

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 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 Bureau.]

Station.	Call signal.	Wavelengths.	Service.	Hours.	Station controlled by—
Baltimore, Md. ¹	WLL	300, 600, 700.....	P	X	City of Baltimore.
Big Creek Power House No. 3, Calif. ²	KLP	1630, 1685, 1685....	FX	X	Southern California Edison Co.
Calver City, Calif. ³	KZY	140, 300, 600.....	P	X	Thomas H. Ince.
Fort Worth, Tex. ⁴	WBAP	1500.....	FX	X	Worham Carter Publishing Co. (Star Telegram).
Laguna Bell Substation, Calif. ⁵	KYG	1585, 1630, 1685....	FX	X	Southern California Edison Co.
Los Angeles, Calif. ⁶	KFZ	140.....	P	X	Russell Reed.
Do. ⁷	KGV	145.....	P	X	Do.
Oberlin, Ohio ⁸	WLK	1287.....	FX	X	Oberlin College.
Portland, Oreg. ⁹	KLB	1578.....	FX	X	Northwestern Electric Co.
Rochester, N. Y. ¹⁰	WJF	143.....	FX	X	Rochester Gas & Electric Corporation.
Underwood, Wash. ¹¹ (near).	KPL	1578.....	FX	X	Northwestern Electric Co.
Vestal Substation, Calif. ¹²	KQY	1585, 1630, 1685....	FX	X	Southern California Edison Co.
Wyoming, Pa. ¹³	WDX	1599.....	FX	X	Pennsylvania State police.

¹ Range, 200; system, Navy, 1000; installed on U. S. S. Cheyenne (permanently moored) for communication with ship stations Annapolis and Lathrop.

² Loc. (approximately) O. 119° 23' 00", N. 37° 09' 00"; range, 200; system, composite v. t. telegraph.

³ Range, 50; system, composite v. t. telephone and telegraph.

⁴ Range, 200; system, Western Electric Co. v. t. telegraph.

⁵ Loc. (approximately) O. 118° 09' 00" N. 33 58' 10"; range, 200; system, composite v. t. telegraph.

⁶ Range, 50; system, composite v. t. telephone and telegraph; stations are portable.

⁷ Loc. (approximately) O. 7° 14' 00", N. 41° 17' 00"; range, 50-200; system, composite spark, 3000 and composite v. t. telephone and telegraph.

⁸ Loc. (approximately) O. 122° 41' 00", N. 43° 31' 14"; range, 200; system, composite v. t. telegraph.

⁹ Range, 100; system, composite v. t. telephone and telegraph.

¹⁰ Loc. O. 121° 31' 20", N. 43° 43' 41"; range, 200; system, composite v. t. telegraph.

¹¹ Loc. (approximately) O. 119° 04' 30", N. 35° 50' 00"; range, 200; system, composite v. t. telegraph.

¹² Loc. (approximately) O. 75° 50' 00", N. 41° 18' 30"; range, 50; system, composite v. t. telegraph.

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 Bureau.]

Name of vessel.	Call signal.	Rates.	Service.	Hours.	Owner of vessel.	Station controlled by—
Ella.....	KFNE	.....	.....	.....	George Whittell, jr.....	R. C. A.
Elena Valdez ¹	KELG	.....	.....	.....	Panamanian Ship Corporation.	
Grand Island ²	KFNA	.....	PG	X	Cleveland Cliffs S. S. Co.	Owner of vessel.
Narada.....	KFND	8	PG	X	Henry Waters.....	R. C. A.
Niobe ³	KDGB	8	PG	X	Standard Oil Co. of N. J.	Do.
Pawnee ⁴	KDGC	8	PG	X	.....do.....	Do.
Richard Holyoke.....	KFNB	.....	PG	X	B. L. Jones.....	Do.
W. H. Talbot.....	KFNI	8	PG	X	H. H. H. Borresen....	

¹ This vessel was formerly the United States vessel Buckhannon, and the letters assigned are for temporary use only until other letters are assigned by the Panamanian authorities.

² Range, 150; system, Navy-R. C. A., 1000; w. l., 300, 600, 700; rates, Great Lakes service 2 cents per word.

³ Range, 150; system, Telefunken, 1000; w. l., 300, 450, 600, 700.

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Commercial land and ship stations, alphabetically by call signals.

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

Call signal.	Name.	Call signal.	Name.
KDGB	Niobe.....	b	
KDGC	Pawnee.....	b	
KELG	Elena Valdez.....	b	
KFL	Underwood, Wash. (near).....	c	
KFNA	Grand Island.....	b	
KFNB	Richard Holyoke.....	b	
KFND	Narada.....	b	
KFNE	Elia.....	b	
KFNI	W. H. Talbot.....	b	
KFZ	Los Angeles, Calif. (portable).....	c	
KGV	Do.....	c	
		KLB	Portland, Oreg.....
		KLP	Big Creek Power House No. 3, Calif.....
		KQY	Vestal Substation, Calif.....
		KYG	Laguna Bell Substation, Calif.....
		KZY	Culver City, Calif.....
		WBAP	Fort Worth, Tex.....
		WDX	Wyoming, Pa.....
		WJF	Rochester, N. Y.....
		WLK	Oberlin, Ohio.....
		WLL	Baltimore, Md.....

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.
Ann Arbor, Mich.....	WCBC	Pittsburgh, Pa.....	WBBK
Atlanta, Ga.....	WBBF	Port Huron, Mich.....	WBBH
Coldwater, Mich.....	KFNG	Richmond, Va.....	WBBL
Grand Forks, N. Dak. (portable).....	KFJQ	Rogers, Mich.....	WBBO
Indianapolis, Ind.....	WBBI	Rossville, N. Y.....	WBBR
Lincoln, Ill.....	WBBM	Roswell, N. Mex.....	KFMZ
Long Beach, Calif.....	KFMY	Seattle, Wash.....	KDZE
Los Angeles, Calif.....	KFSG	Springfield, Mo.....	KFNI
Mattapoisett, Mass.....	WBSG	Syracuse, N. Y.....	WBBE
New Orleans, La.....	WABZ	Wahpeton, N. Dak.....	WMAW
Oakland, Calif.....	KGO	Warrensburg, Mo.....	KFNJ
Pawtucket, R. I.....	WBBQ	West Palm Beach, Fla.....	WBBJ
Petoskey, Mich.....	WBBP	Wilmington, N. C.....	WBBN
Philadelphia, Pa.....	WABY	Washington, D. C.....	WDM

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.	Location of station.	Operated and controlled by--	Wave length.	Power (watts).	Frequency (kilo-cycles).
KDZE	Seattle, Wash.....	Rhodes Co.....	270	100	1,110
KFJQ	Grand Forks, N. Dak.....	Electric Construction Co., valley radio division.....	280	5	1,070
KFMY	Long Beach, Calif.....	Boy Scouts of America.....	220	20	1,310
KFMZ	Roswell, N. Mex.....	Roswell Broadcasting Club.....	250	500	1,200
KFNG	Coldwater, Miss.....	Wooten's Radio Shop.....	254	10	1,180
KFNI	Springfield, Mo.....	State Teachers College.....	256	20	1,270
KFNJ	Warrensburg, Mo.....	Warrensburg Electric Shop.....	234	50	1,280
KFSG	Los Angeles, Calif., 1100 Glenvale Blvd.....	Kecho Park Evangelistic Association.....	278	500	1,080
KGO	Oakland, Calif.....	General Electric Co.....	312	1,000	950
WABY	Philadelphia, Pa., 816 Kimball St.....	John Magaldi, jr.....	242	50	1,240
WABZ	New Orleans, La.....	Coliseum Place Baptist Church.....	263	50	1,140
WBBE	Syracuse, N. Y., 113 W. Rayner Ave.....	Alfred R. Marcy.....	246	10	1,220
WBBF	Atlanta, Ga.....	Georgia School of Technology.....	270	500	1,110
WBBG	Mattapoisett, Mass.....	Irving Vermilya.....	240	100	1,250
WBBH	Port Huron, Mich., 1511 Gordon St.....	J. Irving Bell.....	246	50	1,220
WBBI	Indianapolis, Ind., 1721 N. Somerset St.....	Indianapolis Radio Club.....	234	20	1,280
WBBJ	West Palm Beach, Fla.....	Nash Electric Co.....			

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Stations broadcasting market or weather reports, music, concerts, lectures, etc., alphabetically by call numbers—Continued.

Call signal.	Location of station.	Operated and controlled by—	Wave length.	Power (watts).	Frequency (kilo-cycles).
WBBL	Richmond, Va.....	Grace Covenant Church.....	283	10	1,060
WBBM	Lincoln, Ill., 110 Park Place.	Frank Atlas Produce Co.....	236	200	1,330
WBBN	Wilmington, N. C., 225 N. Front St.	A. B. Blake.....	275	10	1,090
WBBO	Rogers, Mich.....	Michigan Limestone & Chemical Co.	250	500	1,200
WBBP	Petoskey, Mich.....	Petoskey High School.....	246	10	1,220
WBBQ	Pawtucket, R. I., 150 Exchange St.	Frank Crook.....	232	50	1,190
WBBR	Rossville, N. Y.....	Peoples Pulpit Association.....	244	500	1,230
WBBC	Ann Arbor, Mich.....	University of Michigan.....	280	200	1,070
WDM	Washington, D. C.....	Church of the Covenant.....	234	50	1,280
WMAW	Wahpeton, N. Dak.....	Wahpeton Electric Co.....	254	30	1,190

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—
Metuchen, N. J.....	WUBB	<i>600, 671, 683</i>	FX	N	U. S. Army.
New London, Conn. ¹ ..	NBL	<i>600, 671, 683</i>	O	N	Do.

¹ Loc. O. 72° 03' 30", N. 41° 23' 30"; range, 150; system, Navy a. c. v. t.; wave lengths in *italic* are used for "listening in."

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—
A. Mackenzie ¹	WYCN	1091.....	O	N	U. S. Army.
Dan C. Kingman ¹	WYCP	1091.....	O	N	Do.
W. L. Marshall ¹	WYCO	1091.....	O	N	Do.
Wm. T. Russell ¹	WYCQ	1091.....	O	N	Do.

¹ Range, 200; system, U. S. Navy, 1000.

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.
NBL	New London, Conn.....c	WYCO	W. L. Marshall.....b
WUBB	Metuchen, N. J.....c	WYCP	Dan C. Kingman.....b
		WYCN	A. Mackenzie.....b
		WYCQ	Wm. T. Russell.....b

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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—
Ames, Iowa.....	9XBB	Iowa State College.
Atlantic, Mass.....	1XAB	Sheldon S. Heap, 132 Atlantic St.
Boston, Mass.....	1ZA	Jeffrey Nichols Motor Co., 971 Commonwealth Ave.
Chattanooga, Tenn.....	5XAT	Benjamin F. Painter, 624 Carlisle Place.
Chicago, Ill.....	9XBA	Frederick J. Marco, 5723 Winthrop Ave.
Cleveland, Ohio.....	8XBN	George P. Markoff, 3415 West Ninety-fourth St.
College Station, Tex.....	5XAU	Agricultural and Mechanical College of Texas Radio Club.
Detroit, Mich.....	8XBP	Albert B. Allen, 1549 Temple Ave.
Fresno, Calif.....	6ZBT	Joseph W. Baker, Ventura Ave.
Fullerton, Calif.....	6ZBP	Malcom J. Atherton, P. O. Box No. 87.
Iowa City, Iowa.....	9XAZ	University of Iowa.
Ithaca, N. Y.....	8ZU	Donald W. Exner, 307 Founders' Hall.
Lancaster, Calif.....	6ZBQ	Lee E. Potter, R. F. D. No. 1.
Los Angeles, Calif.....	6ZBR	Charles Bruere, jr., 1430 Wright St.
Merced, Calif.....	6ZBU	Merwin J. Fickas, 236 Twentieth St.
Modesto, Calif.....	6ZBO	Forrest W. Donkin, Caldwell Ave.
New York, N. Y.....	2YT	Radio Institute of America, 326 Broadway.
Niles, Ohio.....	8XBO	J. William Kidd, 404 Lafayette St.
Ortega, Fla.....	4XE	William J. Lee and John C. Cooper, jr., P. O. Box No. 111.
Parnassus, Pa.....	8XBM	Raymond C. Hiteshue, P. O. Box No. 158.
Peoria, Ill.....	9XBC	G. C. Shalkhauser and Bradley Polytechnic Institute.
Portland, Oreg.....	7XBD	Radio Service Co.
Salt Lake City, Utah.....	6ZBS	Doc Carroll McRae, 29 South State St.
San Francisco, Calif.....	6XAF	C. E. Thompson, 1876 Fifteenth St.
Savannah, Ga.....	4ZB	R. Ralston Brewin, 21 East Thirty-eighth St.
Springvale, Conn.....	1XAK	Vernor A. Hendrickson, Bouton St.
Swarthmore, Pa.....	3YJ	Swarthmore College.
Venice, Calif.....	6XBN	Gaston B. Ashe, 25 Avenue 37.
Washington, D. C.....	3XAO	Harris F. Hastings, 965 B St. NE.
Do.....	3XAP	George M. Phillips, 711 I St. NE.

Special land stations, grouped by districts.

Call signal.	District and station.	Call signal.	District and station.
1XAK	First district:		
1XAR	Springvale, Conn.	6ZBP	Sixth district—Continued.
1ZA	Atlantic, Mass.	6ZBQ	Fullerton, Calif.
2YT	Boston, Mass.	6ZBR	Lancaster, Calif.
3XAO	Second district: New York, N. Y.	6ZBS	Los Angeles, Calif.
3XAP	Third district:	6ZBT	Salt Lake City, Utah.
3YJ	Washington, D. C.	6ZBU	Fresno, Calif.
4XE	Do.	6ZBO	Merced, Calif.
4ZB	Swarthmore, Pa.	7XBD	Seventh district: Portland, Oreg.
5XAT	Fourth district:	8XBM	Eighth district:
5XAU	Ortega, Fla.	8XBN	Parnassus, Pa.
6XAF	Savannah, Ga.	8XBO	Cleveland, Ohio.
6XBB	Fifth district:	8XBP	Niles, Ohio.
6XBN	Chattanooga, Tenn.	8ZU	Detroit, Mich.
6ZBO	College Station, Tex.		Ithaca, N. Y.
	Sixth district:	9XAZ	Ninth district:
	San Francisco, Calif.	9XBA	Iowa City, Iowa.
	Venice, Calif.	9XBB	Chicago, Ill.
	Modesto, Calif.	9XBC	Ames, Iowa.
			Peoria, Ill.

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 Bernese bureau.]

ALITAK, ALASKA.—System, composite, 480; w. l., 300, 600, 1650.

AMUGUIS, P. I.—Range, 150; system, R. C. A., 1000; w. l., 650, 1000; hours, Sundays and holidays 9–11 a. m. and 2–3.30 p. m.

BALABAC, P. I.—Range, 150; system, R. C. A., 1000.

- BASCO, P. I.—Range, 450; w. l., add 952; hours, Sundays and holidays 9-11 a. m. and 2-3.30 p. m.
- BATANGAS, P. I.—System, R. C. A., 1000; hours, Sundays and holidays 7 a. m.-7 p. m.
- BONGAO, P. I.—Range, 100; system, R. C. A., 1000; w. l., 600.
- CAGAYAN DE SULU, P. I.—Loc. (approximately) O. 118° 30' 30" E., N. 06° 59' 30"; system, composite, 120.
- CALAPAN, P. I.—Range, 50; hours, Sundays and holidays 9-11 a. m. and 2-3.30 p. m.
- CEBU, P. I.—System, R. C. A., 1000; w. l., 600, 1200, 1600, 2400; hours, Sundays and holidays 7 a. m.-7 p. m.
- CULION, P. I.—Range, 100; system, R. C. A., 1000; w. l., 600, 900.
- CUYO, P. I.—Range, 175; system, Telefunken, 1000; w. l., 600, 850; hours, Sundays and holidays 9-11 a. m. and 2-3.30 p. m.
- DAVAO, P. I.—Loc. (approximately) O. 125° 30' 00" E., N. 07° 00' 00"; range, 250; w. l., 1250; hours, Sundays and holidays 9-11 a. m. and 2-3.30 p. m.
- GUNTERSVILLE, ALA.—System, composite, 240.
- ILOILO, P. I.—System, R. C. A., 1000; w. l., 600, 1600, 2400; hours, Sundays and holidays 7 a. m.-7 p. m.
- ISABELA DE BASILAN, P. I.—Range, 15; system, Electro Importing Co., 1000.
- JOLO, P. I.—System, R. C. A., 1000; w. l., 600, 1200, 1905; hours, Sundays and holidays 9-11 a. m. and 2-3.30 p. m.
- LUDINGTON, MICH.—W. l., 300, 600, 1666.
- MALABANG, P. I.—System, composite, 240; w. l., 1050.
- MALANGAS, P. I.—Range, 150; system, Marconi, 1000; w. l., 600.
- MALITA, P. I.—Range, 100; system, Marconi, 1000.
- MARION, MASS. (WCC).—W. l., 300, 600, 1800.
- MATI, P. I.—Range, 100; system, R. C. A., 1000.
- NEW YORK, N. Y. (WCG).—Hours, N.
- NEW YORK, N. Y. (Borough of Brooklyn, WNY).—W. l., 300, 600, 1800.
- NORTHVILLE, MICH.—W. l., 1905; station operated and controlled by Ford Motor Co.
- PORT LERAK, P. I.—Range, 125; system, R. C. A., 1000; w. l., 600, 900, 1500, 2000.
- PUERTO PRINCESA, P. I.—Range, 200; w. l., 600, 900; hours, Sundays and holidays 9-11 a. m. and 2-3.30 p. m.
- PYSET, WASH.—System, Western Electric Co. v. t. telephone and telegraph; service PR (communicates only with certain vessels).
- SAN FRANCISCO, P. I.—Range, 150; system, R. C. A., 1000.
- SAN JOSE, P. I.—Range, 150; system, R. C. A., 1000; w. l., 600, 1400.
- SIASI, P. I.—Range, 100; system, R. C. A., 1000; w. l., 600, 1000.
- WEST PORT ARTHUR, TEX.—System, composite spark, 1000 and I. W. T. Co. arc; w. l., 300, 600, 706, 1800; hours, N.
- ZAMBOANGA, P. I.—Range, 175-450; system, R. C. A., 1000 and composite, 240; w. l., 950, 1250, 1500, 1850.
- Strike out all particulars of Los Angeles, Calif. (KHI.)

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 Bureau.]

- ACME.—W. l., 300, 450, 600, 706.
- ADMIRAL FISKE.—W. l., add 706.
- ADMIRAL SEEBEE.—W. l., add 706.
- A. L. KENT.—Mystic S. S. Co., owner of vessel.
- ALLEGHANY.—Station operated and controlled by R. C. A.
- AMERICAN.—W. l., 300, 450, 600, 706.
- AMOLCO.—Station operated and controlled by R. C. A.
- ANNA E. MORSE.—Range, 300; system, R. C. A., 1000; w. l., 300, 450, 600, 706.
- ANNAPOLIS.—W. l., add 706.
- ANTINOUS.—System, Navy-Kilbourne & Clark, 1000.
- ARDMORE.—W. l., add 706.
- ARIO.—W. l., add 706.
- BARRENFORK.—Range, 150; system, Wireless Specialty Apparatus Co., 1000; S. A. Guilds, owner of vessel.

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- BATON ROUGE (KSG).—System, R. C. A., 1000.
 BENJAMIN BREWSTER.—System, R. C. A., 1000; w. l., add 706.
 BERKSHIRE.—Station operated and controlled by R. C. A.
 BETTY R.—System, composite v. t. telephone and telegraph; service, P.
 BIBCO.—W. l., add 706.
 BLAKELEY.—Deep Sea Salvage Corporation, owner of vessel.
 BLUE TRIANGLE.—W. l., add 706.
 CALORIA.—Standard Fruit and S. S. Co., owner of vessel.
 CAMBRIDGE (KGR).—Station operated and controlled by I. W. T. Co.
 CAROLINAS.—W. l., add 706.
 C. A. SNIDER.—System, Navy-Wireless Specialty Apparatus Co., 1000; rates, 8 cents per word; station operated and controlled by I. W. T. Co.
 CASSIMIR.—Cuba Distilling Co., owner of vessel.
 CHALLENGER.—Station operated and controlled by R. C. A.
 CHICKASAW CITY.—W. l., add 706.
 COALINGA.—Union S. S. Co., owner of vessel.
 COAXET.—Station operated and controlled by R. C. A.
 COLDBROOK.—System, Navy-Wireless Specialty Apparatus Co., 1000; w. l., add 706.
 COLLAMER.—W. l., add 450.
 COMBER.—Range, 300; system, R. C. A., 1000; w. l., 300, 600, 706.
 COMMERCIAL GUIDE.—W. l., add 706.
 CONCORD.—Range, 150; system, Cutting & Washington, 1000; w. l., 300, 450, 600, 706; station operated and controlled by I. W. T. Co.
 CORDOVA (WAR).—W. l., add 706.
 CRETAN.—Station operated and controlled by R. C. A.
 DEERFIELD.—Steamship Deerfield Corporation, owner of vessel.
 DEFACIO.—W. l., add 706.
 DELROSA.—Name changed to Tanana.
 DERBYLINE.—W. l., add 706.
 DEWEY.—W. l., add 706.
 DORCHESTER.—Station operated and controlled by R. C. A.
 DOYLESTOWN.—W. l., add 706.
 EASTERN SEA.—System, Navy-R. C. A., 1000.
 EAST SIDE.—System, Navy-Liberty, 1000.
 EDENTON.—W. l., add 706.
 EDGE MONT.—Station operated and controlled by S. O. R. S.
 EDNA CHRISTENSON.—W. l., add 706.
 EDRIS.—System, Standard Radio Co., 1000 and composite v. t. telephone and telegraph; w. l., 146, 300, 600; service PG and P (P service is with Culver City, Calif.).
 EDWARD PEIRCE.—Mystic S. S. Co., owner of vessel.
 EL DIA.—W. l., add 706.
 ESSEX.—Station operated and controlled by R. C. A.
 EVERETT (KZT).—W. l., 300, 600, 706; Mystic S. S. Co., owner of vessel.
 F. A. DOUTY.—Davis Ocean, Log, Rafting & Towing Co., owner of vessel.
 F. C. LATROBE.—W. l., add 706.
 FELIX TAUBSIG.—Mystic S. S. Co., owner of vessel.
 FORTUNA.—Station operated and controlled by owner of vessel.
 F. Q. BARSTOW.—Range, 300; system, R. C. A., 1000; w. l., add 706.
 GDANSK.—System, Kilbourne & Clark, 1000; Oceanic S. S. Co., owner of vessel, station operated and controlled by F. T. Co.
 GEORGE W. BARNES.—System, Navy-Wireless Specialty Apparatus Co., 1000; w. l., 300, 450, 600, 706.
 GEORGIA (KUR).—W. l., 300, 450, 600, 706.
 GLOUCESTER.—Station operated and controlled by R. C. A.
 GRECIAN.—Station operated and controlled by R. C. A.
 GULFMAID.—W. l., add 706.
 HALF MOON (KUVX).—System, Navy-R. C. A., 1000; w. l., add 706; hours, X.
 HARRY W. CROFT.—Headwaters Co., owner of vessel.
 HOWARD.—Station operated and controlled by R. C. A.
 HUGUENOT.—Bernuth Lembcke (Inc.), owner of vessel.
 HULACO.—Name changed to Mericos H. Whittier.
 INDIAN.—Station operated and controlled by R. C. A.
 IPSWICH.—System, Navy-R. C. A., 1000; w. l., 300, 450, 600, 706.
 IRONWOOD (KUP).—W. l., 300, 600, 706.

- JANELEW.—Range, 300; w. l., 300, 450, 600, 706, 1800.
 JEFF DAVIS.—W. l., 300, 450, 600, 706, 1800.
 JENNIE R. MORSE.—Station operated and controlled by R. C. A.
 JOHN C. KIRKPATRICK.—Range, 300; system, General Radio Co., 1000; w. l., 300, 600, 706.
 JUNIATA (KQJ).—Station operated and controlled by R. C. A.
 KATHERINE DONOVAN.—Katherine Donovan S. S. Co., owner of vessel.
 KERSHAW.—W. l., add 706; station operated and controlled by R. C. A.
 KETCHIKAN.—Range, 200.
 K. R. KINGSBURY.—W. l., 300, 450, 600, 706.
 LAKE FORNEY.—Name changed to Ansonia; w. l., add 706.
 LEBORK.—Station operated and controlled by R. C. A.
 LEXINGTON.—Station operated and controlled by I. W. T. Co.
 LAKE CLEAR.—W. l., add 706.
 LA PURISIMA.—Range, 300.
 LEWIS K. THURLOW.—Mystic S. S. Co., owner of vessel.
 LOKI.—Range, 200; system, Telefunken, 1000; w. l., 300, 450, 600, 706.
 MELROSE.—Mystic S. S. Co., owner of vessel.
 MERRIMACK.—Station operated and controlled by R. C. A.
 M. F. ELLIOTT.—W. l., add 706.
 MONTAGUE.—W. l., 300, 600, 706.
 MONTANA.—W. l., add 706.
 MOONLITE.—Name changed to Admiral Peary.
 MUNPLACE.—W. l., add 706.
 MURSA.—Range, 300; system, Federal arc; w. l., 300, 600, 706, 1800; hours, X.
 NANKING.—Name changed to Emma Alexander; station operated and controlled by R. C. A.
 NANTUCKET.—Station operated and controlled by R. C. A.
 NEWTON.—Mystic S. S. Co., owner of vessel.
 NEW YORK.—W. l., add 706.
 NORLINA.—W. l., add 706.
 NORWOOD.—W. l., 300, 450, 600.
 OCEAN.—Range, 300; system, R. C. A., 1000; w. l., 300, 450, 600, 706.
 ONTARIO.—Station operated and controlled by R. C. A.
 ORCUS.—W. R. Grace & Co., owner of vessel.
 OSCAR D. BENNETT.—W. l., add 706.
 PAN AMERICA.—Station operated and controlled by I. W. T. Co.
 PAULSBORO.—W. l., add 706.
 PAUL SHOUP.—W. l., add 706; Associated Oil Co., owner of vessel.
 PENNSYLVANIA SUN.—W. l., 300, 450, 600, 706.
 PERSIAN.—Station operated and controlled by R. C. A.
 PETER H. CROWELL.—Mystic S. S. Co., owner of vessel.
 PHYLLIS.—W. l., add 706.
 PIONEER (KIG).—W. l., add 706.
 POINT BONITA.—Name changed to San Pedro.
 PRESIDENT BUCHANAN.—Call signal changed to K S N.
 PRESIDENT HARRISON.—Dollar S. S. Line, owner of vessel.
 PRESIDENT HAYES.—Dollar S. S. Line, owner of vessel.
 PRESIDENT MADISON.—Station operated and controlled by S. O. R. S.
 PRESIDENT MCKINLEY.—Station operated and controlled by S. O. R. S.
 PRESIDENT POLK.—Station operated and controlled by I. W. T. Co.
 QUANTICO.—Station operated and controlled by R. C. A.
 RADIANT.—W. l., add 706.
 REPUBLIC (WSU).—Range, 150; w. l., 300, 450, 600, 706; rates, 8 cents per word.
 ROSEY CITY.—W. l., add 706.
 RUTH ALEXANDER.—W. l., add 706.
 SAC CITY.—Station operated and controlled by R. C. A.
 SAGAPORACK.—W. l., add 706.
 SANTIAGO.—Range, 300; system, R. C. A., 1000; w. l., 300, 600.
 SATARTIA.—Station operated and controlled by S. O. R. S.
 SEATTLE SPIRIT.—W. l., add 706.
 SEAWARD.—Range, 300; system, composite v. t. telephone and telegraph; w. l., 300, 450, 600; rates 8 cents per word; station operated and controlled by owner of vessel.
 SILVERADO.—Silverado S. S. Co., owner of vessel.

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SPRINGFIELD.—W. 1., add 706; station operated and controlled by S. O. R. S.
 STEPHEN R. JONES.—Mystic S. S. Co., owner of vessel.
 SUCROSA.—W. 1., add 706; Curtis Bay Copper & Iron Works, owner of vessel.
 SUELCO.—W. 1., add 706.
 SUNBEAM.—Sud Oil Co., owner of vessel.
 THOMAS P. BEAL.—Mystic S. S. Co., owner of vessel.
 TUSCAN.—Station operated and controlled by R. C. A.
 WALLINGFORD.—Wallingford S. S. Co., owner of vessel.
 WALTER D. NOYES.—Mystic S. S. Co., owner of vessel.
 WATERTOWN.—W. 1., 300, 450, 600, 706; station operated and controlled by R. C. A. (U. S. L.).
 WESTERN OCEAN.—Station operated and controlled by S. O. R. S.
 WEST CAJOOT.—System, Navy-Wireless Specialty Apparatus Co., 1000; w. 1., 300, 450, 600, 706; station operated and controlled by I. W. T. Co. (U. S. L.).
 WEST CHOPAKA.—W. 1., add 706.
 WEST HIMROD.—Station operated and controlled by S. O. R. S. (U. S. L.).
 WEST HOLBROOK.—System, Navy-R. C. A., 1000; w. 1., add 706; station operated and controlled by S. O. R. S.
 WEST KEENE.—W. 1., add 706.
 WESTPOOL.—System, Navy-R. C. A., 1000; w. 1., add 706; hours, X; station operated and controlled by S. O. R. S.
 WEST PROSPECT.—W. 1., 300, 600, 706, 1800.
 WEST QUECHEE.—W. 1., add 706.
 WILLETT.—Range, 200; system, Navy-Simon, 1000; w. 1., 300, 450, 600, 706.
 WILLFARO.—Williams S. S. Co., owner of vessel.
 WILLIAM A. MCKENNEY.—Mystic S. S. Co., owner of vessel.
 WILLPOLO.—W. 1., add 450.
 WILLSOLO.—Williams S. S. Co., owner of vessel.
 WILLIAM PENN.—W. 1., add 706.
 YOSEMITE (KDWE).—W. 1., add 706.
 YUCCA.—Name changed to Commercial Courier; Commercial Courier S. S. Co., owner of vessel.

Strike out all particulars of the following-named vessels: A. A. Augustus, Alamo, Allaguash, Amazon, Andalusia, Anthony O'Boyle, Arenas, Ascutney, Australia, Back Bay, Barranca, Bathgate, Blue Point, Commercial Scout, Conejos, Conneaut, Coosa, Damacan, Dan F. Hanion, E. L. Pierce, Fair Oaks, Faith, Fort Worth, Frank Billings, Freedom, F. R. Hazard, G. A. Tomlinson, George B. MacKenzie, Gonzalis, Half Moon (KDTY), Harold B. Nye, Hastnai, Huron (WCH), James P. Walsh, J. J. Sullivan, John Gehm, John R. Gibbons, John Stanton, John Tracy, Joseph G. Butler, jr., Lake Jessup, Lake Tippah, Lampasas, Lolomi, Manitowoc, Mary Weems, Michael Tracy, Martin Mullen, Nancy Weems, Nedeva II, Nepenthe II, North Wind, O. A. Hermanson, Outagamie, Philippines, Pilgrim (KFAH), Pocantico, Price McKinney, Quincy, Remlik III, Rotarian, Ruth E. Merrill, Samoa, Sarah Weems, Sherman, St. Michael, St. Paul, Tartar, "323", Virginia Despatch, Wachusett, West Eagle, Western Comet, Willapa, William A. Paine, Winnebago, Wisconsin Bridge, W. J. Crosby, Wm. G. Howard, and W. M. Tupper.

COMMERCIAL LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

KFGN call changed to KSN; KKEE, read Emma Alexander; KODQ, read Mericos H. Whittier; KPL, read Admiral Peary; KUTG, read Tanana; KWJ, read Commercial Courier; WBUU, read Ansonia; WMT, read San Pedro; strike out all particulars following the call signals, KDCE, KDEA, KDKU, KDLU, KDQQ, KDTH, KDTL, KDTY, KDVG, KDWC, KDXJ, KDKK, KDXL, KDXM, KDXO, KDXP, KDXQ, KDXR, KDXS, KDXT, KDXU, KDXV, KDXW, KDXY, KDXZ, KEJ, KEKS, KELS, KEP, KFAH, KPBR, KFBT, KFCO, KFEF, KFGO, KFW, KHI, KHV, KIBM, KIFR, KIQS, KIRM, KIST, KLD, KMQ, KOBQ, KOVC, KQU, KRQ, KSO, KTEI, KTUI, KUKT, KULS, KURL, KUPP, KVX, KYB, KYV, KZOU, KZR, WAM, WAV, WCH, WCU, WJA, WJEI, WJL, WJR, WLF, WPK, WMEE, WQJ, WQZ, WRA, WSM, WVAI, WVOO, WVOU, WXEI, WXOE.

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.]

KDPM (Cleveland, Ohio).—Power, 500.
 KDZE (Seattle, Wash.).—Call signal changed to KFOA.
 KFAE (Pullman, Wash.).—W. l., 330; frequency, kc. 908.
 KFCF (Walla Walla, Wash.).—Power, 100.
 KPGD (Chickasha, Okla.).—Power, 200.
 KFHD (St. Joseph, Mo.).—Station operated and controlled by Utz Radio & Electric Co.
 WGAZ (South Bend, Ind.).—Power, 250.
 KFHR (Seattle, Wash.).—Power, 50; w. l., 283; frequency, kc. 1060.
 KFJC (Seattle, Wash.).—W. l., 270; frequency, kc. 1110.
 KFLB (Menominee, Mich.).—Power, 5.
 KFLV (Rockford, Ill.).—Power, 100.
 KFNH (Springfield, Mo.).—Power, 20.
 KLX (Oakland, Calif.).—W. l., 509; frequency, kc. 500.
 KRE (Berkeley, Calif.).—W. l., 275; frequency, kc. 1090.
 WBAP (Fort Worth, Tex.).—Power, 500.
 WCAK (Houston, Tex.).—W. l., 263; frequency, kc. 1140.
 WEAY (Houston, Tex.).—Power, 500.
 WGV (New Orleans, La.).—W. l., 242; frequency, kc. 1240.
 WIAJ (Neenah, Wis.).—Power, 20.
 WIK (McKeesport, Pa.).—Power, 100.
 WJAF (Muncie, Ind.).—Station operated and controlled by Muncie Press and Smith Electric Co.
 WJAS (Pittsburgh, Pa.).—W. l., 250; frequency, kc. 1200.
 WKAR (East Lansing, Mich.).—Power, 500.
 WNAL (Omaha, Nebr.).—W. l., 266; frequency, kc. 1130.
 WNAT (Philadelphia, Pa.).—Power, 250.
 WOAG (Belvidere, Ill.).—W. l., 273; frequency, kc. 1100.
 WOAP (Kalamazoo, Mich.).—W. l., 283; frequency, kc. 1060.
 WPAH (Waupaca, Wis.).—Power, 500.
 WPAK (Agricultural College, N. Dak.).—Power, 50.
 WQAM (Miami, Fla.).—W. l., 283; frequency, kc. 1060.
 WQAN (Scranton, Pa.).—Power, 50.
 WRAH (Providence, R. I.).—Power, 15.
 WRAV (Yellow Springs, Ohio).—W. l., 242; frequency, kc. 1240.
 WSAL (Brookville, Ind.).—Power, 50.
 WTAX (Streator, Ill.).—Power, 50.
 Strike out all particulars of the following-named stations: KFAV, Venice, Calif.; KFCD, Salem, Oreg.; KFCK, Colorado Springs, Colo.; KFDD, Lincoln, Nebr.; KFIB, St. Louis, Mo.; KFIK, Gladbrook, Iowa; KFIY, Seattle, Wash.; KFJD, Greeley, Colo.; KFKH, Lakeside, Colo.; WAAZ, Emporia, Kans.; KABC, Anderson, Ind.; WABJ, South Bend, Ind.; WBAW, Marietta, Ohio; WDAX, Centerville, Iowa; WGAY, Madison, Wis.; WJAB, Lincoln, Nebr.; WKAW, Beloit, Wis.; WLAN, Houlton, Me.; WLAT, Burlington, Iowa; WOAJ, Parsons, Kans.

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.]

AFOGNAK, ALASKA.—W. l., 300, 425, 600, 1200; service, FX.
 BAR HARBOR, ME.—System, Navy spark 1000 and a. c. v. t.
 BETHEL, ALASKA.—Call signal changed to WUX.
 BOSTON, MASS. (NAD).—System, Navy spark, 1000 and a. c. v. t. and arc; w. l., 1620 changed to 1863.
 BROWNVILLE, TEX.—W. l., 2250 changed to 2255.
 CIRCLE, ALASKA.—Call signal changed to WUM.
 FAIRBANKS, ALASKA.—Call signal changed to WXP.
 FORT EGBERT, ALASKA.—Call signal changed to WXQ.
 FORT FRANK, P. I.—Call signal changed to WUAD.
 FORT GIBBON, ALASKA.—Call signal changed to WXS.
 FORT TOWNSEND, WASH.—Call signal changed to WVC.

FORT SAM HOUSTON, TEX.—Call signal changed to WVB.
 FORT ST. MICHAEL, ALASKA.—Call signal changed to WXT.
 FORT STOREY, VA.—Call signal changed to WUAE.
 GREAT LAKES, ILL.—W. l., 1988 changed to 1986.
 HOLY CROSS, ALASKA.—Call signal changed to WUY.
 KEY WEST, FLA.—W. l., 600, 975, 1463, 2250, 2400, 3950, 5657.
 NEW YORK, N. Y.—System, Navy spark, 1000 and a. c. v. t.; w. l., 1540 changed to 1538.
 NOME, ALASKA.—Call signal changed to WXY.
 NOORVIK, ALASKA.—Call signal changed to WXW.
 NORFOLK, VA.—W. l., 1360 changed to 1363.
 NULATO, ALASKA.—Call signal changed to WXZ.
 RUBY, ALASKA.—Call signal changed to WXU.
 SAN FRANCISCO, CALIF. (NPG).—System, Navy spark, 1000 and arc; w. l., 1330 changed to 1333, 4650 changed to 4613.
 SAN JUAN, P. R.—W. l., 4850 changed to 4836.
 WASHINGTON, D. C. (Arlington, NAA).—System, Navy a. c. v. t. and arc; w. l., 2655, a. c. v. t., 3950 arc, 5996 arc.
 WASHINGTON, D. C. (WXY).—Call signal changed to WVA.
 Strike out all particulars of the following-named stations: Anchorage, Alaska, Fort Caswell, N. C.; Fort Constitution, N. H.; Fort Du Pont, Del.; Fort Levett, Me.; Fort McKinley, Oreg. (Portland); Fort Moultrie, S. C.; Fort Rodman, Mass.; Fort Rosecrans, Calif.; Fort Washington, Md.; Key West, Fla. (WUBV); Port Eads, La.

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.]

GENERAL JOHN M. SCHOFIELD.—Call signal changed to WYAB.
 GENERAL MIFFLIN.—Call signal changed to WYAT.
 GENERAL R. N. BATCHELDER.—Call signal changed to WYAR.
 JOSEPH HENRY.—Call signal changed to WYAC.
 SAN PEDRO.—Call signal changed to WYAU.
 SLOCUM.—Call signal changed to WYAV.
 Strike out all particulars of the following-named vessels: Captain Fred L. Perry, Captain Gregory Barrett, General Nathaniel Greene, General Timothy Pickering, Major Albert G. Forse, Morgan-Lewis, Navesink, and Sprigg Carroll.

GOVERNMENT LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

WUD, read WVC; WUJ, read WVB; WVA, read WUM; WVB, read WXP; WVC, read WXQ; WVD, read WXS; WVE, read WXT; WVF, read WXU; WVG, read WXY; WVH, read WXZ; WVI, read WUX; WVK, read WUY; WVL, read WUAD; WVM, read WXW; WVN, read WUP; WXJ, read WUAE; WXS, read WYAV; WXT, read WYAC; WXW, read WYAB; WXY, read WVA; WZW, read WYAR; WZX, read WYAT; WZZ, read WYAU; strike out all particulars following the call signals, WUAF, WUBV, WUCN, WUCV, WUE, WUP, WUS, WUT, WYAP, WYAQ, WYBN, WXQ, WXU (Navesink), WZE, WZF, WZH, WZN, WZQ, WZR, WZU.

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.]

DOUGLAS, WYO. (7ZV).—Changed to Casper, Wyo.
 HOUSTON, TEX. (5ZO).—Address, 1711 Caroline Street.
 NEW YORK, N. Y. (2ZG).—Station operated and controlled by Wireless Press (Inc.), 326 Broadway.
 PITTSBURGH, PA. (8XV).—Changed to Wilkesburg, Pa.
 Strike out all particulars of the following-named stations: Appleton, Wis. (9YAR); Atlanta, Ga. (4ZB); Boulder, Colo. (9XAQ); Culver, Ind. (9YQ); Davenport, Iowa (9YAP); Detroit, Mich. (8YW); Evanston, Ill. (9YH); Glenbrook, Conn. (1XAK); Grosse Point Farms, Mich. (8XAS); Le Mars, Iowa (9YAE); Lexington, Ky. (9YC); Mansfield, Ohio (8ZU); Marietta

MISCELLANEOUS.

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

[E—Music, concerts, lectures, etc.; M—Market reports; W—Weather reports. (Complete to Jan. 31, 1934, inclusive).]

Call signal.	Location of station.	Operated and controlled by—	Wave length.	Power (watts).	Service.
KDKA	East Pittsburgh, Pa.	Westinghouse Electric & Mfg. Co.	320	1,000	E. M. W.
KDPM	Cleveland, Ohio.	do.	270	500	E.
KDPT	San Diego, Calif.	Southern Electric Co.	244	50	E.
KDYL	Salt Lake City, Utah.	Telegram Publishing Co.	350	50	E. W.
KDYM	San Diego, Calif.	Savoy Theater.	280	100	E.
KDYQ	Portland, Oreg.	Oregon Institute of Technology.	350	100	E. W.
KDYW	Phoenix, Ariz.	Smith Hughes & Co.	360	20	E.
KDYX	Honolulu, Hawaii.	Star Bulletin.	360	100	E. W.
KDZB	Bakersfield, Calif.	Frank E. Siefert.	240	100	E.
KDZE	Seattle, Wash.	Rhodes Co.	270	100	E.
KDZF	Los Angeles, Calif.	Automobile Club of Southern California.	278	500	E.
KDZI	Wenatchee, Wash.	Electric Supply Co.	300	50	E.
KDZQ	Denver, Colo.	Nichols Academy of Dancing.	360	10	E.
KDZR	Bellingham, Wash.	Bellingham Publishing Co.	264	50	E.
KFAD	Phoenix, Ariz.	McArthur Bros. Mercantile Co.	360	100	E.
KFAE	Pullman, Wash.	State College of Washington.	330	500	E.
KFAF	Denver, Colo.	Western Radio Corp.	300	50	E.
KFAJ	Boulder, Colo.	University of Colorado.	360	100	E.
KFAN	Moscow, Idaho.	The Electric Shop.	300	50	E.
KFAR	Hollywood, Calif.	Studio Lighting Service Co.	280	100	E.
KFAU	Boise, Idaho.	Boise High School.	270	150	E. M. W.
KFAW	Santa Ana, Calif.	The Radio Den.	280	10	E.
KFAV	Medford, Oreg.	Virgin's Radio Service.	283	50	E. W.
KFBB	Livinge, Mont.	F. A. Buttrey & Co.	360	50	E. M. W.
KFBC	San Diego, Calif., 3038 Cliff Place.	W. K. Arbitt.	278	10	E.
KFBE	San Luis Obispo, Calif.	Reuben H. Horn.	360	10	E.
KFBG	Tacoma, Wash.	First Presbyterian Church.	300	50	E.
KFBK	Sacramento, Calif.	Kimball-Upton Co.	283	100	E. W.
KFBL	Everett, Wash.	Liese Bros.	224	10	E.
KFBS	Trinidad, Colo.	Trinidad Gas & Electric Supply Co. and The Chronicle News.	360	10	E.
KFBU	Laramie, Wyo.	The Cathedral.	283	50	E.
KFCB	Phoenix, Ariz.	Nielsen Radio Supply Co.	278	10	E.
KFCF	Walla Walla, Wash., 707 Baker Bldg.	Frank A. Moore.	360	100	E.
KFCH	Billings, Mont.	Electric Service Station (Inc.).	350	10	E. M. W.
KFCM	Richmond, Calif.	Richmond Radio Shop.	360	100	E.
KFCP	Ogden, Utah, 2421 Jefferson Ave.	Ralph W. Flygare.	360	25	E.
KFCV	Houston, Tex.	Fred Mahaffey, Jr.	350	10	E.
KFCY	Le Mars, Iowa.	Western Union College.	272	50	E.
KFCZ	Omaha, Neb.	Omaha Central High School.	258	100	E.
KFDA	Baker, Oreg.	Adler's Music Store.	360	5	E.
KFDD	Boise, Idaho.	St. Michael's Cathedral.	272	10	E.
KFDH	Tucson, Ariz.	University of Arizona.	360	150	E.
KFDJ	Corvallis, Oreg.	Oregon Agricultural College.	300	50	E.
KFDL	Denver, Colo.	Knight-Campbell Music Co.	360	5	E.
KFDO	Bozeman, Mont., 420 W. Koch St.	H. Everett Cutting.	248	50	E.
KFDR	York, Nebr.	Bullock's Hardware & Sporting Goods.	300	10	E.
KFDV	Fayetteville, Ark.	Gilbrech & Stinson.	360	200	E.
KFDX	Shreveport, La.	First Baptist Church.	350	100	E.
KFDY	Brookings, S. Dak.	South Dakota State College.	360	100	E. M.
KFDZ	Minneapolis, Minn., 2510 Thomas Ave. S.	Harry Q. Iverson.	231	5	E.
KFEC	Portland, Oreg.	Meier & Frank Co.	350	50	E. M. W.
KFEJ	Tacoma, Wash., 1724 S. Jay St.	Guy Greason.	360	10	E.
KFEL	Denver, Colo., 1435 Welton St.	Winner Radio Corporation.	360	50	E.
KFEQ	Oak, Nebr.	J. L. Scroggin.	360	150	E.
KFER	Fort Dodge, Iowa.	Auto Electric Service Co.	231	20	E.
KFEV	Casper, Wyo.	Felix Thompson Radio Shop.	263	250	E. W.
KFEK	Minneapolis, Minn.	Augsburg Seminary.	261	100	E.
KFEY	Kellogg, Idaho.	Bunker Hill & Sullivan Mining & Concentrating Co.	360	10	E.
KFEZ	St. Louis, Mo.	American Society of Mechanical Engineers.	360	100	E.
KFFB	Boise, Idaho.	Jenkins Furniture Co.	240	10	E.
KFFE	Pendleton, Oreg.	Eastern Oregon Radio Co.	300	10	E.
KFFO	Hillsboro, Oreg.	E. H. Smith.	229	5	E.

RADIO SERVICE BULLETIN.

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

Call signal.	Location of station.	Operated and controlled by—	Wave length.	Power (watts).	Service.
KPFV	Lamoni, Iowa.....	Graceland College.....	360	10	E.
KPFX	Omaha, Nebr.....	McGraw Co.....	278	100	E.
KPFY	Alexandria, La.....	Pincus & Murphy.....	275	100	E.
KPFZ	Dallas, Tex. (portable).....	Al. G. Barnes Amusement Co.....	226	20	E.
KPGC	Baton Rouge, La.....	Louisiana State University.....	254	100	E.
KPGD	Chickasha, Okla.....	Chickasha Radio & Electric Co.....	248	200	E.
KPGH	Stanford University, Calif.....	Leland Stanford University.....	300	500	R.
KPGJ	St. Louis, Mo.....	Missouri National Guard, One Hun- dred and Thirty-eighth Infantry.....	266	250	E.
KPGL	Atlington, Oreg.....	Arlington Garage.....	234	5	E.
KPGQ	Boone, Iowa.....	Crary Hardware Co.....	226	10	E.
KPGB	Utica, Nebr.....	Headreder Radio Supply Co.....	224	10	E.
KPGX	Orange, Tex.....	First Presbyterian Church.....	250	500	E.
KPGZ	Berrien Springs, Mich.....	Emmanuel Missionary College.....	268	10	E.
KPHA	Gunnison, Colo.....	Western State College of Colorado.....	252	50	E.
KPHB	Hood River, Oreg.....	Rialto Theater.....	280	5	E.
KPHD	St. Joseph, Mo.....	Utz Radio & Electric Co.....	226	100	E.
KPHF	Shreveport, La.....	Central Christian Church.....	266	150	E.
KPHH	Neah Bay, Wash.....	Ambruse A. McCue.....	261	50	E.
KPHI	Santa Barbara, Calif.....	Fallon & Co.....	360	100	E.
KPHR	Seattle, Wash.....	Star Electric & Radio Co.....	283	50	E.
KPHS	Lihue, Hawaii.....	Clifford J. Dow.....	275	30	E.
KPHX	Hutchinson, Kans., 907 E. First St.....	Robert W. Nelson.....	229	150	E.
KFI	Los Angeles, Calif., Tenth and Hope Sts.....	Earle C. Anthony (Inc.).....	466	500	R.
KFID	Iota, Kans.....	Ross Arbuckle's Garage.....	246	20	E.
KFIF	Portland, Oreg.....	Benson Polytechnic Institute.....	360	100	E.
KFIL	Louisburg, Kans.....	Windisch Electric Farm Equipment Co.....	234	30	E.
KFIO	Spokane, Wash.....	North Central High School.....	252	50	F.
KFIQ	Yakima, Wash.....	Yakima Valley Radio Broadcasting Association.....	242	50	E.
KFIU	Juneau, Alaska.....	Alaska Electric Light & Power Co.....	226	10	E.
KFIX	Independence, Mo.....	Reorganized Church of Jesus Christ of Latter Day Saints.....	240	250	E.
KFIZ	Fondulac, Wis.....	Daily Commonwealth and Oscar A. Huelshman.....	273	100	E. W.
KFJB	Marshalltown, Iowa.....	Marshall Electric Co.....	245	10	E.
KFJC	Seattle, Wash.....	Seattle Post-Intelligencer.....	270	100	E.
KFJF	Oklahoma City, Okla.....	National Radio Manufacturing Co.....	252	20	E.
KFJI	Astoria, Oreg.....	Liberty Theater.....	252	10	E.
KFJK	Bristow, Okla.....	Delano Radio & Electric Co.....	233	100	E.
KFJL	Ottumwa, Iowa.....	Hardage Manufacturing Co.....	242	10	E.
KFJM	Grand Forks, N. Dak.....	University of North Dakota.....	280	100	E.
KFJQ	.....do.....	Electric Construction Co., valley radio division.....	280	5	E.
KFJR	Stevensville, Mont (near).....	Ashley C. Dixon & Son.....	258	5	E.
KFJV	Dexter, Iowa.....	Thomas H. Warren.....	224	10	E.
KFJW	Towanda, Kans.....	Le Grand Radio Co.....	226	10	E.
KFJX	Cedar Falls, Iowa.....	Iowa State Teachers College.....	229	50	E.
KFJY	Fort Dodge, Iowa.....	Tunwall Radio Co.....	246	50	E.
KFJZ	Fort Worth, Tex.....	Texas National Guard, One hundred and twelfth Cavalry.....	254	20	E.
KFKA	Greeley, Colo.....	Colorado State Teachers College.....	243	50	E.
KFKB	Milford, Kans.....	Brinkley-Jones Hospital Association.....	286	500	E.
KFKQ	Conway, Ark.....	Conway Radio Laboratories.....	224	150	E.
KFKV	Butte, Mont., 3200 Rich- ardson St.....	F. F. Gray.....	283	50	E.
KFKX	Hastings, Nebr.....	Westinghouse Electric & Mfg. Co.....	288	500	E.
KFKZ	Colorado Springs, Colo.....	Nassor Bros. Radio Co.....	234	10	E.
KFLA	Butte, Mont., 1321 W. Platinum St.....	Abner R. Willson.....	253	5	E.
KFLB	Manominee, Mich.....	Signal Electric Manufacturing Co.....	245	5	K.
KFLD	Franklinton, La.....	Paul E. Greenlaw.....	234	20	E.
KFLE	Denver, Colo.....	National Education Service.....	268	25	F.
KFLH	Salt Lake City, Utah.....	Erickson Radio Co.....	261	50	E.
KFLP	Cedar Rapids, Iowa.....	Everette M. Foster.....	240	20	E.
KFLQ	Little Rock, Ark.....	Blizell Radio Shop.....	261	20	E.
KFLR	Albuquerque, N. Mex.....	University of New Mexico.....	254	100	E.
KFLU	San Benito, Tex.....	Rio Grande Radio Supply House.....	236	20	E.
KFLV	Rockford, Ill., 1508 Fourth Ave.....	A. T. Frykman.....	229	100	E.
KFLW	Missoula, Mont.....	Missoula Electric Supply Co.....	234	10	F.
KFLX	Galveston, Tex., 1214 For- tieth St.....	George R. Clough.....	240	10	K.
KFLY	Fargo, N. Dak.....	Fargo Radio Supply Co.....	231	20	E.
KFLZ	Alhambra, Iowa.....	Alhambra Radio Supply Co.....	232	20	E.

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

Call signal.	Location of station.	Operated and controlled by—	Wave length.	Power (watts).	Service.
KFMQ	Fayetteville, Ark.	University of Arkansas	263	100	E.
KFMR	Spoux City, Iowa	Morningside College	261	10	E.
KFMS	Duluth, Minn.	Fredmuth Department Store	275	100	E. W.
KFMT	Minneapolis, Minn., 2219 N. Bryant St.	George W. Young	231	5	E.
KFMU	San Marcos, Tex.	Stevens Bros.	240	20	E.
KFMW	Houghton, Mich., 127 Blanche St.	M. G. Sateren	266	50	E.
KFMX	Northfield, Minn.	Carlston College	283	500	E.
KFMY	Long Beach, Calif.	Boy Scouts of America	229	20	E.
KFMZ	Roswell, N. Mex.	Roswell Broadcasting Club	250	500	E.
KFNG	Coldwater, Miss.	Wooten's Radio Shop	254	10	E.
KFNH	Springfield, Mo.	State Teachers College	236	20	E.
KFNJ	Warrensburg, Mo.	Warrensburg Electric Shop	234	50	E.
KFOA	Seattle, Wash.	Rhodes Co.	455	500	E.
KFSG	Los Angeles, Calif.	Echo Park Evangelistic Assn.	278	500	E.
KGB	Tacoma, Wash.	Tacoma Daily Ledger	252	50	E.
KGG	Portland, Oreg., 192 Park St.	Hallock & Watson Radio Service	360	50	E.
KGN	Portland, Oreg., 1558 E. Taylor St.	Northwestern Radio Mfg. Co.	350	100	E.
KGO	Oakland, Calif.	General Electric Co.	312	1,000	E.
KGU	Honolulu, Hawaii, Waikiki Beach.	Marion A. Mulrony	360	500	E.
KGW	Portland, Oreg.	Portland Morning Oregonian	492	500	E. M. W.
KGY	Lacey, Wash.	St. Martins College	258	5	E.
KHJ	Los Angeles, Calif.	Times-Mirror Co.	595	500	E. W.
KHQ	Seattle, Wash., 2020 Thirteenth Ave.	Louis Wasmer	350	100	E.
KIQ	Stockton, Calif., 615 E. Main St.	C. O. Gould	360	5	E.
KJR	Seattle, Wash., 1828 Sixth Ave.	Northwest Radio Service Co.	283	50	E. W.
KJS	Los Angeles, Calif., 536 S. Hope St.	Bible Institute of Los Angeles	360	750	E.
KLS	Oakland, Calif., 2201 Telegraph Ave.	Warner Bros. Radio Supplies Co.	360	250	E.
KLX	Oakland, Calif.	Tribune Publishing Co. (Oakland Tribune.)	509	500	E.
KLZ	Denver, Colo., 1534 Glenarm Place.	Reynolds Radio Co.	360	500	E. M. W.
KMJ	Fresno, Calif.	San Joaquin Light & Power Corporation.	273	50	E. W.
KMO	Tacoma, Wash., 818 N. L St.	Love Electric Co.	360	10	E.
KNT	Aberdeen, Wash.	Grays Harbor Radio Co.	263	250	E.
KNV	Los Angeles, Calif., 815 S. Main St.	Radio Supply Co.	256	100	E.
KNX	Los Angeles, Calif., 216 W. Third St.	Electric Lighting Supply Co.	360	100	E.
KOB	State College, N. Mex.	New Mexico College of Agriculture and Mechanic Arts.	360	500	E. W.
KOP	Detroit, Mich.	Detroit Police Department	260	500	E.
KPO	San Francisco, Calif.	Hale Bros.	423	500	E.
KQP	Hood River, Oreg.	Apple City Radio Club	360	10	E.
KQV	Pittsburgh, Pa., 719 Liberty Ave.	Doubleday-Hill Electric Co.	360	250	E.
KQW	San Jose, Calif., 407 First St.	Charles D. Herrold	350	50	E. W.
KRE	Berkeley, Calif.	Berkeley Daily Gazette	275	50	E.
KSD	St. Louis, Mo.	Post-Dispatch	546	500	E. W.
KSS	Long Beach, Calif.	Prest & Dean Radio Co. and Radio Research Society of Long Beach, Calif.	360	20	E.
KTW	Seattle, Wash.	First Presbyterian Church	360	750	E.
KUO	San Francisco, Calif.	Examiner Printing Co.	360	150	E. M. W.
KUS	Los Angeles, Calif.	City Dye Works & Laundry Co.	360	100	E.
KUY	El Monte, Calif.	Coast Radio Co.	256	40	E.
KWG	Stockton, Calif., 530 E. Market St.	Portable Wireless Telephone Co.	360	100	E.
KWH	Los Angeles, Calif.	Los Angeles Examiner	360	500	E. M. W.
KXD	Modesto, Calif.	Modesto Herald Publishing Co.	262	5	E.
KYQ	Honolulu, Hawaii	The Electric Shop	360	20	E.
KYW	Chicago, Ill.	Westinghouse Electric & Mfg. Co.	535	1000	E. M. W.
KZM	Oakland, Calif., Thirteenth and Harrison Sts.	Preston D. Allen	360	50	E.
KZN	Salt Lake City, Utah	The Desert News	360	500	E. W.
KZV	Wenatchee, Wash.	Wenatchee Battery & Motor Co.	360	50	E. W.

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

Call signal.	Location of station.	Operated and controlled by—	Wave length.	Power (watts).	Service.
WAAC	New Orleans, La.	Tulane University	360	400	E.
WAAD	Cincinnati, Ohio	Ohio Mechanics Institute	360	25	E.
WAAP	Chicago, Ill.	Chicago Daily Drivers Journal	286	200	E. M. W.
WAAM	Newark, N. J., Bond St.	L. E. Nelson Co.	298	250	E. M. W.
WAAN	Columbia, Mo.	University of Missouri	254	50	E. W.
WAAW	Omaha, Nebr.	Omaha Grain Exchange	360	200	E. M.
WABA	Lake Forest, Ill.	Lake Forest College	260	100	E.
WABB	Harrisburg, Pa.	Lake Shore Tires Co.	296	10	E.
WABD	Dayton, Ohio	Parker High School	283	70	E.
WABE	Washington, D. C.	Y. M. C. A.	283	100	E.
WABG	Jacksonville, Fla.	Arnold Edwards Piano Co.	275	10	E.
WABH	Sandusky, Ohio	Lake Shore Tires Co.	340	20	E.
WABI	Bangor, Me.	Bangor Railway & Electric Co.	240	50	E.
WABK	Worcester, Mass.	First Baptist Church	252	10	E.
WABL	Storr, Conn.	Connecticut Agricultural College	283	100	E.
WABM	Saginaw, Mich.	F. E. Doherty Automotive & Radio Equipment Co.	234	100	E. W.
WABN	La Crosse, Wis.	Ott Radio (Inc.)	244	250	E.
WABO	Rochester, N. Y.	Lake Avenue Baptist Church	252	10	E.
WABP	Dayton, Ohio, 523 Wooster Ave.	Robert F. Weinig	286	100	E.
WABQ	Haverford, Pa.	Haverford College Radio Club	261	50	E.
WABR	Toledo, Ohio	Scott High School	270	50	E.
WABS	Newark, N. J., 117 Mulberry St.	Essex Mfg. Co.	244	50	E.
WABT	Washington, Pa.	Holtiday-Hall	232	100	E.
WABU	Camden, N. J.	Victor Talking Machine Co.	226	100	E.
WABV	Nashville, Tenn., 1312 Fifteenth Ave. S.	John H. De Witt	263	20	E.
WABW	Wooster, Ohio	College of Wooster	234	20	E.
WABX	Mount Clemens, Mich. (near)	Henry B. Joy	270	150	E.
WABY	Philadelphia, Pa., 815 Kimball St.	John Magaldi, Jr.	242	50	E.
WABZ	New Orleans, La.	Coliseum Place Baptist Church	263	50	E.
WBAA	West Lafayette, Ind.	Purdue University	360	250	E.
WBAD	Minneapolis, Minn., 31 S. Fifth St.	Sterling Electric Co.	360	100	E.
WBAH	Minneapolis, Minn., Seventh St. and Nicollet Ave.	The Dayton Co.	417	500	E.
WBAN	Paterson, N. J., 193 Ellison St.	Wireless Phone Corporation	244	100	E.
WBAO	Decatur, Ill.	James Millikin University	360	50	E.
WBAP	Fort Worth, Tex.	Wortham-Carter Publishing Co. (Star Telegram)	476	500	E. M. W.
WBAV	Columbus, Ohio, 146 N. Third St.	Erner & Hopkins Co.	390	500	E. W.
WBAX	Wilkes-Barre, Pa., 66 Gildersleeve St.	John H. Stouger, Jr.	360	20	E.
WBAY	New York, N. Y., 463 West St.	Western Electric Co.	492	500	E.
WBBA	Newark, Ohio	Newark Radio Laboratories	240	20	E.
WBBD	Reading, Pa., Fourth and Walnut Sts.	Barbey Battery Service	234	50	E.
WBBE	Syracuse, N. Y., 113 W. Raynor Ave.	Alfred R. Marcy	246	10	E.
WBBF	Atlanta, Ga.	Georgia School of Technology	270	500	E.
WBBG	Mattapoisett, Mass., 24 Vermilya St.	Irving Vermilya	240	100	E.
WBBH	Port Huron, Mich., 1511 Gordon St.	J. Irving Ball	246	50	E.
WBBI	Indianapolis, Ind., 1721 N. Somerset St.	Indianapolis Radio Club	234	20	E.
WBBJ	West Palm Beach, Fla.	Neel Electric Co.	258	50	E.
WBBK	Pittsburgh, Pa.	Kaufmann & Baer Co.	254	10	E.
WBBL	Richmond, Va.	Grace Covenant Church	283	10	E.
WBBM	Lincoln, Ill., 110 Park Place.	Frank Atlas Produce Co.	236	200	E.
WBBO	Rogers, Mich.	Michigan Limestone & Chemical Co.	250	500	E.
WBL	Anthony, Kans.	T. & H. Radio Co.	261	100	E.
WBS	Newark, N. J., 325 Central Ave.	D. W. May (Inc.)	360	20	E.
WBT	Charlotte, N. C., 1116 Realty Bldg.	Southern Radio Corporation	360	500	E. M. W.
WBZ	Springfield, Mass.	Westinghouse Electric & Mfg. Co.	337	1000	E.
WCAD	Canton, N. Y.	St. Lawrence University	280	250	E. W.

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

Call signal.	Location of station.	Operated and controlled by—	Wave length.	Power (watts).	Service.
WCAH	Columbus, Ohio, 321 W. Tenth St.	Entrekin Electric Co.	255	100	E.
WCAI	University Place, Nehr...	Nebraska Wesleyan University	360	500	E. W.
WCAK	Houston, Tex., 2504 Bagby St.	Alfred P. Daniel	363	50	E.
WCAL	Northfield, Minn.	St. Olaf College	300	500	E.
WCAM	Villanova, Pa.	Villanova College	300	150	E.
WCAO	Baltimore, Md.	Sanders & Stayman Co.	350	50	E. W.
WBBN	Wilmington, N. C., 25 N. Front St.	A. B. Blake	275	10	E.
WBBP	Petoskey, Mich.	Petoskey High School	246	10	E.
WBBQ	Pawtucket, R. I., 150 Exchange St.	Frank Crook	232	50	E.
WBBR	Rossville, N. Y.	Peoples Pulpit Association	244	500	E.
WCAF	Washington, D. C.	Chesapeake & Potomac Telephone Co.	459	500	E.
WCAR	San Antonio, Tex., 608 W. Evergreen St.	Alamo Radio Electric Co.	360	150	E.
WCAS	Minneapolis, Minn.	William Hood Dunwoody Industrial Institute	246	100	F.
WCAT	Rapid City, S. Dak.	South Dakota State School of Mines	240	100	E.
WCAU	Philadelphia, Pa., 1055 Market St.	Durham & Co.	286	100	E. W.
WCAV	Little Rock, Ark., 113 W. Capitol Ave.	J. C. Dice Electric Co.	300	20	E. W.
WCAX	Burlington, Vt.	University of Vermont	360	50	E.
WCAY	Milwaukee, Wis., 517 Grand Ave.	Kesselman O'Driscoll Co.	261	250	E. W.
WCAZ	Carthage, Ill.	Carthage College	246	50	E.
WCBA	Allentown, Pa., 1015 Allen St.	Charles W. Heimbsch	280	10	E.
WCBC	Ann Arbor, Mich.	University of Michigan	250	200	E.
WCBD	Zion, Ill.	Wilbur G. Voliva	345	500	E.
WCK	St. Louis, Mo.	Stix-Baer & Fuller Dry Goods Co.	360	100	E.
WCM	Austin, Tex.	University of Texas	360	500	E. M.
WCX	Detroit, Mich.	Detroit Free Press	317	500	E. M. W.
WDAE	Tampa, Fla.	Tampa Daily Times	360	250	E. M. W.
WDAF	Kansas City, Mo.	Kansas City Star	411	500	E. M. W.
WDAG	Amarillo, Tex.	J. Laurance Martin	263	100	E.
WDAH	El Paso, Tex.	Trinity Methodist Church (South)	265	50	E.
WDAK	Hartford, Conn.	The Courant	261	100	E.
WDAO	Dallas, Tex., Ervay and Corsicana Sts.	Automotive Electric Co.	360	50	E.
WDAP	Chicago, Ill.	Board of Trade	360	500	E. M. W.
WDAR	Philadelphia, Pa.	Lit Brothers	305	500	E.
WDAS	Worcester, Mass., 692a Main St.	Samuel A. Waite	360	5	E.
WDAU	New Bedford, Mass., 23 N. Water St.	Siccum & Kilburn	360	100	E.
WDAY	Fargo, N. Dak., 117 Broadway.	Radio Equipment Corporation	244	50	E. W.
WDBC	LANCASTER, Pa.	Kirk, Johnson & Co.	258	50	E. M.
WDM	Washington, D. C.	Church of the Covenant	284	50	E.
WDZ	Tuscola, Ill.	James L. Bush	278	10	E.
WEAA	Flint, Mich., Police Bldg.	Frank D. Fallain	260	10	E.
WEAF	New York, N. Y., 24 Walker St.	American Telephone & Telegraph Co.	492	500	E.
WEAH	Wichita, Kans.	Wichita Board of Trade	290	50	E. M. W.
WEAI	Ithaca, N. Y.	Cornell University	296	500	E.
WEAJ	Vermilion, S. Dak.	University of South Dakota	283	200	E.
WEAM	North Plainfield, N. J.	Borough of North Plainfield	252	100	E.
WEAN	Providence, R. I.	Shepard Co.	275	100	E. W.
WEAO	Columbus, Ohio	Ohio State University	300	500	E. M. W.
WEAP	Mobile, Ala., O'Gwyn Bldg.	Mobile Radio Co.	360	100	E. M. W.
WEAR	Baltimore, Md.	Baltimore American and News Publishing Co.	300	50	E. W.
WEAS	Washington, D. C.	Hecht Co.	300	100	E.
WEAU	Sixon City, Iowa	Davidson Bros. Co.	360	100	E. W.
WEAY	Houston, Tex.	Iris Theater	350	500	E. W.
WEB	St. Louis, Mo., 1110 Olive St.	Benwood Co.	360	500	E.
WEV	Houston, Tex., McKinley Ave. and San Jacinto St.	Hurlburt-Still Electrical Co.	350	50	E. W.
WEW	St. Louis, Mo.	St. Louis University	261	100	E. M. W.
WFAA	Dallas, Tex.	Dallas News and Dallas Journal	476	500	E. M. W.
WFAB	Syracuse, N. Y., 802 McBride St.	Carl F. Woese	234	100	E.
WFAF	Poughkeepsie, N. Y., 357	H. C. Spratley Radio Co.	360	20	E.

RADIO SERVICE BULLETIN.

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

Call signal.	Location of station.	Operated and controlled by—	Wave length.	Power (watts).	Service.
WFAH	Port Arthur, Tex., 637 Procter St.	Electric Supply Co.....	236	150	E.
WFAJ	Ashville, N. C., 25 Hanover St.	Hi-Grade Wireless Instrument Co.....	360	50	E.
WFAH	St. Cloud, Minn.....	Times Publishing Co.....	360	20	E. W.
WFAN	Hutchinson, Minn.....	Hutchinson Electric Service Co.....	360	100	E. M. W.
WFAQ	Cameron, Mo.....	Missouri Wesleyan College.....	360	10	E.
WFAT	Sioux Falls, S. Dak.....	New Columbus College.....	258	50	E.
WFAV	Lincoln, Nebr.....	University of Nebraska.....	275	500	E. M. W.
WFI	Philadelphia, Pa.....	Strawbridge & Clothier.....	395	500	E. M.
WGAL	Lancaster, Pa., 23 E. Orange St.	Lancaster Electric Supply and Construction Co.....	248	10	E.
WGAN	Pensacola, Fla., 216 W. Romana St.	Cecil R. Lloyd.....	360	50	E.
WGAQ	Shreveport, La., 909 Texas Ave.	Glenwood Radio Corporation.....	360	150	E.
WGAW	Altoona, Pa., 1918 W. Chestnut St.	Ernest C. Albright.....	261	100	E.
WGAZ	South Bend, Ind.....	South Bend Tribune.....	360	250	E.
WGI	Medford Hillside, Mass.....	American Radio and Research Corporation.....	360	500	E. M. W.
WGL	Philadelphia, Pa., 2303 N. Broad St.	Thomas F. J. Howlett.....	360	500	E.
WGR	Buffalo, N. Y.....	Federal Telephone & Telegraph Co.....	319	500	E. M. W.
WGV	New Orleans, La., 356 Barrone St.	Interstate Electric Co.....	242	100	E. M.
WGY	Schenectady, N. Y.....	General Electric Co.....	380	1000	E. W.
WHA	Madison, Wis.....	University of Wisconsin.....	360	500	E. M. W.
WHAA	Iowa City, Iowa.....	State University of Iowa.....	283	100	E.
WHAB	Galveston, Tex.....	Clark W. Thompson.....	310	200	E. W.
WHAD	Milwaukee, Wis.....	Marquette University.....	280	100	E.
WHAG	Cincinnati, Ohio.....	University of Cincinnati.....	273	100	E.
WHAI	Joplin, Mo., 112 W. Sixth St.	Haier Supply Co.....	283	250	E.
WHAK	Clarksburg, W. Va.....	Roberts Hardware Co.....	258	15	E.
WHAM	Rochester, N. Y.....	University of Rochester (Eastman School of Music)	253	100	E. M. W.
WHAP	Decatur, Ill., 109 S. Water St.	Otta and Kuhns.....	360	50	E.
WHAR	Atlantic City, N. J., Seventeen and one-half S. Virginia Ave.	Paramount Radio & Electric Co.....	231	10	F.
WHAS	Louisville, Ky.....	Courier-Journal and Louisville Times.....	400	500	E. W.
WHAV	Wilmington, Del., 405 Delaware Ave.	Wilmington Electrical Specialty Co.....	360	50	E.
WHAZ	Troy, N. Y.....	Rensselaer Polytechnic Institute.....	580	500	E.
WHB	Kansas City, Mo., Sweeney Bldg.	Sweeney School Co.....	411	500	E. M. W.
WHK	Cleveland, Ohio, 5005 Euclid Ave.	Radiovox Co.....	283	100	E.
WHN	New York, N. Y., 1540 Broadway.	George Schubel.....	360	100	E. W.
WIAB	Rockford, Ill., 320 Church St.	Joslyn Automobile Co.....	252	50	E.
WIAC	Galveston, Tex.....	Galveston Tribune.....	360	100	E. W.
WIAD	Ocean City, N. J., 6318 N. Park Ave.	Howard R. Miller.....	294	10	E.
WIAF	New Orleans, La., 139 N. Alexander St.	Gustav A. DeCortin.....	234	10	E.
WIAI	Springfield, Mo.....	Heer Stores Co.....	232	20	E. W.
WIAJ	Neenah, Wis., 425 Cherry St.	Fox River Valley Radio Supply Co.....	224	30	E.
WIAK	Omaha, Nebr.....	Journal-Stockman Co.....	278	200	E. M. W.
WIAO	Milwaukee, Wis., 415 Marshall St.	School of Engineering of Milwaukee.....	360	100	E.
WIAQ	Marian, Ind., 413 S. Washington St.	Chronicle Publishing Co.....	226	10	E.
WIAR	Paducah, Ky.....	Paducah Evening Sun.....	390	100	E.
WIAS	Burlington, Iowa, 216 N. Third St.	Rome Electric Co.....	390	100	E.
WIAU	Le Mars, Iowa.....	American Trust & Savings Bank.....	360	20	E.
WIK	McKeesport, Pa., 427 Olive St.	K. and L. Electric Co.....	234	100	E.
WIL	Washington D. C., 808 Ninth St.	Continental Electrical Supply Co.....	360	10	E.
WIP	Philadelphia, Pa.....	Gimbel Bros.....	500	500	E. W.
WJAD	Waco, Tex., 801 Austin St.	Jackson's Radio Engineering Laboratories.....	360	150	E.

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

Call signal.	Location of station.	Operated and controlled by—	Wave length.	Power (watts).	Service.
WJAK	Greentown, Ind.	Clifford L. White.	254	30	E.
WJAM	Cedar Rapids, Iowa, 332 Third Ave. West.	D. M. Perham.	268	20	E.
WJAN	Pecota, Ill.	Pecota Star.	280	100	E. W.
WJAQ	Topeka, Kans.	Capper Publications.	360	100	E.
WJAR	Providence, R. I.	The Outlet Co.	360	600	E. W.
WJAS	Pittsburgh, Pa., 963 Liberty Ave.	Pittsburgh Radio Supply House.	350	500	E.
WJAT	Marshall, Mo.	Kelley-Vawter Jewelry Co.	360	10	E.
WJAX	Cleveland, Ohio.	Union Trust Co.	390	500	E. M. W.
WJAZ	Chicago, Ill., 232 S. Michigan Ave.	Chicago Radio Laboratory.	448	1000	E.
WJD	Granville, Ohio.	Denison University.	229	50	E.
WJH	Washington, D. C., 812 Thirteenth St. N. W.	William P. Boyer Co.	273	50	E. M.
WJX	New York, N. Y., 1391 Sedgwick Ave.	Deforest Radio Telephone and Telegraph Co.	360	500	E.
WJY	New York, N. Y.	Radio Corporation of America.	405	500	E.
WJZ	do.	do.	455	500	E.
WKA	Cedar Rapids, Iowa.	H. F. Psar.	286	100	E.
WKAD	East Providence, R. I.	Charles Looff (Crescent Park).	240	10	E.
WKA	Wichita Falls, Tex., 725 Tenth St.	W. S. Radio Supply Co.	360	100	E.
WKAN	Montgomery, Ala.	United Battery Service Co.	226	15	E.
WKAP	Cranston, R. I.	Dutree W. Flint.	360	200	E.
WKAQ	San Juan, P. R.	Radio Corporation of Porto Rico.	360	100	E.
WKAR	East Lansing, Mich.	Michigan Agriculture College.	280	500	E. W.
WKA	Laconia, N. H.	Laconia Radio Club.	254	50	F.
WKA	Gainesville, Ga.	Brenau College.	280	10	E.
WKY	Oklahoma, Okla.	W K Y Radio Shop.	360	100	F.
WLAG	Minneapolis, Minn., 18 W. Franklin St.	Cutting & Washington Radio Corporation.	417	500	E. M. W.
WLAH	Syracuse, N. Y., 425 Brownell St.	Samuel Woodworth.	234	100	E.
WLAJ	Waco, Tex., 616 Austin Ave.	Waco Electrical Supply Co.	360	150	E. M.
WLA	Bellows Falls, Vt.	Vermont Farm Machine Corp.	360	100	E.
WLAL	Tulsa, Okla., 24 W. Second St.	Naylor Electrical Co.	300	100	E.
WLAP	Louisville, Ky.	W. V. Jordan.	300	15	E.
WLAQ	Kalamazoo, Mich., 108 Elm St.	Arthur E. Schilling.	283	10	E.
WLAV	Pensacola, Fla., 30 S. Palafox St.	Electric Shop.	264	15	E.
WLAW	New York, N. Y.	Police Department, city of New York.	360	300	E.
WLAX	Greencastle, Ind.	Putnam Electric Co. (Greencastle community broadcasting station).	251	10	E.
WLB	Minneapolis, Minn.	University of Minnesota.	360	5	E. M. W.
WLW	Cincinnati, Ohio.	Crosley Mfg. Co.	309	500	E. M. W.
WMAB	Oklahoma, Okla., 707 N. Broadway.	Radio Supply Co.	360	100	E.
WMAC	Cazenovia, N. Y., Fernwood St.	Clive B. Meredith.	261	200	E.
WMA	Dartmouth, Mass.	Round Hills Radio Corp.	360	100-500	E.
WMAH	Lincoln, Nebr., 144 N. Thirteenth St.	General Supply Co.	254	100	E.
WMAJ	Kansas City, Mo.	Drovers Telegram Co.	275	250	E. M. W.
WMAK	Lockport, N. Y.	Norton Laboratories.	360	500	E. W.
WMA	Trenton, N. J., 85 E. State St.	Trenton Hardware Co.	266	50	E.
WMAN	Columbus, Ohio.	First Baptist Church.	286	10	E.
WMA	Easton, Pa., 665 Northampton St.	Utility Battery Service.	248	150	E.
WMAQ	Chicago, Ill.	Chicago Daily News.	448	500	E.
WMAV	Auburn, Ala.	Alabama Polytechnic Institute.	250	500	E. M. W.
WMAW	Wahpeton, N. Dak.	Wahpeton Electric Co.	254	50	E.
WMA	St. Louis, Mo.	Kingshighway Presbyterian Church.	280	100	E.
WMAZ	Macon, Ga.	Murcor University.	268	50	E.
WMC	Memphis, Tenn.	Commercial Appeal.	500	500	E. M. W.
WMU	Washington, D. C.	Doubleday-Hill Electric Co.	261	50	E.
WNAC	Boston, Mass.	Shepard Stores.	278	100	E.
WNAD	Norman, Okla.	University of Oklahoma.	360	100	E.
WNAL	Omaha, Nebr., 5019 Capitol Ave.	R. J. Rockwell.	266	20	E.
WNAN	Syracuse, N. Y., 207 E. Jefferson St.	Syracuse Radio Telephone Co.	296	100	E.
WNAP	Springfield, Ohio.	Wittenberg College.	231	100	E.
WNAD	Charleston, S. C.	Charleston Radio Electric Co.	360	10	E.

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

Call signal.	Location of station.	Operated and controlled by—	Wave length.	Power (watts).	Service.
WNAT	Philadelphia Pa., 827 Spring Garden.	Lennig Brothers Co.....	360	250	E.
WNAV	Knoxville, Tenn.....	Peoples Telephone & Telegraph Co....	238	500	E. W.
WNAW	Fort Monroe, Va.....	Peninsular Radio Club.....	360	5	E.
WNAX	Yankton, S. Dak.....	Dakota Radio Apparatus Co.....	244	100	E. W.
WNJ	Albany, N. Y.....	Shotton Radio Mfg. Co.....	360	55	E.
WOAC	Lima, Ohio, 404 N. Main St.	Maus Radio Co.....	268	50	E.
WOAD	Sigourney, Iowa.....	Friday Battery & Electric Corp.....	360	20	E.
WOAE	Fremont, Nebr.....	Midland College.....	360	20	E.
WOAF	Tyler, Tex.....	Tyler Commercial College.....	360	10	E.
WOAG	Belvidere, Ill.....	Apollo Theatre.....	278	100	E.
WOAH	Charleston, S. C., 267 King St.	Palmetto Radio Corporation.....	360	100	E.
WOAI	San Antonio, Tex.....	Southern Equipment Co.....	385	500	E. W.
WOAL	Webster Groves, Mo.....	William E. Woods.....	220	500	E.
WOAN	Lawrenceburg, Tenn.....	James D. Vaughn.....	360	150	E.
WOAO	Mishawaka, Ind.....	Lyradon Mfg. Co.....	360	60	E.
WOAP	Kalamazoo, Mich.....	Kalamazoo College.....	283	50	E.
WOAR	Kenosha, Wis., 1066 Sheridan Road.	Kerry P. Landarow.....	228	50	E.
WOAT	Wilmington, Del., 215 Market St.	Boyd M. Hamp.....	360	50	E.
WOAV	Erie, Pa.....	Pennsylvania National Guard, One hundred and twelfth Infantry.	242	100	E.
WOAW	Omaha, Nebr.....	Woodmen of the World.....	526	500	E. W.
WOAX	Trenton, N. J., 600 Ingham Ave.	Franklyn J. Wolf.....	240	500	E.
WOC	Davenport, Iowa.....	Palmer School of Chiropractic.....	494	500	E. W.
WOI	Ames, Iowa.....	Iowa State College.....	360	100	E. M. W.
WOK	Pine Bluff, Ark.....	Pine Bluff, Co.....	360	500	E.
WOO	Philadelphia, Pa.....	John Wanamaker.....	509	500	E. M. W.
WOQ	Kansas City, Mo.....	Western Radio Co.....	360	500	E. M. W.
WOR	Newark, N. J.....	L. Bamberg & Co.....	405	500	E.
WOS	Jefferson City, Mo.....	Missouri State Marketing Bureau.....	441	500	E. M. W.
WPAB	State College, Pa.....	Pennsylvania State College.....	283	500	E.
WPAC	Okmulgee, Okla., 210 Tiger Bldg.	Donaldson Radio Co.....	360	200	E.
WPAH	Waupaca, Wis.....	Wisconsin Department of Markets.....	360	500	E. M. W.
WPAJ	New Haven, Conn.....	DocLittle Radio Corporation, 89 Center St.	268	10	E.
WPAK	Agricultural College, N. Dak.	North Dakota Agricultural College....	360	50	E. W.
WPAL	Columbus, Ohio, 114 N. Third St.	Avery & Loeb Electric Co.....	286	100	E.
WPAM	Topeka, Kans., 700 Kansas Ave.	Auerbach & Guettel.....	360	100	E.
WPAP	Winchester, Ky., 222 Lexington Ave.	Theodore D. Phillips.....	360	35	E.
WPAQ	Frostburg, Md.....	General Sales & Engineering Co.....	360	10	E.
WPAT	El Paso, Tex.....	St. Patrick's Cathedral.....	360	20	E.
WPAU	Moorhead, Minn.....	Concordia College.....	360	20	E. W.
WPAZ	Charleston, W. Va.....	John R. Koch.....	278	10	E.
WPG	New Lebanon, Ohio.....	Nushawg Poultry Farm.....	234	50	E. M. W.
WQAA	Parkeburg, Pa.....	Horace A. Beale, Jr.....	360	500	E.
WQAC	Amarillo, Tex., 108 E. Eighth St.	E. B. Gish.....	360	100	E.
WQAD	Waterbury, Conn., 59 W. Maine St.	Whitall Electric Co.....	242	50	E.
WQAE	Springfield, Vt.....	Moore Radio News Station.....	275	50	E.
WQAF	Sandusky, Ohio.....	Sandusky Register.....	240	5	E.
WQAH	Lexington, Ky.....	Brock - Anderson Electrical Engineering Co.	254	10	E.
WQAL	Mattoon, Ill.....	Coles County Telephone & Telegraph Co.	238	10	E.
WQAM	Miami, Fla.....	Electrical Equipment Co.....	283	100	E.
WQAN	Seranton, Pa.....	Seranton Times.....	280	50	E. W.
WQAO	New York, N. Y.....	Calvary Baptist Church.....	360	100	E.
WQAQ	Abilene, Tex.....	West Texas Radio Co. (Abilene Daily Reporter).	360	100	E.
WQAS	Lowell, Mass. 108 Merrimack St.	Prince-Walter Co.....	266	100	E.
WQAV	Greenville, S. C.....	Huntington & Guerry (Inc.).....	258	15	E. W.
WQAW	Washington, D. C.....	Catholic University.....	236	5	E.
WQAX	Peoria, Ill.....	Radio Equipment Co.....	360	100	E.
WRAA	Houston, Tex.....	Rice Institute.....	360	200	E.
WRAD	Marion, Kans.....	Taylor Radio Shop.....	248	10	E.
WRAF	Laporte, Ind.....	The Radio Club.....	224	20	E.

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

Call signal.	Location of station.	Operated and controlled by—	Wave length.	Power (watts).	Service.
WRAM	Galesburg, Ill.	Lombard College	244	250	E.
WRAN	Waterloo, Iowa	Black Hawk Electrical Co.	238	10	E.
WRAO	St. Louis, Mo., 5735 Bartmer Ave.	St. Louis Radio Service Co.	360	10	F.
WRAV	Yellow Springs, Ohio	Antioch College	242	100	E.
WRAW	Reading, Pa.	Avenue Radio Shop	238	10	E.
WRAX	Gloucester City, N. J.	Flexon's Garage	268	100	E.
WRAY	Seranton, Pa., 110 Spruce St.	Radio Sales Corporation	280	100	E. W.
WRAZ	Newark, N. J., 89 Lehigh Ave.	Radio Shop of Newark	233	50	E.
WRC	Washington, D. C.	Radio Corporation of America	489	500	E.
WRK	Hamilton, Ohio	Doron Bros. Electrical Co.	390	200	E.
WRL	Schenectady, N. Y.	Union College	390	500	E.
WRM	Urbana, Ill.	University of Illinois	390	500	E.
WRR	Dallas, Tex.	City of Dallas, Police and Fire Signal Department	350	20	E. W.
WRW	Tarrytown, N. Y.	Tarrytown Radio Research Laboratory	273	150	E.
WSAB	Cape Girardeau, Mo.	Southeast Missouri State Teachers College	360	100	F.
WSAC	Clemson College, S. C.	Clemson Agricultural College	360	500	E.
WSAD	Providence, R. I., 60 Derrance St.	J. A. Foster Co.	261	100	E.
WSAG	St. Petersburg, Fla.	Loren V. Davis and George Prestman, St.	244	10	E.
WSAH	Chicago, Ill., 4801 Woodlawn Ave.	A. G. Leonard, Jr.	248	500	E.
WSAI	Cincinnati, Ohio	United States Playing Card Co.	309	500	E.
WSAJ	Grove City, Pa.	Grove City College	360	250	E.
WSAL	Brookville, Ind.	Franklin Electric Co.	246	50	E.
WSAN	Allentown, Pa.	Allentown Radio Club	229	10	E.
WSAR	Fall River, Mass.	Doughty & Welch Electrical Co.	254	10	E.
WSAT	Plainview, Tex.	Donohoe-Ware Hardware Co.	268	20	E.
WSAW	Canandaigua, N. Y.	John J. Long, Jr.	275	50	E.
WSAX	Chicago, Ill.	Chicago Radio Laboratory	268	20	E.
WSAY	Port Chester, N. Y.	Port Chester Chamber of Commerce	233	100	E.
WSAZ	Pomeroy, Ohio	Chase Electric Shop	258	50	E.
WSB	Atlanta, Ga.	Atlanta Journal	429	500	E. M. W.
WSL	Utica, N. Y., 26 Bank Place	J. & M. Electric Co.	273	100	E. M.
WSY	Birmingham, Ala.	Alabama Power Co.	360	500	E. W.
WTAB	Fall River, Mass.	Fall River Daily Herald Publishing Co.	248	10	E.
WTAC	Johnstown, Pa., Washington St.	Penn Traffic Co.	360	150	E.
WTAF	New Orleans, La., 2222 Lapeyrouse St.	Louis J. Gallo	268	20	E.
WTAG	Providence, R. I., 84 Weybosset St.	Kern Music Co.	258	10	E.
WTAH	Belvidere, Ill.	Carmen Ferro	236	10	E.
WTAJ	Portland, Me.	The Radio Shop	236	10	E.
WTAL	Toledo, Ohio	Toledo Radio & Electric Co.	252	10	E.
WTAM	Cleveland, Ohio	Willard Storage Battery Co.	350	1,000	E.
WTAN	Mattcon, Ill.	Orndorff Radio Shop	240	100	E.
WTAP	Cambridge, Ill.	Cambridge Radio & Electric Co.	242	50	E.
WTAQ	Osseo, Wis.	S. H. Van Gorden & Son	236	100	E.
WTAR	Norfolk, Va.	Reliance Electric Co.	280	100	E.
WTAS	Elgin, Ill. (near), R. F. D. No. 5, Box 75	Charles E. Erbstein	286	500	E.
WTAT	Boston, Mass. (portable), 39 Boylston St.	Edison Electric Illuminating Co.	244	100	E.
WTAU	Tecumseh, Nebr.	Ruegg Battery & Electric Co.	360	10	E.
WTAW	College Station, Tex.	Agricultural and Mechanical College of Texas	280	50	E.
WTAX	Streator, Ill.	Williams Hardware Co.	231	50	E.
WTAY	Oak Park, Ill.	Ionar-Oak Leaves Broadcasting Station	226	15	E.
WTAZ	Lambertville, N. J.	Thomas J. McGuire	283	15	F.
WTG	Manhattan, Kans.	Kansas State Agricultural College	390	1,000	W.
WWAB	Trenton, N. J.	Hoentig, Swern & Co.	226	10	E.
WWAC	Waco, Tex.	Sanger Bros.	360	50	E.
WWAD	Philadelphia, Pa., 2215 N. Broad St.	Wright & Wright (Inc.)	360	100	E.
WWAB	Joliet, Ill.	Alamo Dance Hall	227	500	E.
WWAF	Camden, N. J., 521 Market St.	Galvin Radio Supply Co.	296	100	E.
WWAO	Houghton, Mich.	Michigan College of Mines	244	250	E.
WWI	Dearborn, Mich.	Ford Motor Co.	273	500	E.

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CONFERENCE ON SHIP AND SHORE COMMUNICATION.

A conference was held in the office of the supervisor of radio, New York, on January 11, 1924, with steamship and radio officials and representatives of other Government departments to determine what proper action could be taken to reduce the interference with the broadcasting service caused by coast stations and ship stations along the Atlantic coast and Gulf.

The members of the conference recommended a reallocation of wave lengths to several of the Atlantic coast stations. The opinion prevailed that the use of the 450 meter wave length by ships should be discontinued, as this wave length is within the band of Class B broadcasting stations and ships be required to use 600 and 706 meters. It was also recommended that as far as possible communications with ships be conducted through continuous wave channels. As soon as some minor adjustments can be made the report will be submitted to the Secretary of Commerce for his consideration and approval if he finds that the recommendations can be legally made effective.

CONFERENCE ON RADIATING RECEIVING SETS.

A conference was held at the Engineers Club, New York City, on the evening of January 16 to discuss ways and means of curbing the radiation interference evil. The conference was attended by prominent radio engineers and editors of radio publications. It was the unanimous opinion of those present that radiating receiving sets were causing a large proportion of the interference with broadcasting, and that some immediate steps should be taken to remedy this condition.

Two committees were selected—a technical committee to furnish diagrams of nonradiating receiving sets and diagrams showing how radiating receiving sets could be converted into nonradiating receiving sets and also furnish other technical information which would be useful in an educational campaign and a committee on publicity for the purpose of widely disseminating this information. It was the opinion of those present that such an educational campaign would be more effective at this time than any legislation covering receiving apparatus.

GOVERNMENT DECREE REGULATING RADIO INSTALLATIONS IN ECUADOR.

The following item relative to a new decree of the national Government regulating the installation and use of wireless telephonic and telegraphic apparatus is translated from the December 1, 1923, issue of the Boletín de la Cámara de Comercio de Caracas:

On June 23, 1923, an executive decree was published relative to radio telephony and telegraphy, the decree of March 1, 1920, upon this subject being revoked. According to the new regulations no private or official individual company or institution may install within the Republic any radio apparatus capable of intercepting communications sent by stations pertaining to the Government. The use, however, of wireless telephone apparatus of wave lengths not exceeding 500 meters is permitted for business or educational purposes. In order to introduce apparatus for radio telephony, it is necessary that the request for removing the apparatus from the customhouse be sent, together with a description of each piece of the equipment, to the Minister of Telegraphy for his approval. Without the approval of the latter the customs authorities may not release the equipment.

INTERFERENCE WITH DISTRESS SIGNALS.

The bureau recently has received several reports of interference with distress (SOS) signals, and operators are hereby warned to be extremely careful not to call or transmit signals which are not of assistance after hearing a distress signal. Any operator reported to the bureau for violation of the law in this regard may expect to be dealt with severely. Section 5 of the act of August 13, 1912, is quoted herewith:

That every license granted under the provisions of this act for the operation or use of apparatus for radio communication shall prescribe that the operator thereof shall not willfully or maliciously interfere with any other radio communication. Such interference shall be deemed a misdemeanor, and upon conviction thereof the owner or operator, or both, shall be punishable by a fine of not to exceed \$300 or imprisonment for not to exceed one year, or both.

DETAILS REGARDING STATION AT TEGUCIGALPA.

The bureau has been informed of the following particulars of the Technical

and 10 continuous wave transmitters are available on 3,450 meters, with the 1 kilowatt set also tuned to 2,350 meters for duplex and ship work. Effective immediately Tegucigalpa will call for ships to answer on either spark 600 meters or continuous wave 2,300 meters at 1, 2, 5, 8, 9, and 10 a. m., 1.30, 3, 4, 7.15, and 11 p. m. daily, ninth meridian time, and will listen for ships on 600 meters each 15 minutes on the hour and for ships on 2,300 meters each 15 minutes on the half-hour when not otherwise occupied. Tegucigalpa wave length for ship communication will be 2,350 meters continuous wave, and two vessels may be worked simultaneously, either spark or continuous wave.

INTERNATIONAL ICE-PATROL SERVICE.

For the purpose of carrying on the International Ice Observation and Ice-Patrol Service provided for by the International Convention for the Safety of Life at Sea, London, 1913-14, the U. S. Coast Guard cutters *Tampa* and *Modoc* have been detailed for this service.

The object of the Ice Patrol Service is to locate the icebergs and field ice nearest to the trans-Atlantic steamship lane. It will be the duty of the patrol vessels to determine the southerly, easterly, and westerly limits of the ice and to keep in touch with these fields as they move to the southward, in order that radio messages may be sent out daily, giving the whereabouts of the ice, particularly the ice that may be in the immediate vicinity of the regular trans-Atlantic steamship lanes.

During the months of March, April, May, and June, and as much longer as necessary, these two vessels will obtain fuel and other necessary supplies at Halifax, Nova Scotia. They will alternate on patrol, making alternate cruises of about 15 days in the ice region; the 15 days to be exclusive of time occupied in going to and from base. The movements of the vessel will be so regulated that on the 15th day after reaching the ice region the vessel on patrol will be relieved by the second vessel, if possible, at which time the first vessel will proceed to base, replenish her fuel supply, and return in time to relieve the other vessel at the end of the latter's 15-day cruise. It is important that the patrol be continuous, and the vessel on patrol will not leave her station until relieved by the other vessel unless it is absolutely necessary to do so.

Having located the ice, the patrol vessel will send the following daily radio broadcast. All time in radiograms will be in seventy-fifth meridian time: (a) At 6 a. m. and 6 p. m. (seventy-fifth meridian time) ice information will be sent broadcast by radio on 600 meters (spark). These broadcasts will be sent three times, with an interval of two minutes between each. *Broadcasts on spark will be eliminated as soon as possible, and all vessels should equip themselves with receivers capable of continuous wave reception.* (b) At 7 a. m. and 7 p. m. (seventy-fifth meridian time) ice information will be sent broadcast by radio on 185 kilocycles continuous wave (1,621 meters). These broadcasts will be sent three times, with an interval of two minutes between each. (c) Ice information will be given by radio at any time to any ship with which the patrol vessel can communicate. Such information will be furnished as regular radio traffic (without charge) on commercial traffic frequencies (wave lengths).

Ice information will be given in as plain, concise English as practicable and will state in the following order: (a) Position of patrol vessel; (b) location and description of ice; (c) other data.

The ice-patrol vessels general radio call letters are NIDK. This is a special call for the vessel actually on patrol and must not be confused with the regular call letters of the individual vessels.

The work of the U. S. Coast Guard cutters engaged on this ice-patrol duty will be greatly facilitated if the principal trans-Atlantic steamships report the following data by radio to the patrol vessels: (a) Icebergs or obstructions sighted, giving date, time, latitude, longitude, and direction of drift of an iceberg, together with the temperature of the water at the time. (b) Surface temperature of the sea water every four hours when between latitude 39° N. and 48° N. and crossing longitude 52° W. and 54° W. when bound either east or west and giving the latitude and longitude, course, and speed at time of observation. These data will facilitate the drawing of a temperature curve which will be useful in locating the branches of the Labrador current.

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STANDARD FREQUENCY STATIONS.

As a result of measurements by the Bureau of Standards upon the transmitted waves of radio transmitting stations, data are given in each month's Radio Service Bulletin on stations which 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. The broadcasting stations included in the list below have, with rare exceptions, attained the goal of varying not more than 2 kilocycles from the assigned frequency as recommended by the Second National Radio Conference (reported in April, 1923, RADIO SERVICE BULLETIN).

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 Frequency and Their Utilization. A copy of this 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 (1923-4).	Number of times measured.	Greatest deviation from assigned frequency since Dec. 16, 1923.	Average deviation from assigned frequency.
						<i>Per ct.</i>	<i>Per ct.</i>
WQL	Radio Corporation of America.	Coram Hill, Long Island, N. Y.	17.13	Oct. 8-Jan. 15...	34	0.2	0.2
NSS	U. S. Navy.....	Annapolis, Md.....	17.50	Aug. 24-Jan. 15..	63	.2	.2
WQK	Radio Corporation of America.	Rocky Point, Long Island, N. Y.	18.21	.....do.....	34	1.2	.3
WGG	Do.....	Tuckerton, No. 1, N. J.	18.85	.....do.....	89	.2	.2
WII	Do.....	New Brunswick, N. J.	22.04	Oct. 1-Jan. 15...	57	.6	.3
WSO	Do.....	Marion, Mass.....	25.80	Aug. 21-Jan. 15..	75	.3	.3
WWJ	Detroit News.....	Detroit, Mich.....	580	Aug. 27-Jan. 15..	22	.2	.1
WCAP	Chesapeake & Potomac Telephone Co.	Washington, D. C..	640	Sept. 11-Jan. 15..	32	.2	.1
WSB	Atlanta Journal.....	Atlanta, Ga.....	700	Sept. 14-Jan. 15..	28	.1	.1
WGY	General Electric Co..	Schenectady, N. Y.	790	June 28-Jan. 15..	56	.3	.2
KDKA	Westinghouse Electric & Manf. Co.	East Pittsburgh, Pa.	920	Sept. 8-Jan. 15..	71	.2	.1

¹ Only one measurement since Dec. 16, 1923.

A DIRECTIVE TYPE OF RADIO BEACON AND ITS APPLICATION TO NAVIGATION.

The problem of improving the safety of marine and aerial navigation in time of fog has always been an important one and should be of interest to all and especially to those who travel by water or air. As is well known, beacon lights and foghorns are maintained along the coasts in order that shipping may be carried on with maximum safety. Unfortunately, however, during fog or thick weather, when the greatest need for these aids to navigation exists, they fail to serve their purpose adequately. Light does not penetrate the fog, and sound signals are unreliable and can not be depended upon to indicate direction or distance. One of the greatest improvements over beacon lights and foghorns has been the use of radio beacon signals sent out from the points where the beacon lights are located. By the use of a device on shipboard known as a

Recently the Bureau of Standards, in cooperation with the United States Signal Corps and United States Air Service, has developed an additional means for increasing the safety of both marine and aerial navigation. Briefly, the method may be outlined as follows: At the lighthouse or other desired point an ordinary type of radio transmitting set is installed. Two antennas of the coil type are used with this set. These two antennas consist of a single turn of wire each in the form of a vertical rectangle about 100 feet long by 50 feet wide. These two rectangular antennas are arranged to cross each other at an angle of 135° . The transmitting set is connected alternately to one of these antennas and then to the other. Due to the fact that this type of antenna transmits a maximum signal in one direction and practically no signal in a direction at right angles to this direction, a receiving set located along the line bisecting the angles formed by the two crossed-coil antennas will receive signals of equal intensity from the two coil antennas. If the receiving set is on an airplane or ship, the airplane or ship may thus be guided along this straight bisecting line either away from or toward the crossed-coil antenna beacon. Should the ship or airplane deviate either way from this course, the two signals from the two rectangular antennas will become noticeably unequal in intensity. The course, therefore, is maintained by navigating so that the two signals always remain equal in intensity. Such a course may thus be maintained regardless of visibility conditions and without dependence on landmarks or the magnetic compass and with no other apparatus than the ship's or airplane's ordinary radio receiving apparatus.

The paper describes development tests of this method both on shipboard and on an airplane. It was found reliable and effective and offers great promise, especially for cross-country aerial navigation. Recently an airplane was guided into Dayton, Ohio, from a distance of 100 miles from Dayton, the pilot navigating only by means of the signals from this type of directive radio beacon.

A complete description of the apparatus used and the results of these tests is given in Bureau of Standards Scientific Paper No. 480, entitled "A Directive Type of Radio Beacon and its Application to Navigation," by F. H. Engel and F. W. Dunmore, which has just been issued. A copy of this paper may be purchased through the Superintendent of Documents, Government Printing Office, Washington, D. C., at a price of 5 cents.

TESTS OF RADIO RECEIVING SETS (IV).

The results of an investigation of the characteristics of radio receiving sets made by the Bureau of Standards in 1921 and 1922 are given in a series of letter circulars. The fourth and last of the series is Letter Circular No. 109, which has just been issued. This letter circular describes the results of tests of seven electron-tube receiving sets, some of them of a frequency range from about 30 to 300 kilocycles (10,000 to 1,000 meters) and others from about 80 to 1,700 kilocycles (3,750 to 175 meters). The third of the series, Letter Circular 102, described the results of tests on a number of short-wave regenerative receiving sets; the second of the series, Letter Circular 93, gave the results of tests on a number of receiving sets which utilize crystal detectors, and the first of the series, Letter Circular 90, gave the results of tests on a number of electron-tube receiving sets for continuous-wave reception. Copies of Letter Circulars 90 and 93 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 for testing, 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.

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.

- R007.6 New French regulations encourage use of radio: Rules less irksome. *American Radio Journal*, 2, p. 6, January 19, 1924.
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