT VESSEL.—Loc. $0.124^{\circ} 50' 25''$, N. $48^{\circ} 10' 03''$.
 WINTER QUARTER SHOALS LIGHT VESSEL.—Loc. $0.74^{\circ} 56' 22''$, N. $37^{\circ} 55' 25''$.

Strike out all particulars of the following-named stations: Fort Crockett, Tex.; Fort San Jacinto, Tex.; Fort Travis, Tex.; Memphis, Tenn.; New Orleans, La. (WYDC); and St. Louis, Mo.

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.]

Strike out all particulars of the following-named vessels: Apo, Baton Rouge, Cairo, Celtic, Choctaw, Curacao, Fortune, Georgia, Housatonic, Machias, Mars, Memphis (WYDJ), Monadnock, Natchez, Nebraska, New Orleans (WYDH), Nokomis, Osceola, Panther, Prairie, Quiros, Rhode Island, S. C. 106, St. Louis, Vicksburg (WYDE), Vixen, and Vulcan.

GOVERNMENT LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

NZT, read Grand Marais, Mich.; strike out all particulars following the call signals, NAGQ, NDB, NEGS, NFX, NGF, NHD, NJR, NMA, NOA, NOGQ, NOJ, NQL, NQM, NQZ, NSU, NTX, NUDP, NVT, WUX, WUY, WXP, WYDA, WYDB, WYDC, WYDD, WYDE, WYDF, WYDG, WYDH, WYDI, WYDJ, WYDK, and WYDL.

GOVERNMENT AIRSHIP 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 Bernese Bureau.]

ZR-1.—Name changed to Shenandoah.

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.]

BALTIMORE, MD. (3XX).—Station operated and controlled by R. Selway Collmus and William E. Lehr, 3912 Maine Avenue.

BROOKLINE, MASS. (1XA).—Changed to Andover, Mass.

CONWAY, ARK. (5XAC).—Station operated and controlled by Ben H. Woodruff.

DARTMOUTH, MASS. (1XAN).—This is a portable station.

NEW BRAUNFELS, TEX. (5YK).—Station operated and controlled by New Braunfels High School.

REEDLEY, CALIF. (6XAV).—Changed to Hollywood, Calif., 7058½ Hollywood Boulevard.

STAPLETON, N. Y. (2XAC).—Station operated and controlled by J. B. Ferguson, 29 Broadway, New York, N. Y.

TUCSON, ARIZ. (6XAZ).—Station operated and controlled by L. R. Wilson.

WACO, TEX. (5ZAF).—Station operated and controlled by William P. Clarke, 728 North 13th Street.

Strike out all particulars of the following-named stations: Agricultural College, N. Dak. (9YG); Atlanta, Ga. (4XC); Atlanta, Ga. (4XN); Atlanta, Ga. (4YA); Atlanta, Ga. (4YD); Chicago, Ill. (9XU); College Park, Ga. (4XO); Colorado Springs, Colo. (9XC); El Dorado, Kans. (9XP); Eugene, Oreg. (7YB); Fulton, Mo. (9YR); Hoboken, N. J. (2XD); Iowa City, Iowa (9YA); Kansas City, Mo. (9XK); Morgantown, W. Va. (8YH); Pawtucket, R. I. (1XAD); Pittsburgh, Pa. (8YZ); Pullman, Wash. (7ZS); Raleigh, N. C. (4YC); Salt Lake City, Utah (6ZV); St. Louis, Mo. (9XR); Tampa, Fla. (4XJ); and White Sulphur Springs, W. Va. (8XP).

MISCELLANEOUS.

TIME SIGNALS IN FOREIGN COUNTRIES.

Germany.—Nauen now sends a time signal on 3,100 meters and simultaneously on a wave length of 13,000 meters.

Russia.—Petrograd sends a signal on 1,500 meters, spark. Moscow transmits a signal on 5,000 meters, spark.

NEW LISTS OF STATIONS NOW AVAILABLE.

The new list of Commercial and Government Radio Stations of the United States, edition June 30, 1923, which contains a list of the broadcasting stations and the list of Amateur Radio Stations of the United States, edition June 30, 1923, can now be purchased from the Superintendent of Documents, Government Printing Office, this city. The price of the first-named list is 15 cents per copy and the price of the last-named list is 25 cents per copy. Do not send remittances to the Bureau of Navigation.

NEW RADIO FOG SIGNALS.

The following-named radio fog signals have been placed in operation by the United States Fish Commission:

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¹ BOSTON LIGHT VESSEL (NADX) (lat. 42° 20' 22" N., long. 70° 45' 26" W.)—	
Groups of one dash and one dot for.....	15 seconds.
Silent.....	15 seconds.
NANTUCKET SHOALS LIGHT VESSEL (NLA) (lat. 40° 37' 02" N., long. 69° 37' 06" W.)—	
Groups of four dashes for.....	30 seconds.
Silent.....	25 seconds.
COLUMBIA RIVER LIGHT VESSEL (NAJT) (lat. 46° 10' 45" N., long. 124° 10' 35" W.)—	
Groups of three dashes for.....	20 seconds.
Silent.....	20 seconds.
SWIFTSURE BANK LIGHT VESSEL (NABT) (lat. 48° 31' 44" N., long. 125° 00' 00" W.)—	
Groups of two dashes for.....	35 seconds.
Silent.....	25 seconds.

The signals are transmitted continuously during thick or foggy weather on a wave length of 1,000 meters.

For list of stations in addition to the above see the list of Commercial and Government Radio Stations of the United States, edition June 30, 1923.

RADIO FOG SIGNALS ESTABLISHED IN NORWAY.

A radio fog signal has been established at Marstønen Light Station, west coast of Norway, in (approximately) 60° 07' 48" N., 5° 01' 00" E. The signal consists of the call signal of the station TSY, repeated three times, followed by a series of v's for 50 seconds. The above system is issued three times, followed by an interval of 1 minute. The range is about 30 miles. The fog signal is automatic and operates on a wave length of 1,000 meters.

Another fog signal has been established at Faerder Light Station in (approximately) 59° 01' 36" N., 10° 31' 54" E. The signal consists of the call signal TRW, repeated three times, followed by a series of v's for 50 seconds. The above system is issued three times, followed by an interval of 1 minute. The range is about 30 miles. The signal is automatic and is sent on a 1,000-meter wave length.—*From Notice to Mariners, No. 41, 1923.*

FOG SIGNAL ESTABLISHED IN GULF OF ST. LAWRENCE.

An automatic radio fog signal has been established on the Anticosti Light Vessel located in 23 fathoms, 8 miles 104° from Heath Point. The station will transmit on a wave length of 1,000 meters with a spark frequency of 500. The characteristic of the station will be a series of groups of four dashes transmitted for a period of 60 seconds, followed by a silent interval of 4 minutes. The elapsed time from the beginning of one group of dashes to the beginning of the next group will be 4 seconds.

In foggy weather the automatic transmitter will be in operation on 1,000 meters continuously except when the operator is on watch. The operator will maintain watch on 600 meters during the following hours, eastern standard time: 7-7.30 a. m., 9-9.30 a. m., 11-11.30 a. m., 1-1.30 p. m., 3-3.30 p. m., 5-5.30 p. m., 7-7.30 p. m., and 10-10.30 p. m.

If during the period in which the operator is on watch a ship should require the light vessel to transmit radio signals for direction-finding purposes, the request for such signals should be made on 600 meters. The light vessel will then acknowledge the request on that wave length, after which she will immediately transmit the automatic radio beacon signal on 1,000 meters. No charge is made for this service. The transmitting range is about 50 miles. Location (approximately) 49° 03' 00" N., 61° 30' 30" W.

Masters of vessels equipped to receive these signals are requested to listen in when in the vicinity of this station and report the results of such reception to the Radio Inspector, H. M. C. Dockyard, Halifax, Nova Scotia, or to Radio Inspector, Marine Department, Old Customs Building, Montreal, Quebec, or directly to the Director of Radio, Department of Marine and Fisheries, Ottawa, Canada.—*From Notice to Mariners, No. 42, 1923.*

RADIO SERVICE BULLETIN.

IMPROVISED SET USED IN EMERGENCY ON THE "HARRY LUCKENBACH."

On a recent voyage of the steamship *Cuba* the motor generator used to operate the radio set became inoperative, and because of this defect, which the radio operators and the ship's electrician were unable to remedy, the vessel could not transmit radio signals and obtain compass bearings, which probably would have saved the vessel.

In a similar case the resourcefulness of the operators of the steamship *Harry Luckenbach* is to be commended. The operators contrived an apparatus for interrupting the direct current by taking an ordinary electric fan and providing brushes for the same, which were placed in the direct-current circuit. In this way they were able to work distances up to 1,400 miles. The blades of the fan acted as a motor and made contact with the improvised brushes, thus giving a pulsating current through the transformer. This improvised emergency set made it possible to carry on radio communication and is brought to the attention of other radio operators who may in the future have similar experiences.

Details of time, weather, press, and hydrographic bulletin schedules transmitted by naval radio stations.

Name of station.	Call signal.	Wave length.	Type of emission.	Time. (75th meridian).	Nature of service.
✓ Annapolis, Md.....	NSS	17,150	arc.....	1155 1700	Time. Ice report.
✓ Arlington, Va.....	NAA	5,996 2,655	arc.....	2155 1630 1155	Time, press. Weather, hydrographic. Time, storm warnings.
Balboa, C. Z.....	NBA	7,000	arc.....	2155 0455	Time, weather, hydrographic, press. Time, press.
Bar Harbor, Me.....	NBD	2,400	spark	1255 0300	Time. Press.
✓ Boston, Mass.....	NAD	1,363	spark	1100 1155	Weather, hydrographic. Time, if Arlington fails.
Brownsville, Tex.....	NAY	2,255	spark.....	1700 1200 1900	Weather, hydrographic. Weather. Do. Do.
Cavite, P. I.....	NPO	5,260	arc.....	0855 2155	Time, weather, hydrographic. Do.
Charleston, S. C.....	NAO	2,800	spark.....	0855 2155	Do. Do.
Charleston, S. C.....	NAO	2,800	spark.....	1030 1155	Weather, hydrographic. Time, if Arlington fails.
Colon, C. Z.....	NAX	1,631	spark.....	1800 0455	Weather, hydrographic. Time, hydrographic, press.
Dutch Harbor, Alaska...	NPR	2,255	spark.....	1255 0600	Do. Weather.
Eureka, Calif.....	NPW	2,250	spark.....	1230 1200 1455	Do. Do. Time.
Galveston, Tex.....	NKB	1,817	spark.....	1700 2030	Weather. Do.
Galveston, Tex.....	NKB	1,817	spark.....	1130 1800	Weather, hydrographic. Do.
Great Lakes, Ill.....	NAJ	4,685	arc.....	1045 1700	Hydrographic. Do.
Great Lakes, Ill.....	NAJ	1,956	spark.....	1845 1100	Weather. Hydrographic.
Great Lakes, Ill.....	NAJ	1,956	spark.....	1155 1715	Time. Hydrographic.
Great Lakes, Ill.....	NAJ	1,956	spark.....	0900	Weather.
Guantanamo, Cuba.....	NAW	2,736 4573	spark.....	2155	Hurricane warnings as issued every four hours. <i>weather tel 6-7</i>
Honolulu, Hawaii.....	NPM	2,255	spark.....	0130 1330 1730 1855	Weather, hydrographic. Do. Do. Time.
Inglewood, Calif.....	NPX	12,000 1,428	arc..... spark.....	1855 1130	Do. Weather.
Jupiter, Fla.....	NAQ	1,305	spark.....	1700 2330 1130	Do. Do. Do.
Jupiter, Fla.....	NAQ	1,305	spark.....	1800	Do.
San Francisco, Calif.....	NAR	2,255	spark.....	1655	Time.

u.c.

spark

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Details of time, weather, press, and hydrographic bulletin schedules transmitted by naval radio stations—Continued.

Name of station.	Call signal.	Wave length.	Type of emission.	Time. (75th meridian).	Nature of service.
New Orleans, La.	NAT	2,600	spark	1100	Weather, hydrographic.
				1155	Time.
				1700	Weather, hydrographic. ¹
				1940	Weather.
				2200	Do.
Newport, R. I.	NAF	2,600	spark	1450	Time, if Arlington fails.
				1630	Weather, hydrographic.
New York, N. Y.	NAH	1,540	spark	1155	Time, if Arlington fails.
				1700	Weather, hydrographic.
Norfolk, Va.	NAM	1,800	spark	0830	Weather.
				1945	Weather, hydrographic.
				1155	Time, if Arlington fails.
				1600	Weather, hydrographic.
				2000	Weather.
North Head, Wash.	NPE	2,720	spark	1,395	Do. ¹
				507	Do.
				0630	Do.
				0830	Do.
				1230	Do.
Pensacola, Fla.	NAS	1,330	v. l. c. w.	1145	Weather.
				1800	Do. ¹
				1945	Weather, hydrographic.
				1700	Do.
				1700	Do.
Philadelphia, Pa.	NAI	1,300	v. l. c. w.	1945	Weather, hydrographic.
Port au Prince, Haiti.	NSC	2,255	spark		Hurricane warnings as issued every four hours.
Portland, Me.	NAB	800	spark	1300	Weather.
Puget Sound, Wash.	NPC	1,463	spark	2900	Do.
				0800	Do.
				1300	Weather, hydrographic.
				1600	Do.
				2000	Do.
San Diego, Calif.	NPL	9,801	arc	2200	Hydrographic.
				2300	Weather.
				0600	Press.
				1455	Time.
				1455	Do.
San Francisco, Calif.	NPG	1,538	arc	1,630	Do.
				0415	Press.
				1200	Weather, hydrographic.
				1455	Time.
				1,800	Do.
San Juan, P. R.	NAU	1,850	arc	0655	Do.
				0100	Weather.
				0415	Press.
				1455	Time.
				2230	Weather, hydrographic.
Savannah, Ga.	NEV	1,800	spark	1100	Do.
St. Augustine, Fla.	NAP	2,100	spark	1800	Do. ¹
				1130	Do.
St. Croix, V. I.	NNI	450	spark	1900	Do. ¹
					Hurricane warnings as issued every four hours.
St. Thomas, V. I.	NBD	1,625	spark		Do.
Tutuila, Samoa.	NPU	2,255	spark	0230	Weather, hydrographic.
				1830	Do.
				2230	Do.

¹ Hurricane warnings as issued every two hours.

All naval time signals are made in a standard manner, which is as follows:

The signal begins 5 minutes before the hour to be marked and consists of a dot for each second. The dot for the twenty-ninth second of each minute is omitted, and also the last 5 seconds of the first 4 minutes. The last 10 seconds of the fifth minute are omitted, this silence being followed by a 1-second dash, the beginning of which marks the time signal.

ALASKAN STATIONS CLOSED UNTIL NEXT SEASON.

The following-named stations closed until next season on the dates set after their names: Chemley (KDP), October 25; Hidden Inlet (KQL), October 1; Lazy Bay (KEPS), September 24; Port Althorp (KLW), October 3; Port Beauclaire (KWO), October 12; Port Walter (KEQ), October 15; Pybus Bay (KFC), September 26; Quadra (KHD), October 12; Rose Inlet (KJC), October 17; Tee Harbor (KQP), October 10; Union Bay (KON), October 4; Uyak (KHA), September 26; Yakutat (KKA), October 12; Yes Bay (KRU), September 28.

REGULATIONS COVERING THE INSTALLATION OF RADIO TELEGRAPH AND TELEPHONE STATIONS IN GUATEMALA.

The Government of Guatemala on September 27 last issued a decree regulating the operation of radio stations by individuals or companies.

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.

R000.—Radio communication.

- R007.1 Cuban amateurs recognized by president of island. (Regulations: 20 meters and $\frac{1}{2}$ kilowatt.) Radio Digest Illustrated, 4, p. 9, October 8, 1923.
- R007.5 British rules protested by Australians: Object to being at mercy of one broadcasting station. American Radio Journal, 2, p. 15, September 1, 1923.
- R007.5 British Government will permit private companies to establish high-power stations in the kingdom and colonies. American Radio Journal, 2, p. 2, October 1, 1923.
- R007.5 Radio activities in Australia (regulations). Wireless Age, 11, pp. 45, 46, October, 1923.
- R020 A discussion of the practical systems of direction finding by reception (pamphlet). Published by H. M. Stationery Office, London, price 9 pence net. Noted in Wireless World and Radio Review, October 3, 1923.
- R020 Mitchell, W. G. W. Time and weather by wireless. Published by the Wireless Press (Ltd.), London, price 3s. 6d. Noted in Wireless World and Radio Review, October 3, 1923.
- R020 Superheterodyne receiver (complete constructional details, blue prints No. 30141-145). Published by Experimenter's Information Service, New York, price \$2 postpaid. Noted in Radio News, November, 1923.
- R050 Radio News' Amateurs Handbook. Experimenter Publishing Co., New York, price \$1. Noted in Radio News, November, 1923.
- R050 Bangay, R. D. Wireless telephony (book). Published by Wireless Press (Ltd.), London, price 3s. 6d. Noted in Wireless World and Radio Review, October 3, 1923.
- R020 The dope on wave lengths and kilocycles. Radio Broadcast, 4, p. 47, November, 1923.
- R020 Free, E. E. How to convert wave lengths into kilocycles. Popular Radio, 4, pp. 405-409, November, 1923.

R100.—Radio principles.

- R111 Fleming, J. A. Electrons, electric waves, and wireless telephony (end of series). Radio News, 5, pp. 526-527, November, 1923.
- R113.8 Ionization wrong, sun crowds radio (scientists make interesting observations on radio during solar eclipse). Radio Digest Illustrated, 7, p. 3, October 13, 1923.
- R114 Austin, L. W. Observations on Lafayette and Nagen stations in Washington, March 1, 1922, to February 28, 1923. Proceedings Institute Radio Engineers, 11, pp. 459-465, October, 1923.
- R120 Conrad, F. Radio antenna design. Wireless Age, 11, pp. 54-55, October, 1923.
- R124 Jolliffe, H. Some experiments with loop antenna. Radio News of Canada, 2, pp. 26-29, October, 1923.
- R125.1 Horton, C. E. Wireless direction finding in steel ships (with discussion). Journal Institution Electrical Engineers, 61, pp. 1049-1050, September, 1923.
- R133 High-power vacuum tube of knockdown construction for radiotelegraphy (5 to 6 kilowatt triode valve). Génie Civil, 88, pp. 111-112, August 4, 1923.
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STANDARD FREQUENCY STATIONS.

If every radio transmitting station maintained exactly the wave frequency assigned



A METHOD OF MEASURING VERY SHORT RADIO WAVE LENGTHS AND THEIR USE IN FREQUENCY STANDARDIZATION.

A paper describing one method of establishing frequency standards employed by the Bureau of Standards has recently been published in the Proceedings of the Institute of Radio Engineers. The method described is based on the direct measurement in linear measure of the wave length of very short standing waves on a pair of parallel wires. The wave lengths measured were from 9 to 16 meters, the currents having frequencies from 33,000 to 19,000 kilocycles per second. The apparatus for generating these ultraradio frequency currents is described, as well as the details of the method used in measuring the wave length of the waves which they produce on the parallel wires. A method is also described for calibrating a wave meter at frequencies from 30,000 kilocycles to 352 kilocycles (10 to 850 meters). This method makes use of the harmonics in a second radio-frequency generating set, one of which, when combined with the output from the ultraradio frequency generating set, produces a beat note in a receiving set tuned to the ultraradio frequency. The zero beat-note method is used to obtain an exact setting.

A detailed account of these experiments is given in a paper entitled "A method of measuring very short radio wave lengths and their use in frequency standardization," by F. W. Dunmore and F. H. Engel, which appeared in the Proceedings of the Institute of Radio Engineers, page 467, October, 1923.

DESCRIPTION OF A SERIES OF SINGLE-LAYER INDUCTANCE COILS SUITABLE FOR RADIO-FREQUENCY STANDARDS.

The radio laboratory of the Bureau of Standards has prepared Bureau of Standards Letter Circular No. 103, Description of a Series of Single-Layer Inductance Coils Suitable for Radio-Frequency Standards, which gives specifications for the construction of a complete series of single-layer inductance coils suitable for radio-frequency standards. The series consists of 17 coils having a constant ratio between the successive values of inductance, and the coils are designed to cover the inductance range from 8 to 5,000 microhenries. This, like the other letter circulars, is available only in mimeographed form. A limited number of copies are available for distribution to radio laboratories and manufacturers and others who can show that they have actual use for this material. Requests should be addressed to Bureau of Standards, Washington, D. C.

TESTS OF RADIO RECEIVING SETS (III).

The results of tests on receiving sets made by the radio laboratory of the Bureau of Standards are given in a series of letter circulars which are now being issued. The third of the series is Letter Circular No. 102, which has just been issued. This describes results of tests on a number of short-wave regenerative receiving sets. The second of the series, Letter Circular No. 93, which was previously announced, described the results of tests on a number of receiving sets which utilize crystal detectors. The first letter circular of the series gave results of tests on certain electron tube-receiving sets; copies of this are no longer available. It is believed that the methods followed and the examples given in these reports will be of assistance to manufacturers in the development of methods of testing and describing and improving their products. The particular receiving sets are referred to by arbitrary reference numbers rather than by a statement of the manufacturers' names and type numbers.

This letter circular is available only in mimeographed form, but a limited number of copies are available for distribution to testing laboratories, manufacturers, and others who can show that they are directly concerned with the testing of receiving sets. Requests should be addressed to the Bureau of Standards, Washington, D. C.

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