

DEPARTMENT OF COMMERCE

RADIO SERVICE BULLETIN

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Washington, July 1, 1924—No. 87

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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 inter-	
		national 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.	
Fy.	=	Frequency.	
A. c.	=	Alternating current.	

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—
East Moriches, N. Y.	WSH	300, 600	PG	X	I. W. T. Co.
Mackinac Island, Mich.	WHQ	550 to 1100, 950	PG	X	Mackinac Radio Service.
Surigan, P. I. ³	KZAM		PG		Philippine Insular Government.
Tuckerton, N. J.	W8C				R. C. A.

¹ Loc. (approximately) O. 84° 35' 00"; range, 300; system, composite, 240; rates, 10 cents per word.

² Loc. (approximately) O. 123° 29' 00", N. 6° 48' 00"; range, 35; system composite, v. t. telegraph; hours, 8 a. m.—12 noon and 2-5.30 p. m. daily, 9-11 a. m. and 2-3.30 p. m. Sundays and holidays; rates, 12 cents per word.

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—
Alaska Standard	KFTJ		PG	X	Standard Oil Co.	Owner of vessel.
Big Bill ¹	WHU		P	X	William H. Thompson	
Catalina	KFTP		PG	N	Wilmington Transportation Co.	
Cauto ²	KWF	8	PG	X	New York & Cuba Mail S. S. Co.	I. W. T. Co.
Dan F. Hanlon	KDKU		PG	X	D. J. Hanlon	Owner of vessel.
Elsie	KFTM		P	X	T. L. Grainger	
Frank Beiber ³	KFTS		PG	X	Becker S. S. Co.	Do.
George H. Ingalls ⁴	KFTO		PG	X	Eastern S. S. Corp.	Do.
Guantanamo ⁵	KWN	8	PG	X	New York & Cuba Mail S. S. Co.	I. W. T. Co.
Henry P. Werner ⁶	KFTN		PG	X	Eastern S. S. Corp.	Owner of vessel.
John A. Donaldson ⁷	KFTT		PG	X	Becker S. S. Co.	Do.
Marina ⁸	KIVD	8	PG	X	Robert Gellier	R. C. A.
Pizarro ⁹	KFPU				Compania Industrial y Commercial Centro-Americana	F. T. Co.
Santa Maria ¹⁰	KFTI	8	PG	X	Union Oil Co.	
Skylark II ¹¹	KFTU		P	X	George H. Phelps	
Volcano ¹²	KFTG		P	X	Inland Waterways Corp.	Do.

¹ Range, 100; system, composite v. t. telephone and telegraph; w. l., 106, 150, 175, 200.

² Range, 300; system, R. C. A., 1000; w. l., 300, 600, 706.

³ Range, 200; system, Kilbourne & Clark, 1000; w. l., 300, 600; rates, Great Lakes service, 2 cents per word.

⁴ Range, 150; system, W. S. A. Co., 1000; w. l., 300, 600, 706.

⁵ Range, 300; system, R. C. A., 1000; w. l., 300, 600, 706.

⁶ Range, 150; system, W. S. A. Co., 1000; w. l., 300, 600, 706.

⁷ Range, 200; system, K. & C., 1000; w. l., 300, 600; rates, Great Lake service, 2 cents per word.

⁸ Range, 150; system, R. C. A., 1000; w. l., 300, 600, 706.

⁹ Temporarily assigned call letters—vessel under Panamanian flag.

¹⁰ Range, 300; system, Federal arc; w. l., 300, 600, 706, 2400.

¹¹ Range, 50; system, composite v. t. telephone and telegraph; w. l., 146, 300, 600.

¹² Range, 200; system, Navy-Simon, 2000; w. l., 300, 600, 1100.

Commercial land and ship stations, alphabetically by call signals

[b=ship station; c=land station]

Call signal	Name	Call signal	Name
KDKU	Dan F. Hanlon.....b	KFTT	John A. Donaldson.....b
KFPU	Pizarro.....b	KFTU	Skylark II.....b
KFTG	Volcano.....b	KIVD	Marina.....b
KFTI	Santa Maria.....b	KWF	Cauto.....b
KFTJ	Alaska Standard.....b	KWN	Guantanamo.....b
KFTM	Elsie.....b	KZAM	Surigan, P. I.....c
KFTN	Henry P. Werner.....b	WHQ	Mackinac Island, Mich.....c
KFTO	George H. Ingalls.....b	WHU	Big Bill.....b

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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
Anderson, Ind.	WEBD	Iowa City, Iowa	KFQP
Anthony, Kans.	WBL	Kingston, N. Y.	WDBZ
Austin, Tex.	KFGM	Los Angeles, Calif.	KFGG
Chicago, Ill.	WDBY	Manitou, Colo.	KFQS
Do.	WTL	Milwaukee, Wis.	WCAY
Columbia, Tenn.	WDBW	Muskogee, Okla.	KFQL
Cranston, R. I.	WBBF	New York, N. Y.	WDBX
Culver City, Calif.	KFQI	Oklahoma, Okla.	KFQJ
Denison, Tex.	KFQT	Do.	KFQR
Denver, Colo.	KFPO	Portland, Oreg.	KFQN
Fayette, Mo.	KFQK	Russell, Kans.	KFQO
Fort Wayne, Ind.	WDBV	St. Petersburg, Fla.	WDDI
Hattiesburg, Miss.	WDBT	Skowhegan, Me.	WDBU
Highland Park, N. J.	WEBA	Superior, Wis.	WEBC
Hillsborough, Calif.	KFQH		

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

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

Call signal	Location of station	Operated and controlled by—	Wave length	Power (watts)	Service
KFPO	Denver, Colo.	Colorado National Guard, Forty-fifth Division Tank Co.	500	231	1300
KFQO	Los Angeles, Calif., Armory, Exposition Park.	Southern California Radio Association.	100	226	1830
KFQH	Hillsborough, Calif., Box 51, Burlingame, Calif.	Albert Sherman	50	231	1800
KFQI	Culver City, Calif.	Thomas H. Ince Corp.	100	234	1280
KFQJ	Oklahoma, Okla., 211 West Main St.	Harbour-Longmire Co.	50	236	1370
KFQK	Fayette, Mo.	Democrat Leader	10	226	1270
KFQL	Muskogee, Okla.	Oklahoma Free State Fair Association.	20	252	1150
KFQM	Austin, Tex.	Texas Highway Bulletin	100	268	1130
KFQN	Portland, Oreg.	Third Baptist Church	5	283	1050
KFQO	Russell, Kans.	Meyer Radio Shop	10	261	1150
KFQP	Iowa City, Iowa, 806 East College St.	George S. Carson, jr.	10	234	1240
KFQR	Oklahoma, Okla., 625 East Sixth St.	Walter L. Ellis	10	250	1200
KFQS	Manitou, Colo.	Dickenson-Henry Radio Laboratories	10	246	1220
KFQT	Denison, Tex.	Texas National Guard, Thirty-sixth Signal Co.	10	252	1190
WBL	Anthony, Kans., 401 South Anthony St.	T. & H. Radio Co.	100	264	1120
WCAY	Milwaukee, Wis., Hotel Antlers	Milwaukee Civic Broadcasting Station	250	266	1130
WDDI	St. Petersburg, Fla., 819 Third St., South	Radio Specialty Co.	10	220	1830
WDBT	Hattiesburg, Miss.	Taylor's Book Store	10	236	1270
WDBU	Skowhegan, Me., 45 Water St.	Somerset Radio Co.	10	258	1160
WDBV	Fort Wayne, Ind.	Strand Theater	100	258	1150
WDBW	Columbia, Tenn., West Seventh St.	The Radio Den	20	268	1120
WDRX	New York, N. Y., 138 Dyckman St.	Otto Baur	5	233	1290
WDBY	Chicago, Ill.	North Shore Congregational Church	500	268	1100
WDBZ	Kingston, N. Y.	Boy Scouts of America, Ulster County Council	5	283	1290
WEBA	Highland Park, N. J., 11 South Eighth Ave.	The Electric Shop	15	283	1290
WEBC	Superior, Wis., 1011 North Twenty-first St.	Walter C. Bridges	10	242	1240
WEBD	Anderson, Ind.	Electrical Equipment & Service Co.	10	246	1220
WBBF	Cranston, R. I.	Dutess W. Flint	500	266	1050
WTL	Chicago, Ill., Webster Hall	H. G. Saal Co.	10	268	1120

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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—
Fort Constitution, N. H. ¹	WZE	1300	FX	X	U. S. Army,
Fort Crockett, Tex. ²	WUAC	1000	FX	X	Do.
Fort Levett, Me. ³	WUAV	800	FX	X	Do.
Fort Moultrie, S. C. ⁴	WZF	1050	FX	X	Do.
Fort Rodman, Mass. ⁵	WUCN	535	FX	X	Do.
Fort Rosecrans, Calif. ⁶	WUB	300	FX	X	Do.
Fort Tilden, N. Y. ⁷	WUBY	300	FX	X	Do.
Fort Travis, Tex. ⁸	WUBB	825	FX	X	Do.
Fort Washington, Md. ⁹	WUAF	1200	FX	X	Do.
Fortuna, Alaska	WXN		FX	X	Do.
Key West, Fla. ¹⁰	WUBV	825	FX	X	Do.
Wiseman, Alaska	WXG		FX	X	Do.

¹ Loc. 0.70° 42' 40", N. 43° 04' 16"; range, 50; system, U. S. Army, 1000.

² Loc. 0.94° 48' 32", N. 22° 18' 28"; range, 50; system, U. S. Army, 1000.

³ Loc. 0.70° 11' 39", N. 43° 38' 40"; range, 200; system, Telefunken, 1000.

⁴ Range, 50; system, U. S. Army, 1000.

⁵ Range, 50; system, U. S. Army, 1000.

⁶ Range, 200; system, K. & C., 1000.

⁷ Loc. 0.94° 49' 31", N. 22° 21' 51"; range, 50; system, U. S. Army, 1000.

⁸ Loc. (approximately) 0.77° 00' 00", N. 39° 00' 00"; range, 50; system, U. S. Army, 1000.

⁹ Loc. (approximately) 0.81° 43' 00", N. 24° 30' 00"; range, 50; system, U. S. Army, 1000.

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—
John Ewens	WYCI	700	P	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
WUAC	Fort Crockett, Tex.....c	WUB	Fort Rosecrans, Calif.....b
WUAF	Fort Washington, Md.....c	WXG	Wiseman, Alaska.....c
WUAV	Fort Levett, Me.....c	WXN	Fortuna, Alaska.....c
WUBB	Fort Travis, Tex.....c	WYCI	John Ewens.....b
WUBV	Key West, Fla.....c	WZE	Fort Constitution, N. H.....b
WUBY	Fort Tilden, N. Y.....c	WZF	Fort Moultrie, S. C.....c
WUCN	Fort Rodman, Mass.....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—
Atlanta, Ga.	4XT	James H. Lewis, 188 St. Charles Ave.
Battle Creek, Mich.	8XAO	Battle Creek High School.
Boise, Idaho.	7ZN	Bird B. Bliss, Jr., 417 Bannock St.
Cape Girardeau, Mo.	9XBO	Southeast Missouri State Teachers College.
Columbia, Mo.	9XBQ	University of Missouri.
Columbus, Ohio.	8XAI	Erner & Hopkins Co., 146 North Third St.
Grove City, Pa.	8XAB	Glenn Gordon Boundy, 513 State St.
Hastings, Nebr.	9XBL	Harold Rees, 1012 North St. Joseph Ave.
Jacksonville, Fla.	4XI	George W. Clark, 1459 Riverdale Ave.
Lincoln, Nebr.	9XBN	University of Nebraska.
Los Angeles, Calif.	6XBX	Maurice E. McCreery, 628 West Forty-ninth St.
Do.	6ZCM	Edward Gilbert, 4021 South Harvard Boulevard.
Mansfield, Mass.	1XAY	George E. Howard, 42 Union St.
Minneapolis, Minn.	9XBM	William Hood Dunwoody Industrial Institute.
Modesto, Calif.	6ZCN	Lawrence J. Wrenn, 911 Thirteenth St.
Do.	6ZCP	Robert N. Potts, 545 Santa Cruz Ave.
New York, N. Y.	2XBG	Concourse Radio Corp., Hotel Majestic.
Do.	2XBH	City of New York, Department of Plant and Structures.
Pittsburgh, Pa.	8XAQ	Biddle Arthurs, Jr., 3046 Center Ave.
San Francisco, Calif.	6ZCL	Willard Battery Station, 1389 Bush St.
San Leandro, Calif.	6XBY	Herbert C. Colburn, 448 Dowling Boulevard.
Santa Rosa, Calif.	6XB	L. H. Drake Battery and Radio Supplies, 545 Third St.
Stonham, Mass.	1ZY	Wallace A. Battison, 4 Pearl St.
Tacoma, Wash.	7ZM	George Beckett, 323 South Tenth St.
Vermillion, S. Dak.	9XBP	University of South Dakota.
Washington, D. C.	3XAV	Potomac Electric Power Co.
Do.	3ZR	Donald J. Detwiler, 1120 Virginia Ave.
Waynesburg, Pa.	8ZV	Cecil F. Yates, R. D. 6.
Whittier, Calif.	6ZCO	Harold D. Squires, 306 South Pierce Ave.

Special land stations, grouped by districts

Call signal	District and station	Call signal	District and station
1XAY	First district:		Seventh district:
1ZY	Mansfield, Mass.	7ZM	Tacoma, Wash.
	Stonham, Mass.	7ZN	Boise, Idaho.
2XBG	Second district:	8XAB	Eighth district:
2XBH	New York, N. Y.	8XAC	Grove City, Pa.
	Do.	8XAI	Battle Creek, Mich.
3XAV	Third district:	8XAO	Columbus, Ohio.
3ZR	Washington, D. C.	8XAQ	Pittsburgh, Pa.
	Do.	8ZV	Waynesburg, Pa.
4XI	Fourth district:	9XBL	Ninth district:
4XT	Jacksonville, Fla.	9XBM	Hastings, Nebr.
	Atlanta, Ga.	9XBW	Minneapolis, Minn.
6XB	Sixth district:	9XBO	Lincoln, Nebr.
6XBX	Santa Rosa, Calif.	9XBP	Cape Girardeau, Mo.
6XBY	Los Angeles, Calif.	9XBQ	Vermillion, S. Dak.
6ZCL	San Leandro, Calif.		Columbia, Mo.
6ZCM	San Francisco, Calif.		
6ZCN	Los Angeles, Calif.		
6ZCO	Modesto, Calif.		
6ZCP	Whittier, Calif.		
	Modesto, Calif.		

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 Berns bureau]

BATANGAS, P. I.—W. l., 400, 600, 800, 950, 1200, 1500, 1900.

CALAPAN, P. I.—W. l., 400, 600, 700, 900.

CULVER CITY, CALIF. (KYI).—Station operated and controlled by Metro Pictures Corp.

CULVER CITY, CALIF. (KYJ).—Station operated and controlled by Metro

HILLSBORO, OREG. (KEK).—W. l., 300, 600, 706, 2400.
 KANATAK, ALASKA, (near).—W. l., 300, 525, 600, 1800.
 KUKAK BAY, ALASKA.—System, Kilbourne & Clark, 1000.
 LUDINGTON, MICH.—Rates, 10 cents per word; hours, N.
 NEW BRUNSWICK, N. J. (WII).—W. l., 13550.
 NEW YORK, N. Y. (WJK).—Hours, N.
 TAMPA, FLA.—W. l., 300, 600.
 ST. CROIX FALLS, WIS.—System, composite v. t. telegraph.
 SIASI, P. I.—W. l., 450, 600, 650.

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]

ADMIRAL PEARY.—W. l., add 706.
 AGWIBAY.—W. l., 300, 450, 600, 706.
 AGWIPOND.—Range, 200; system, I. W. T. Co., 1000; w. l., 300, 600; rates, 8 cents per word.
 ALASKAN.—Station operated and controlled by owner of vessel.
 AMELIA.—Range, 200; system, I. W. T. Co., 1000; w. l., add 706; station operated and controlled by Amelia S. S. Corp.
 AMERICAN.—Station operated and controlled by owner of vessel.
 AMERICAN BANKER.—Station operated and controlled by S. O. R. S.
 A. M. SCOTT.—Inland Waterways Corp., owner of vessel.
 ARCTIC.—W. l., add 706.
 ARIZONAN.—Station operated and controlled by owner of vessel.
 BALLCAMP.—Station operated and controlled by R. C. A. (U. S. L.).
 BATON ROUGE (KDVB).—Inland Waterways Corp. owner of vessel.
 BENJAMIN F. PACKARD.—W. l., 300, 600, 706; station operated and controlled by owner of vessel.
 BETTERTON.—W. l., 300, 600, 706.
 BIRMINGHAM.—Inland Waterways Corp. owner of vessel.
 BLUE TRIANGLE.—Station operated and controlled by R. C. A.
 BOSTON (WEL).—Range, 150; system, R. C. A., 1000 and R. C. A. v. t. telephone; w. l., 300, 600, 706, 909; station operated and controlled by R. C. A.
 BROOKDALE.—Rates, 8 cents per word; station operated and controlled by owner of vessel.
 CADARETTA.—Station operated and controlled by S. O. R. S.
 CAIRO.—Inland Waterways Corp. owner of vessel.
 CALCITE.—W. l., 300, 600, 706.
 CALIFORNIAN.—Station operated and controlled by owner of vessel.
 CAPT. JOHN W. MCKIE.—Inland Waterways Corp. owner of vessel.
 CHALMETTE.—W. l., add 450.
 CHARLIE WATSON.—W. l., 300, 600, 706.
 CITY OF BUFFALO.—W. l., add 706.
 CITY OF CLEVELAND III.—W. l., 300, 600, 706.
 CITY OF ERIE.—W. l., add 706.
 CORDOVA.—Inland Waterways Corp. owner of vessel.
 DAKOTAN.—Station operated and controlled by owner of vessel.
 DELPHINE.—W. l., 300, 600, 706.
 DEMOPOLIS.—Inland Waterways Corp. owner of vessel.
 EASTERN DAWN.—W. l., 300, 600, 706, 1800, 2400.
 EAST HAMPTON.—Station operated and controlled by owner of vessel.
 E. C. POPE.—System, Navy-Lowenstein, 1000; w. l., 300, 600, 706; Thompson Transit Corp. owner of vessel.
 EDWARD SEWALL.—Name changed to Star of Shetland.
 EL ABETO.—Los Angeles Lumber Products S. S. Co. owner of vessel.
 EL CAPITAN (KKH).—System, R. C. A., 1000; w. l., 300, 600, 706.
 EL CICUTA.—Los Angeles Lumber Products S. S. Co. owner of vessel.
 EL ESTERO.—W. l., add 706.
 EL PASO.—Service, P.
 EOCENE.—W. l., add 706.
 FELTORE.—W. l., add 450, 706.
 F. J. LUCKENBACH.—W. l., 300, 600, 706.
 FLORIDIAN.—Station operated and controlled by owner of vessel.
 FREEMAN.—W. l., 300, 600, 706.

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GEORGIAN.—Station operated and controlled by owner of vessel.
 GERTRUDE.—Service, P.
 G. J. GRAMMER.—Range, 150; system, R. C. A., 1000; w. l., 300, 600, 706.
 GOOD WILL.—W. l., add 706.
 G. S. ALLYN.—Service, P.
 GUINEVERE.—Service, P.
 GULFPORT.—Inland Waterways Corp. owner of vessel.
 HAWAIIAN.—Station operated and controlled by owner of vessel.
 HOMER.—Rates, 8 cents per word.
 HOVEN.—Station operated and controlled by I. W. T. Co. (U. S. L.).
 ILLINOIS (KFMC).—Inland Waterways Corp. owner of vessel.
 IOWA.—Inland Waterways Corp. owner of vessel.
 IOWAN.—Station operated and controlled by owner of vessel.
 IPSWICH.—Station operated and controlled by owner of vessel.
 JACOB.—W. l., 300, 600, 706; Charles Nelson & Co. owner of vessel.
 JOHN F. HYLAN.—Service, P.
 JOHN WORTHINGTON.—W. l., add 706.
 JOSEPH M. CUDAHY.—W. l., add 706.
 KENTUCKIAN.—Station operated and controlled by owner of vessel.
 KERMIT.—Station operated and controlled by owner of vessel.
 LA PLACENTIA.—System, R. C. A. v. t. telephone and telegraph; w. l., add 870.
 LAVADA.—W. l., 300, 600, 2100, 2400.
 LEVIATHAN.—System, Navy, 1000 and Western Electric Co. v. t. telephone and telegraph; w. l., add 870.
 LEWIS K. THURLOW.—W. l., 300, 600, 706.
 LIBERTY, GLO.—W. l., 300, 600, 706.
 LORAIN.—System, Navy-Liberty, 1000; w. l., add 706.
 LT. COL. ROBERT G. GILDART.—Inland Waterways Corp. owner of vessel.
 LYDIA.—W. l., 300, 600, 706.
 MANCHURIA.—W. l., 300, 600, 706.
 MARINA.—Station operated and controlled by R. C. A.
 MAROR.—W. l., add 450.
 MATSONIA.—System, R. C. A. v. t. telephone and telegraph; w. l., 300, 600, 706, 870, 1800, 2100.
 MEMPHIS.—Inland Waterways Corp. owner of vessel.
 MEXICAN.—Station operated and controlled by owner of vessel.
 M. M. DAVIS.—Service, P.
 MONTGOMERY (KFMH).—Inland Waterway Corp. owner of vessel.
 MONTICELLO.—W. l., add 706.
 MOUNT CLAY.—W. l., add 2100; service, N.; station operated and controlled by I. W. T. Co.
 MUNPLACE.—W. l., 300, 600, 706.
 OCCIDENTAL.—W. l., add 706.
 OHIO.—W. l., 300, 600, 706.
 ONEIDA (KDJO).—Range, 100; system, R. C. A. v. t. telephone and telegraph; w. l., 300, 600, 706, 909, 1875; rates, Great Lakes Service, 4 cents per word.
 ONEIDA (KYP).—Station operated and controlled by I. W. T. Co.
 ONONDAGA.—Range, 100; system, R. C. A. v. t. telephone and telegraph; w. l., 300, 600, 706, 909, 1875; rates, Great Lakes Service, 4 cents per word.
 PERE MARQUETTE 21.—Range, 150; system, R. C. A., 1000; w. l., 300, 600; rates, Great Lakes Service, 6 cents per word.
 PRESIDENT GARFIELD.—W. l., add 706.
 PRESIDENT GRANT.—W. l., add 706, 2100, 2400.
 PRESIDENT POLK.—System, Navy-R. C. A., 1000 & Federal arc.; w. l., add 450, 1800.
 PROGRESS.—Range, 150; system, R. C. A., 1000; w. l., 300, 600; rates, Great Lakes Service, 4 cents per word.
 QUEEN.—W. l., add 706.
 RICHARD PECK.—W. l., 300, 600, 706.
 ROBERT P. CLARK.—W. l., add 706.
 ROMAGNE.—Rates, 8 cents per word.
 SAHALE.—W. l., add 706.
 SANTA CRUZ.—W. l., add 706.
 SEEANDBEE.—W. l., 300, 475, 600, 706; system, R. C. A., 1000; and R. C. A. v. t. telephone.
 S. O. Co. No. 92.—Range, 150; system, R. C. A., 1000; w. l., add 706

STEEL MARINER.—W. l., add 450.
STEELORE.—W. l., 300, 450, 600, 706.
STELLARIS.—System, R. C. A. v. t. telegraph and R. C. A., 1000; w. l., 300, 600, 706.
SURICO.—System, Navy-W. S. A. Co., 1000; w. l., add 706.
SUSCOLANCO.—Station operated and controlled by R. C. A.
SWIFTEAGLE.—System, I. W. T. Co. arc; w. l., add 706, 1800, 2100, 2400.
TEXAN.—Station operated and controlled by owner of vessel.
THE ANGELES.—System, Navy-R. C. A., 1000; w. l., add 706.
THEODORE H. WICKWIRE.—W. l., add 706.
TIGER KFMV.—Range, 50; system, composite, 480; w. l., 300, 600; service, PG, hours, X.
TORRES.—W. l., add 706.
VICKSBURG.—W. l., 300, 600, 1100; Inland Waterways Corp. owner of vessel.
VICTORIOUS.—W. l., add 706.
VOLUNTEER.—Station operated and controlled by S. O. R. S.
WESTERN PLAINS.—Station operated and controlled by R. C. A. (U. S. L.).
WEST IVIS.—W. l., add 706.
WEST MAHWAH.—System, Navy-R. C. A., 1000; w. l., add 706; station operated and controlled by R. C. A.
WESTMORELAND.—System, Navy-Liberty, 1000; w. l., 300, 450, 600, 706; hours, X.
W. L. CONNELLY.—W. l., add 706.
W. L. STEED.—W. l., add 706.
WILLIAM F. FITCH.—Range, 150; system R. C. A., 1000; w. l., 300, 600, 706.
W. S. RHEEM.—W. l., add 450.
 Strike out all particulars of the following-named vessels: Chinampa, De Soto, Lake Agomak, Oswego, State of Ohio, Westwego.

COMMERCIAL LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS

KFFL, read Star of Shetland; strike out all particulars following the call signals, **KFDM, KFFT, KGE, KRK, KZEU, WFR**.

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]

KDZE (Seattle, Wash.).—Station operated and controlled by Rhodes Department Store.
KKEAF (Denver, Colo.).—Power, 500; w. l., 278, frequency, kc 1080.
KKEBS (Trinidad, Colo.).—W. l., 280, frequency, kc, 1070.
KFEQ (Oak, Nebr.).—Power, 100; w. l., 268, frequency, kc, 1120.
KFFV (Lamoni, Iowa).—Power, 100; w. l., 280, frequency, kc, 1070.
KFLU (San Benito, Tex.).—Power, 100.
KFOR (David City, Nebr.).—Power, 20.
KFPL (Dublin, Tex.).—Power, 15.
KFPW (Cartersville, Mo.).—Power, 10.
KHQ (Seattle, Wash.).—Station operated and controlled by Louis Wasmer (Excelsior Motorcycle & Bicycle Co.).
KLZ (Denver, Colo.).—W. l., 283, frequency, kc, 1060.
WAAW (Omaha, Nebr.).—W. l., 286, frequency, kc, 1050.
WABX (Mount Clemens, Mich., near).—Power, 500.
WBAH (Minneapolis, Minn.).—Power, 1000.
WBAV (Columbus, Ohio).—W. l., 423, frequency, kc, 710.
WBL (Anthony, Kans.).—W. l., 254, frequency, kc, 1180.
WBT (Charlotte, N. C.).—Power, 250.
WCBH (Oxford, Miss.).—Power, 10.
WCBJ (Jennings, La.).—Power, 10.
WDAS (Worcester, Mass.).—Station operated and controlled by Sam Waite's Radio Shop.
WEV (Houston, Tex.).—Power, 100; w. l., 283, frequency, kc, 1140.
WGAQ (Shreveport, La.).—Station operated and controlled by W. G. Patterson.
WHAR (Atlantic City, N. J.).—Power, 100; w. l., 275, frequency, kc, 1090.
WIAB (Rockford, Ill.).—Station operated and controlled by Art A. Johnson's Garage.

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WKAA (Cedar Rapids, Iowa).—W. l., 278, frequency, kc. 1080.
 WKAD (East Providence, R. I.).—Power, 20.
 WLW (Cincinnati, Ohio).—W. l., 423, frequency, kc 710; station operated and controlled by Crosley Radio Corp.
 WMAC (Cazenovia, N. Y.).—Power, 100.
 WQAE (Fremont, Nebr.).—Power, 15, w. l., 230, frequency, kc 1070.
 WPAC (Okmulgee, Okla.).—Power, 100.
 WPAK (Agricultural College, N. Dak.).—W. l., 283, frequency, kc 1060.
 WPAU (Moorehead, Minn.).—W. l., 286, frequency, kc 1050.
 WQAX (Peoria, Ill.).—Power, 100, w. l., 248, frequency, kc 1210.
 WSAD (Providence, R. I.).—Power, 100.
 WSAS (Grove City, Pa.).—W. l., 258, frequency, kc 1150.
 WSL (Utica, N. Y.).—Power, 10.

Strike out all particulars of the following-named stations: KDYX, Honolulu, Hawaii; KFAN, Moscow, Idaho; KFAU, Boise, Idaho; KFCY, Le Mars, Iowa; KFDA, Baker, Oreg.; KFDO, Bozeman, Mont.; KFDV, Fayetteville, Ark.; KFPO, Hillsboro, Oreg.; KFFQ, Colorado Springs, Colo.; KFFZ, Dallas, Tex. (portable); KFGV, Utica, Nebr.; KFHB, Hood River, Oreg.; KPHF, Shreveport, La.; KFHX, Hutchinson, Kans.; KFJV, Dexter, Iowa; KFLH, Salt Lake City, Utah; KFLR, Albuquerque, N. Mex.; KFLW, Missoula, Mont.; KFMS, Duluth, Minn.; KFMU, San Marcos, Tex.; KFMY, Long Beach, Calif.; KFMZ, Roswell, N. Mex.; KFNC, Corsicana, Tex. KFNH, Springfield, Mo.; KFOF, Marshfield, Oreg.; KFOH, Portland, Oreg.; KFOP, Dallas, Tex.; KFOV, Sioux City, Iowa; KGN, Portland, Oreg.; KZV, Wenatchee, Wash.; WABA, Lake Forest, Ill.; WABN, La Crosse, Wis.; WABS, Newark, N. J.; WABV, Nashville, Tenn.; WBBF, Atlanta, Ga.; WBBO, Rogers, Mich.; WBBQ, Pawtucket, R. I.; WBBS, New Orleans, La.; WCAM, Villanova, Pa.; WCM, Austin, Tex.; WDAO, Dallas, Tex.; WFAF, Poughkeepsie, N. Y.; WFAJ, Asheville, N. C.; WFAQ, Cameron, Mo.; WEAT, Sioux Falls, S. Dak.; WGV, New Orleans, La.; WHAB, Galveston, Tex.; WIAF, New Orleans, La.; WIAI, Springfield, Mo.; WIAJ, Neenah, Wis.; WIAT, Marshall, Mo.; WJX, New York, N. Y.; WLAJ, Waco, Tex.; WLAJ, Bellows Falls, Vt.; WMAB, Oklahoma, Okla.; WMAJ, Kansas City, Mo.; WNAN, Syracuse, N. Y.; WNAQ, Charleston, S. C.; WNAS, Austin, Tex.; WNAV, Knoxville, Tenn.; WNJ, Albany, N. Y.; WOAP, Kalamazoo, Mich.; WOAR, Kenosha, Wis.; WOK, Pine Bluff, Ark.; WPAT, El Paso, Tex.; WQAW, Washington, D. C.; WRAA, Houston, Tex.; WRAH, Providence, R. I.; WRAY, Scranton, Pa.; WSAG, St. Petersburg, Fla.; WSAT, Plainview, Tex.; WSAW, Canandaigua, N. Y.; WWAC, Waco, Tex.; WWAF, Camden, N. J.

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 Bureau.]

ANACOSTIA, D. C. (R. C. station).—Call signal changed to NSF.
 ANACOSTIA, D. C. (regular station).—W. l., 673.
 ANNAPOLIS, MD. (NAK, Naval Academy).—W. l., 600, 952, 1540.
 BALBOA CANAL ZONE.—W. l., 600, 952, 2250, 2400, 3950, 6970, 8860, 9790, 17145.
 BAR HARBOR, ME. (Otter Cliffs).—W. l., 600, 673, 952, 2340, 2400, 3700, 5950.
 BETHEL, ALASKA.—W. l., 300, 510, 600.
 BOSTON, MASS. (NAD).—W. l., 600, 673, 952, 1363.
 BOSTON, MASS. (WVO).—W. l., 669.
 BROWNSVILLE, TEX.—W. l., 600, 952, 2250, 2400, 3950, 5000.
 CAMP ALFRED VAIL, N. J.—W. l., 1100.
 CAMP JONES, ARIZ.—Read Camp Harry J. Jones, Ariz.; w. l., 1347.
 CAMP KNOX, KY.—W. l., 1091.
 CAMP NICHOLS, P. I.—W. l., 600.
 CAMP S. D. LITTLE, ARIZ.—W. l., 1347.
 CAMP STOTSENBERG, P. I.—W. l., 350.
 CATTLE POINT, WASH.—Hours, N.
 CAVITE, P. I.—W. l., 600, 952, 2400, 2700, 3950, 4540, 5280, 9080, 12000, 17350.
 CHANUTE FIELD, ILL.—W. l., 1500, 1557.
 CHARLESTON, S. C.—W. l., 600, 952, 2400, 2600, 3950, 4800.
 CLARE FIELD, P. I.—W. l., 600.
 CHICAGO, ILL. (WVT).—W. l., 1363.
 CIRCLE, ALASKA.—W. l., 2200, 4000.
 CIRCLE, ALASKA.—W. l., 200, 373, 952, 1290, 2720

CORDOVA, ALASKA.—W. 1, 600, 952, 2400, 2720, 3950, 6000, 7680, 8860.
 DAHLGREN, VA.—W. 1, variable.
 DUTCH HARBOR, ALASKA.—W. 1, 600, 952, 2250.
 EUREKA, CALIF. (NPW).—W. 1, 600, 952, 2205.
 FAIRBANKS, ALASKA.—W. 1, 3700.
 FORT ADAMS, R. I.—W. 1, 300.
 FORT AMADOR, CANAL ZONE.—*Read* Fort Grant, Canal Zone.
 FORT ANDREWS, MASS.—W. 1, 1100.
 FORT BARRANCAS, FLA.—W. 1, 300.
 FORT BENJAMIN HARRISON, IND.—W. 1, 3091.
 FORT BLISS, TEX.—W. 1, 7900.
 FORT BRAGG, N. C.—W. 1, 3000.
 FORT BROWN (BROWNSVILLE), TEX.—W. 1, 3097.
 FORT CASEY, WASH.—W. 1, 300.
 FORT D. A. RUSSELL, WYO.—W. 1, 1347.
 FORT DES MOINES, IOWA.—W. 1, 672.
 FORT DOUGLAS, UTAH.—W. 1, 2776.
 FORT DRUM, UTAH.—W. 1, 825.
 FORT EGBERT, ALASKA.—W. 1, 600.
 FORT ETHAN ALLEN, VT.—W. 1, 669.
 FORT FRANK, P. I.—W. 1, 600.
 FORT GIBBON, ALASKA.—W. 1, 1100.
 FORT HANCOCK, N. J.—W. 1, 1100.
 FORT HAYES, OHIO.—W. 1, 1410.
 FORT H. G. WRIGHT.—W. 1, 1091.
 FORT HOWARD, MD.—W. 1, 1318.
 FORT JOHN HAY, P. I.—W. 1, 600.
 FORT LEAVENWORTH, KANS.—W. 1, 4915.
 FORT MCARTHUR, TEX.—W. 1, 1318.
 FORT MCINTOSH, TEX.—W. 1, 1363.
 FORT MCPHERSON, GA.—W. 1, 1460, 2552.
 FORT MILLS, P. I. (WUAG).—W. 1, 600.
 FORT MONROE, VA.—W. 1, 1090.
 FORT MORGAN, ALA.—W. 1, 1700.
 FORT OMAHA, NEBR.—W. 1, 1304.
 FORT RILEY, KANS.—W. 1, 600.
 FORT RINGOLD, TEX.—W. 1, 1347.
 FORT ST. MICHAEL, ALASKA.—W. 1, 600.
 FORT SAM HOUSTON, TEX.—W. 1, 5796.
 FORT SILL, OKLA.—W. 1, 3748.
 FORT SNELLING, MINN.—W. 1, 1091.
 FORT STEVENS, OREG. (WUK).—W. 1, 600.
 FORT STORRY, VA.—W. 1, 300.
 FORT TERRY, N. Y.—W. 1, 669.
 FORT TOTTEN, N. Y.—W. 1, 1100.
 FORT WILLIAMS, ME.—W. 1, 300.
 FORT WINFIELD SCOTT, CALIF.—W. 1, 1500.
 FORT WINT, P. I.—W. 1, 600.
 FORT YUKON, ALASKA.—W. 1, 600.
 GALVESTON, TEX.—W. 1, 600, 952, 1820; service, PG.
 GOVERNORS ISLAND, N. Y.—W. 1, 1347, 1444.
 GREAT LAKES, ILL.—W. 1, 600, 1986, 3950, 4680; service, O.
 GUAM, GUAM.—W. 1, 600, 952, 2250, 2400, 3950, 6000, 9080, 12180, 17350.
 GUANTANAMO, CUBA.—W. 1, 143, 600, 952, 1395, 2400, 3950, 4540.
 HILO, HAWAII.—W. 1, 600, 673, 952, 2000, 2400.
 HOLY CROSS, ALASKA.—W. 1, 550.
 HONOLULU, HAWAII (Heeia Point-NPM).—W. 1, 600, 952, 2250, 2400, 2650, 3950, 7890, 10510.
 HONOLULU, HAWAII (Pearl Harbor-NPM).—W. 1, 600, 673, 952, 2250, 9080, 9745, 12180, 17350.
 HOT SPRINGS, ALASKA.—W. 1, 620.
 IMITAROD, ALASKA.—W. 1, 600, 3500.
 INDIAN HEAD, MD.—W. 1, variable.
 INGLEWOOD, CALIF.—W. 1, 600, 952, 1427, 2400, 2750, 3950.
 JUNEAU, ALASKA.—W. 1, 600, 952, 2250.
 JUPITER, FLA. (regular station).—W. 1, 600, 952, 1305.
 KETCHIKAN, ALASKA.—W. 1, 600, 952, 1875, 2400, 4540, 5000.

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KEY WEST, FLA. (regular station).—W. L., 600, 800, 952, 1462, 2400, 3950, 5660.
 KODIAK, ALASKA.—W. L., 600, 952, 1685.
 LAKEHURST, N. J. (regular station).—W. L., 673.
 LA PALMA, PANAMA.—W. L., 600, 1818.
 LIVENGOOD, ALASKA.—W. L., 600.
 MANAGUA, NICARAGUA.—W. L., 952, 1875.
 MANILA, P. I. (Fort Santiago).—W. L., 1350.
 MARSEFIELD, OREG.—W. L., 600, 952, 1948; service, PG.
 METUCHEN, N. J.—W. L., 1091.
 MITCHEL FIELD, N. Y.—W. L., 1100, 1559.
 MOREHEAD CITY, N. C.—W. L., 600, 952, 1657.
 NEW DUNCENESS, WASH.—Hours, N.
 NEW LONDON, CONN.—W. L., 600, 673, 952.
 NEW ORLEANS, LA.—W. L., 600, 952, 2400, 2605, 3950, 6240.
 NEWPORT, R. I.—W. L., 143, 600, 952, 2605.
 NEW YORK, N. Y.—W. L., 143, 600, 673, 800, 952, 1540, 2400.
 NOME, ALASKA.—W. L., 600, 4000.
 NOORVIK, ALASKA.—W. L., 520.
 NORFOLK, VA.—W. L., 143, 600, 673, 952, 1363, 2140, 2400, 3950, 5450.
 NORTH HEAD, WASH.—W. L., 600, 952, 2400, 2720, 3950, 4540, 5000; service, PG.
 NULATO, ALASKA.—W. L., 650.
 OCEAN PARK, WASH.—Read Klipsan Beach, Wash.
 OFU, SAMOA.—W. L., 600, 705; service, O.
 OLONGAPO, P. I.—W. L., 600, 952, 1908.
 PARRIS ISLAND, S. C.—W. L., variable.
 PEKIN, CHINA.—W. L., 952, 1908, 3950, 4540.
 PENSACOLA, FLA. (regular station—NAS).—W. L., 600, 673, 952, 1330, 2250.
 PHILADELPHIA, PA.—W. L., 600, 952, 1304.
 PORT AU PRINCE, HAITI.—W. L., 600, 952, 2250, 2400, 3750, 3950.
 PORTLAND, ME.—W. L., 600, 1090.
 PORTSMOUTH, N. H.—W. L., 600, 952, 1330.
 PUGET SOUND, WASH. (Bremerton).—Read Puget Sound, Wash. (Keyport);
 w. l., 600, 673, 952, 2500, 3950, 5450, 7680, 8860, 10510.
 QUANTICO, VA.—W. L., 600, 673, 952.
 RUBY, ALASKA.—W. L., 600.
 SAN DIEGO, CALIF.—W. L., 600, 673, 952, 1540, 2400, 3950, 5170, 6970, 9800,
 12180, 17145; service, O.
 SAN FRANCISCO, CALIF. (NPG).—W. L., 143, 600, 673, 952, 1330, 2400, 3950,
 4530, 4835, 5170, 5450, 7240, 7890, 9080, 10510, 17145, 17350.
 SAN FRANCISCO, CALIF. (Presidio of San Francisco, WVY).—W. L., 1347, 2900.
 SAN JUAN, P. R.—W. L., 600, 952, 2400, 2852, 3950, 4835, 6970, 8860, 9140.
 SAVANNAH, GA.—W. L., 600, 1808.
 SCOTT FIELD, ILL. (Belleville).—W. L., 1500.
 SHANGHAI, CHINA (American consulate).—W. L., 952, 3950, 4540, 5860, 17350.
 SITKA, ALASKA.—W. L., 600, 952, 2400, 2852, 3950, 4835, 6970, 8860, 9140.
 SMITH ISLAND, WASH.—Hours, N.
 ST. AUGUSTINE, FLA.—W. L., 600, 952, 2100.
 ST. CROIX, VIRGIN ISLANDS.—W. L., 600.
 ST. PAUL, ALASKA.—W. L., 600, 952, 2650, 3950, 5660.
 ST. THOMAS, VIRGIN ISLANDS.—W. L., 600, 952, 1685.
 TAU, SAMOA.—W. L., add 450, 600; service, O.
 TIENTSIN, CHINA.—W. L., 756.
 TUTUILA, SAMOA.—W. L., 600, 952, 2250, 2400, 3950, 4540.
 VALDEZ, ALASKA.—W. L., 1100.
 VIRGINIA BEACH, VA.—Read Norfolk, Va. (Virginia Beach).—W. L., 600, 673,
 952, 1395, 1988.
 WASHINGTON, D. C. (Arlington, NAA).—W. L., 435, 2650, 2940, 3950, 5950;
 service, O.
 WASHINGTON, D. C. (Navy Yard, NAL).—W. L., 2650, 4345.
 WASHINGTON, D. C. (Sayville, NDD).—W. L., 8860, 9145.
 WASHINGTON, D. C. (Bellevue, NKF).—Read Bellevue, D. C.
 WASHINGTON, D. C. (Annapolis, Md., NSS).—W. L., 6970, 9790, 10510, 17145.
 WASHINGTON, D. C. (WVA).—W. L., 1333, 2653.

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 Berns Bureau]

B. M. HARROD.—W. 1., 700.
 CAMBRAL.—W. 1., 600.
 CAPTAIN CLARENCE M. CONDON.—W. 1., 600.
 CAPT. EDWARD P. NONES.—W. 1., 600.
 CAPT. JAMES FORNANCE.—W. 1., 600.
 CHATEAU THIERRY.—W. 1., 600.
 COLONEL GEORGE ARMISTEAD.—W. 1., 600.
 COLONEL GEORGE F. E. HARRISON.—W. 1., 600.
 CRANE SHIP No. 1.—*Read* Kearsage (Crane Ship No. 1).
 CUBA.—W. 1., 600.
 CULEBRA.—W. 1., 700.
 EDGE Moor.—W. 1., 600; service, 0; hours, N.
 GAMA.—*Read* GAMMA; w. 1., 700.
 GENERAL ABBSALOM BAIRD.—W. 1., 700.
 GENERAL E. O. C. ORD.—*Read* General Edward O. C. Ord.; w. 1., 1200.
 GENERAL J. FRANKLIN BELL.—W. 1., 600.
 GENERAL JOHN M. SCHOFIELD.—W. 1., 600.
 GENERAL MIFFLIN.—W. 1., 600.
 GENERAL RICHARD ARNOLD.—W. 1., 600.
 GENERAL R. N. BATCHELDER.—W. 1., 600.
 GENERAL ROBERT ANDERSON.—W. 1., 600.
 GENERAL ROYAL T. BUNK.—W. 1., 1100.
 GENERAL WILLIAM M. GRAHAM.—W. 1., 600.
 GEORGE H. WEEKS.—*Read* General George H. Weeks, w. 1., 600.
 GRANT.—W. 1., 600, 2400.
 INSPECTOR.—W. 1., 700.
 IOTA.—W. 1., 700.
 JOSEPH HENRY.—W. 1., 600.
 JUPITER.—W. 1., 700.
 KAPPA.—W. 1., 700.
 LT. COL. HERMAN C. SCHUMM.—W. 1., 600.
 MAJOR ALBERT G. JENKINS.—W. 1., 600.
 MAJOR EVAN THOMAS.—W. 1., 600.
 MAJOR WILLIAM P. PENCE.—W. 1., 600.
 MEIGS.—W. 1., 600, 2400.
 MERRITT.—W. 1., 600, 2400.
 RENO (WYAN).—W. 1., 600.
 SAN PEDRO.—W. 1., 600.
 SATURN.—W. 1., 700.
 SLOCUM.—W. 1., 600.
 SOMME.—W. 1., 600, 2400.
 ST. MIHIEL.—W. 1., 600, 2400.
 THOMAS (WXM).—W. 1., 600, 2400.
 WILLIAM T. ROSSELL.—W. 1., 600.
 Strike out all particulars of the following-named stations: Anacostia, D. C. (NOF); Cape Hatteras, N. C. (R. C.); Navassa Island, Windward Passage, West Indies; Port Eads, La. (RC); San Pedro, Calif.

GOVERNMENT LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS

NAM, *read* Norfolk, Va. (Virginia Beach); NIP, *read* Kearsage (Crane Ship No. 1); NKF, *read* Bellevue, D. C.; NPC, *read* Puget Sound, Wash. (Keyport); NSF, *read* Anacostia, D. C. (R. C.); NZS, *read* Klipsan Beach, Wash.; WUBE, *read* Fort Grant, Canal Zone; WYAI, *read* General George H. Weeks; WYCE, *read* Gamma; WZM, *read* Camp Harry J. Jones, Ariz.; strike out all particu-

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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)

- HARTFORD, CONN. (1XW).—Changed to West Hartford, Conn.
 MONTEREY, CALIF. (6ZBC).—Call changed to 6XBC.
 OKLAHOMA, OKLA. (5XAW).—Address, 1534 W. 28th St.
 SAVANNAH, GA. (4XX).—Address, 1110 E. 37th St.
 SCHENECTADY, N. Y. (2XAB).—Address, 7 Elm St.
 SEATTLE, WASH. (7XU).—Station operated and controlled by Rhodes Department Store.
 ORTEGA, FLA. (4XE).—Changed to Winter Park, Fla., station operated and controlled by William J. Lee, Interlachen Ave.
 Strike out all particulars of the following-named stations: Abilene, Tex. (5YN); Albuquerque, N. Mex. (5XAM); Ames, Iowa (9YI); Atlanta, Ga. (4XW); Atlanta, Ga. (4XC); Austin, Tex. (5XU); Baltimore, Md. (3XG); Baltimore, Md. (3YR); Battle Creek, Mich. (8YN); Baton Rouge, La. (5YW); Berkeley, Calif. (6XAY); Binghamton, N. Y. (8XAM); Bozeman, Mont. (7XB); Brooklyn, N. Y. (2XT); Brownwood, Tex. (5XF); Camden, N. J. (3YQ); Canton, Ohio (8ZV); Cape Girardeau, Mo. (9YAO); Cazenovia, N. Y. (8XH); Charlottesville, Va. (3XAB); Chicago, Ill. (9XBD); Cincinnati, Ohio (8XAJ); Clayton, Mo. (9ZY); Cleveland, Ohio (8XBD); Columbia, Mo. (9YM); Columbus, Ohio (8XAT); Connellsville, Pa. (8XAP); Corvallis, Oreg. (7YJ); Crete, Nebr. (9YU); Dallas, Tex. (5XBC); Dartmouth, Mass. (portable-1XAN); Dartmouth, Mass. (1XV); Davenport, Iowa (9XAC); Dayton, Ohio (8YU); Detroit, Mich. (8XAR); Dublin, Tex. (5XJ); Enumclaw, Wash. (7YQ); Fayetteville, Ark. (5YM); Fort Wayne, Ind. (9XH); Galesburg, Ill. (9XS); Grand Coteau, La. (5XZ); Greencastle, Ind. (9YJ); Greenwich, Conn. (1XB); Highland Park, Ill. (9XBG); Highland Park, Mich. (8XAF); Houston, Tex. (5XAA); Houston, Tex. (5XBB); Houston, Tex. (5XN); Houston, Tex. (5XO); Kalamazoo, Mich. (8XF); Key West, Fla. (4XP); Knoxville, Tenn. (5XBE); Knoxville, Tenn. (5XK); La Crosse, Wis. (9XBE); Lafayette, Ind. (9YB); Lincoln, Nebr. (9YY); Los Angeles, Calif. (6XO); Mayville, N. Dak. (9XAS); Minneapolis, Minn. (9YX); Mobile, Ala. (5XAE); Montgomery, Ala. (5XBA); Moscow, Idaho (7ZM); New Braunfels, Tex. (5YK); New Orleans, La. (5XAO); New Orleans, La. (5XB); New Orleans, La. (5XQ); New Orleans, La. (5YC); New Orleans, La. (5YR); New Orleans, La. (5YU); New York, N. Y. (2XAL); New York, N. Y. (2XC); New York, N. Y. (2XG); New York, N. Y. (2XM); New York, N. Y. (2YM); Oakland, Calif. (6XAR); Oklahoma, Okla. (5XAF); Orange, Tex. (5XAD); Orono, Me. (1XAH); Pasadena, Calif. (6XI); Peoria, Ill. (9XBC); Philadelphia, Pa. (3YG); Pine Bluff, Ark. (5XAI); Pittsburgh, Pa. (8XY); Plainview, Tex. (5XAH); Portland, Oreg. (7XF); Portland, Oreg. (7YG); Portland, Oreg. (7YN); Potsdam, N. Y. (8XAZ); Pullman, Wash. (7XW); Rapid City, S. Dak. (9YW); Reading, Pa. (3XAH); Rochester, N. Y. (8XAO); Rolla, Mo. (9YN); San Antonio, Tex. (5XAQ); San Antonio, Tex. (5XP); San Francisco, Calif. (6XC); San Marcos, Tex. (5YT); Savannah, Ga. (4YB); Schenectady, N. Y. (2XQ); Scranton, Pa. (8XAX); Seattle, Wash. (7XAA); Seattle, Wash. (7XE); Seattle, Wash. (7XK); Seattle, Wash. (7XZ); Seattle, Wash. (7XJ); Stapleton, N. Y. (2XAC); Takoma Park, Md. (3XAJ); Thibodaux, La. (5YL); Tucson, Ariz. (6XAZ); University, Va. (3XAM); Vermillion, S. Dak. (9YAM); Victoria, Tex. (5YA); Waco, Tex. (5XAK); Waco, Tex. (5XBG); Waco, Tex. (5XY); Washington, D. C. (8YS); Washington, D. C. (3XAO); Washington, D. C. (8XI); Washington, D. C. (3ZH); Wayne, Nebr. (9YT); Winter Park, Fla. (4XK); Wyandotte, Mich. (8XBK); Yellow Springs, Ohio (8YY).

MISCELLANEOUS

NOTICES TO MARINERS BY ARGENTINA STATIONS

The Darsena North (North Basin) in approximately latitude 34° 36' S., longitude 58° 22' W.; call signal LIH and Comodoro Rivadavia in approximately latitude 45° 52' S., longitude 67° 28' W., call signal LIJ. The first station broadcasts the notices immediately after the radio time signal at 22h. civil time.

List of Argentina broadcasting stations

Call signal	Location	Wave length	Power
LOR	Buenos Aires.....	400	500
LOX	do.....	375	500
LOZ	Monte Grande.....	425	500

TIME SIGNAL BY COLOMBO, CEYLON STATION

On and after July 1, 1924, the radio station at Colombo, call letters VPB, will transmit four times daily, radio time signals, based on the International System. The actual time signals will be automatically controlled from Colombo Observatory, the remaining signals being sent by hand.

The times of transmission and wave lengths employed will be as follows:

G. M. T. (astronomical)	Indian standard time (astronomical)	Wave length (meters)
H. m. s.	H. m. s.	
4 57 00	10 27 00	600
to	to	(spark)
5 00 00	10 30 00	2,300
5 57 00	11 27 00	(C. W.)
to	to	
6 00 00	11 30 00	600
16 57 00	22 27 00	(spark)
to	to	
17 00 00	22 30 00	2,300
17 57 00	23 27 00	(C. W.)
to	to	
18 00 00	23 30 00	

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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A QUANTITATIVE STUDY OF REGENERATION BY INDUCTIVE FEED BACK

The amplification of received radio signals by regeneration in electron tube circuits is well known. One method of regeneration is the feeding back of alternating current power by means of inductively coupled coils in the two circuits, from the plate circuit to the tuned circuit connected to the grid of the electron tube. This method has been used extensively in modern radio receiving sets and is known as the "tickler" method of regeneration. However, very little quantitative data have been available on the amplification produced by this method of regeneration.

By means of simple alternating current theory an equation has been derived from which the amplification produced by inductive feed back may be calculated. This equation shows that regeneration can be considered as producing a reduction in the resistance of the tuned circuit and so increasing the current. The equation derived was completely verified by experiment.

These experiments are described in Bureau of Standards Scientific Papers No. 487, *A Quantitative Study of Regeneration by Inductive Feed Back*; by C. B. Joffe and Miss J. A. Rodman. A copy of this paper may be obtained for 10

RADIO SERVICE BULLETIN

17

STANDARD FREQUENCY STATIONS

As a result of measurements by the Bureau of Standards upon the transmitted waves of a limited number of radio transmitting stations, data are given in each month's Radio Service Bulletin on such of these stations as have been found to maintain a sufficiently constant frequency to be useful as frequency standards. There may be many other stations maintaining their frequency just as constant as these, but these are the only ones which reached the degree of constancy shown among the stations upon whose frequencies measurements were made in the bureau's laboratory. There is, of course, no guaranty, that the stations named below will maintain the constancy shown. As a means of maintaining constant frequency the high-power low-frequency alternator stations listed below have speed regulators. Most of the broadcasting stations listed use frequency indicators (one-point wave meters) and maintain a maximum deflection of the instrument on the frequency indicator throughout the transmission. These broadcasting stations with rare exceptions, vary not more than 2 kilocycles from the assigned frequency. The transmitted frequencies from these stations can be utilized for standardizing wave meters and other apparatus by the procedure given in Bureau of Standards letter circular No. 92, Radio Signals of Standard Frequencies and Their Utilization. A copy of that letter circular can be obtained by a person having actual use for it upon application to the Bureau of Standards, Washington, D. C.

Station	Owner	Location	Assigned frequency (kilocycles)	Period covered by measurements (1923-24)	No. of times measured	Greatest deviation from assigned frequency since May 16, 1924	Average deviation from assigned frequency
NBS	U. S. Navy	Annapolis, Md.	17.50	Aug. 24-May 31	79	<i>Per ct.</i> 0.2	<i>Per ct.</i> 0.2
WGG	Radio Corporation of America	Tuckerton, No. 1, N. J.	18.55do.....	96	.1	.2
WII	do	New Brunswick, N. J.	22.04	Oct. 1-May 31	78	.3	.3
WSO	do	Marion, Mass.	35.80	Aug. 21-May 31	87	.4	.3
WWJ	Detroit News	Detroit, Mich.	580	Aug. 27-June 15	39	.0	.1
WCAP	Chesapeake & Potomac Telephone Co.	Washington, D. C.	640	Sept. 11-June 15	54	.0	.1
WBC	Radio Corporation of Americado.....	640	Dec. 19-June 15	37	.2	.1
WSB	Atlanta Journal	Atlanta, Ga.	700	Sept. 14-June 15	52	.0	.1
WGY	General Electric Co.	Schenectady, N. Y.	790	June 29-June 15	86	.3	.2
EDKA	Westinghouse Electric & Manufacturing Co.	East Pittsburgh, Pa.	920	Sept. 8-June 15	111	.1	.1

STANDARD RADIO FREQUENCY TRANSMISSIONS, JULY TO SEPTEMBER

The Bureau of Standards is transmitting special signals of standard frequency on announced dates. The last previously announced schedule was published in the May, 1924, issue of the Radio Service Bulletin. The next schedule is announced below. The signals can be heard and utilized in general east of the Mississippi River.

These special signals of standard frequency are of use to testing laboratories, transmitting station operators, and others in standardizing wave meters and adjusting transmitting and receiving apparatus. The transmissions on July 7 include the frequencies used by amateurs, those on August 5 ship and point-to-point communication, those on September 5 ship communication, those on Sep-

Letter Circular No. 92, which may be obtained on application from the Bureau of Standards, Washington, D. C.

All transmissions are by unmodulated continuous wave telegraphy. A complete frequency transmission includes a "general call," a "standard frequency signal," and "announcements." The "general call" is given at the beginning of the eight-minute period and continues for about two minutes. This includes a statement of the frequency. The "standard frequency signal" is a series of very long dashes with the call letters WWV intervening. This signal continues for about four minutes. The "announcements" are on the same frequency as the "standard frequency signal" just transmitted, and contain a statement of the measured frequency. An announcement of the next frequency to be transmitted is then given. There is then a four-minute interval while the transmitting set is adjusted for the next frequency.

The schedule of standard frequency signals from the Bureau of Standards is as follows:

Schedule of frequencies in kilocycles

[Approximate wave lengths in meters in parentheses]

Eastern standard time	July 7	Aug. 5	Sept. 5	Sept. 22
11 to 11.08 p. m.	1303 (230)	125 (2400)	300 (1000)	550 (545)
11.12 to 11.20 p. m.	1430 (210)	133 (2250)	315 (952)	650 (461)
11.24 to 11.32 p. m.	1500 (200)	143 (2097)	345 (869)	750 (400)
11.36 to 11.44 p. m.	1500 (187)	155 (1934)	375 (800)	833 (360)
11.48 to 11.56 p. m.	1700 (176)	168.5 (1800)	425 (705)	1000 (300)
12 to 12.08 a. m.	1800 (167)	205 (1453)	500 (600)	1200 (250)
12.12 to 12.20 a. m.	1900 (158)	260 (1153)	600 (500)	1350 (222)
12.24 to 12.32 a. m.	2000 (150)	315 (952)	666 (450)	1500 (200)

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