

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

## RADIO SERVICE BULLETIN.

## 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, 1922, and to the International List of Radiotelegraph Stations published by the Berns bureau.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Los Angeles, Calif. (see Wilmington, Calif.).					
Rogers, Mich. <sup>1</sup> .....	WHT	300, 450, 600, 1800	PG	N	Michigan Limestone & Chemical Co.
Wilmington, Calif. <sup>2</sup> .....	KSE		PG	N	R. C. A.

<sup>1</sup> Loc. (approximately) 0.83° 59' 00", N. 45° 25' 00"; range, 500; system, composite v. t. telephone and telegraph and composite spark, 1000; rates, ship service, 10 c. per word.

<sup>2</sup> Rates, ship service, 10 c. 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, 1922, and to the International List of Radiotelegraph Stations published by the Berns bureau.]

Name of vessel.	Call signal.	Rates.	Service.	Hours.	Owner of vessel.	Station controlled by—
Alleghany.....	KFGA		PG	N	Merchants & Miners Transportation Co.	
Arapahoe.....	KFFM		PG	X	Alaska Packers Association.	
Barbara C.....	KFFU	8	PG	X	W. R. Chamberlain...	R. C. A.
Chilkat.....	KFFN		PG	X	Alaska Packers Association.	
De Sota <sup>1</sup> .....	KFFT	8	PG	X	Standard Oil Co. of New Jersey.	Do.
Edward Sewall.....	KPFL		PG	X	Alaska Packers Association.	
George L. Olson.....	KFGU		PG	X	Oliver J. Olson.....	
Leroy <sup>2</sup> .....	KFGK	8	PG	X	Aiken Towboat & Barge Co.	S. O. R. S.
Phyllis.....	KFGR		PG	X	W. R. Chamberlain...	
Stanwood.....	KFFW	8	PG	X	do.	R. C. A.
Star of France.....	KFFH		PG	X	Alaska Packers Association.	
Star of Italy.....	KFFI		PG	X	do.	
Star of Russia.....	KFFJ		PG	X	do.	
Star of Scotland.....	KFFK		PG	X	do.	
St. Hellens <sup>3</sup> .....	KFFS	8	PG	X	Huasteca Petroleum Co.	Do.
Walnes.....	KPGT		PG		Inter Island Steam Navigation Co.	
Whitney Olson.....	KFGS		PG	X	Oliver J. Olson.....	

<sup>1</sup> Range, 300; system, R. C. A., 1000; w. l., 300, 600.

<sup>2</sup> Range, 150; system, Telefunken, 1000; w. l., 300, 450, 600.

<sup>3</sup> Range, 150; system, U. S. Navy, 1000; w. l., 300, 450, 600.

*Commercial land and ship stations, alphabetically by call signals.*

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

Call signal.	Name.	Call signal.	Name.		
KFFK	Star of Scotland.....	b	KFFW	Stanwood.....	b
KPFL	Edward Sewall.....	b	KFGA	Alleghany.....	b
KFFH	Star of France.....	b	KFGK	Leroy.....	b
KFFI	Star of Italy.....	b	KFGR	Phyllis.....	b
KFFJ	Star of Russia.....	b	KFGS	Whitney Olson.....	b
KFFM	Arapahoe.....	b	KPGT	Walnes.....	b
KFFN	Chilkat.....	b	KFGU	George L. Olson.....	b
KFFS	St. Hellens.....	b	KSE	Wilmington, Calif. (Los Angeles).....	c
			WHT	Rogers, Mich.....	c

### RADIO SERVICE BULLETIN.

*Broadcasting stations, alphabetically by names of cities.*

[Additions to the List of Radio Stations of the United States, edition of June 30, 1922.]

City.	Call signal.	City.	Call signal.
Arlington, Oreg.	KFGL	Moberly, Mo.	KFFP
Brookings, S. Dak.	KFDY	Neah Bay, Wash.	KFHH
Cincinnati, Ohio	WSAI	New York, N. Y.	WSAP
Columbus, Ohio	WWAJ	Peoria, Ill.	WQAX
Escanaba, Mich.	WRAK	Portland, Oreg.	KFIF
Greensboro, N. C.	WQAZ	Portsmouth, Va.	WQAQ
Gunnison, Colo.	KPHA	Providence, R. I.	WRAH
Hillsboro, Oreg.	KFFO	Seattle, Wash.	KFHR
Hood River, Oreg.	KPHB	Shreveport, La.	KFDX
Do.	KQP	Sparks, Nev.	KFRF
Kellogg, Idaho	KFEY	St. Croix Falls, Wis.	WRAL
Lamont, Iowa	KFFV	St. Louis, Mo.	KFEZ
McLeansboro, Ill.	WRAS	Winter Park, Fla.	WRAF
Minneapolis, Minn.	KFDZ		

*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, 1922.]

Call signal.	Station operated and controlled by—	Location of station.	Wave lengths.
KFDX	First Baptist Church	Shreveport, La.	360
KFDY	South Dakota State College of Agriculture and Mechanical Arts.	Brookings, S. Dak.	360
KFDZ	Harry O. Iverson.	Minneapolis, Minn., 2510 Thomas Avenue south.	360
KFEY	Bunker Hill & Sullivan Mining Co.	Kellogg, Idaho	360
KFEZ	American Society of Mechanical Engineers	St. Louis, Mo.	360
KFFO	Dr. E. H. Smith	Hillsboro, Oreg.	360
KFFP	First Baptist Church	Moberly, Mo.	360
KFHR	Nevada State Journal (Jim Kirk)	Sparks, Nev.	360
KFFV	Graceland College	Lamont, Iowa	360
KFGL	Arlington Garage	Arlington, Oreg.	360
KPHA	Colorado State Normal School	Gunnison, Colo.	360
KPHB	Rialto Theater	Hood River, Oreg.	360
KFHH	Ambrose A. McCue	Neah Bay, Wash.	360
KFHR	Star Electric & Radio Co.	Seattle, Wash.	360
KFIF	Benson Polytechnic Institute	Portland, Oreg.	360
KQP	Apple City Radio Club	Hood River, Oreg.	360
WQAQ	Portsmouth Kiwanis Club	Portsmouth, Va.	360
WQAX	Radio Equipment Co.	Peoria, Ill.	360
WQAZ	Greensboro Daily News	Greensboro, N. C.	360
WRAH	Stanley N. Reed	Providence, R. I.	360
WRAF	Winter Park Electric Construction Co.	Winter Park, Fla.	360
WRAK	Economy Light Co.	Escanaba, Mich.	360
WRAL	Northern States Power Co.	St. Croix Falls, Wis.	360
WRAS	Radio Supply Co.	McLeansboro, Ill.	360
WSAI	United States Playing Card Co.	Cincinnati, Ohio	360
WSAP	Seventh Day Adventist Church	New York, N. Y.	360
WWAJ	Columbus Radio Club	Columbus, Ohio	360

*Government land stations, alphabetically by names of stations.*

Additions to the List of Radio Stations of the United States, edition of June 30, 1922, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—

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## RADIO SERVICE BULLETIN.

*Government ship stations, alphabetically by names of stations.*

[Additions to the List of Radio Stations of the United States, edition of June 30, 1922, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Cambrai.....	WXA	.....	O	.....	U. S. Army.
Somme.....	WXB	.....	O	.....	Do.
Speedwell.....	NIZF	.....	O	X	Lighthouse Service, Department of Commerce.
Spruce.....	NIXD	.....	O	X	Do.

*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.
NDY	Dahlgren, Va. ....c	WXA	Cambrai.....b
NIZF	Speedwell.....b	WXB	Somme.....b
NIXD	Spruce.....b		

*Special land stations, alphabetically by names of stations.*

[Additions to the list of Radio Stations of the United States, edition of June 30, 1922.]

Station.	Call signal.	Wave lengths.	Station controlled by—
Avalon, Calif.....	6ZW	#60,375.....	Lawrence Mott, Santa Catalina Island.
Fort Lauderdale, Fla. ....	4ZJ	#60,375.....	John M. Anderson.
New Orleans, La.....	5ZAP	#60,375.....	Valdemar Jensen and Harry L. Egle, 137 South St. Patrick Street.
Portland, Oreg.....	7ZR	#60,375.....	Walter V. Russ, 831 Michigan Avenue.
Provo, Utah.....	6YD	#60,375.....	Brigham Young University.
Salt Lake City, Utah (airplane).	6XBE	Variable.....	Art Johnson, P. O. Box 772.
Tacoma, Wash.....	7XV	#60,375.....	Kilbourne & Clark Manufacturing Co.
Tulsa, Okla.....	5ZBF	#60,375.....	Tulsa Radio Co.

*Special land stations, grouped by districts.*

Call signal.	District and station.	Call signal.	District and station.
4ZJ	Fourth district; Fort Lauderdale, Fla.	6YD	Sixth district, continued:
5ZAP	Fifth district:	6ZW	Provo, Utah.
5ZBF	New Orleans, La.	7XV	Avalon, Calif.
	Tulsa, Okla.	7ZR	Seventh district:
6XBE	Sixth district:		Tacoma, Wash.
	Salt Lake City, Utah (airplane).		Portland, Oreg.

**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, 1922, and to the International List of Radiotelegraph Stations, published by the Berne bureau.]

ALITAK, ALASKA.—Range, 150.

BATANGAS, P. I.—W. l., 3,000.

CALAPAN, P. I (MINDORO).—Call signal KZAC.

CAPE MAY, N. J.—W. l., 300, 450, 600, 1,610.

CHESIK ISLAND, ALASKA.—Station operated and controlled by Pioneer Canneries (Inc.), 409 Colman Building, Seattle, Wash.

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DAGY, ALASKA.—W. I., 300, 550, 600.  
 KARLUK, ALASKA.—R. C. A.  
 KAWAHAE, HAWAII.—Hours, 7.30 a. m.—11 p. m.  
 KOGGIUNG, ALASKA (KUBX).—System, R. C. A.  
 KUSSLOP, ALASKA.—Loc. (approximately)  $0.151^{\circ} 22' 00''$ , N.  $60^{\circ} 20' 00''$ .  
 PORT ALTHORP, ALASKA.—Range, 300.  
 SIASCONSET, MASS.—System, R. C. A., 1000.  
 WARREN, ALASKA.—System, R. C. A., 1000; w. l., 300, 550, 600, 1,610.  
 Strike out all particulars of the following-named stations: Belfast, Me.; Jualin, Alaska; and Los Angeles, Calif. (KFR).

## 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, 1922, and to the International List of Radiotelegraph Stations, published by the Bureau.]

ACME.—System, R. C. A., 1000.  
 ADMIRAL DEWEY.—System, R. C. A., 1000; w. l., 300, 450, 600.  
 ADMIRAL FARRAGUT.—System, R. C. A., 1000.  
 ADMIRAL SCHLEY.—System, R. C. A., 1000.  
 ALEDO.—System, Navy, 1000; w. l., 300, 450, 600.  
 AMBRIDGE.—System, Navy-R. C. A., 1000; w. l., 300, 450, 600; hours, X; station operated and controlled by R. C. A.  
 ANNISTON CITY.—Station operated and controlled by I. W. T. Co.  
 ANVIL.—Howard N. Findley owner of vessel; station operated and controlled by owner of vessel.  
 ASTORIA.—Range, 150; system, Navy-Simon, 1000; w. l., 300, 450, 600.  
 AUSABLE.—Station operated and controlled by I. W. T. Co.  
 BALSAM.—W. I., 300, 450, 600.  
 BANTU.—System, R. C. A., 1000.  
 BESSEMER CITY.—System, R. C. A., 1000.  
 BIBCO.—System, Navy-Liberty, 1000.  
 BRADFORD.—Associated Oil Co. owner of vessel.  
 CALAWAIL.—Range, 300; system, Federal arc; w. l., 300, 600, 1,800; rates, 8 c. per word; station operated and controlled by F. T. Co.  
 CANANOVA.—W. I., 300, 450, 600.  
 CANIBAS.—System, R. C. A., 1000.  
 CAPTAIN A. F. LUCAS.—System, R. C. A., 1000.  
 CAROLYN.—Range, 200.  
 CARRABULLE.—Cuba Distilling Co., owner of vessel.  
 CASPER.—System, Navy, 1000.  
 CECIL COUNTY.—Station operated and controlled by R. C. A. (U. S. L.).  
 CHARLIE WATSON.—System, R. C. A., 1000; w. l., 300, 600.  
 CHESTER SUN.—Sun Oil Co., owner of vessel.  
 COALINGA.—Range, 500.  
 COLDWATER.—W. I., 300, 450, 600.  
 COMMERCIAL GUIDE.—Station operated and controlled by R. C. A.  
 COMMERCIAL PATHFINDER.—System, R. C. A., 1000; w. l., 300, 450, 600.  
 COMMERCIAL SPIRIT.—W. I., 300, 500, 600; rates, 8 c. per word.  
 COMMERCIAL TRADER.—Range, 200; station operated and controlled by R. C. A.  
 COTTONPLANT.—Name changed to F. A. Warner.  
 COVEDALE.—Munson S. S. Line, owner of vessel.  
 DEER LODGE.—W. I., 300, 450, 600; system, Navy-Liberty, 1000; station operated and controlled by S. O. R. S.  
 DELFINA.—Range, 300; system, Navy-Lowenstein, 1000; w. l., 300, 450, 600; station operated and controlled by R. C. A. (U. S. L.)  
 D. G. SCOFIELD.—System, R. C. A., 1000.  
 DISTRICT OF COLUMBIA.—Station operated and controlled by S. O. R. S.  
 DURANGO.—Range, 300; system, Federal arc; w. l., 300, 600, 1,800; station operated and controlled by S. O. R. S. (U. S. L.)  
 EASTERN COAST.—System, Navy-R. C. A., 1000.  
 EASTERN SAILOR.—Name changed to Peter Kerr; Columbia Pacific Shipping Co., owner of vessel.  
 ECLIPSE.—W. I., 300, 450, 600.  
 EDGAR F. LUCKENBACH.—Range, 300; w. l., 300, 450, 600.  
 EDWARD PIERCE.—W. I., 300, 450, 600.  
 EL ESTERO.—System, R. C. A., 1000.

**ETHAN ALLEN.**—Hours, X.  
**EURANA.**—Station operated and controlled by I. W. T. Co.  
**EVERGREEN CITY.**—W. I., 300, 450, 600.  
**FORT MCHENRY.**—Name changed to Vacoil.  
**FORTUNA.**—Station operated and controlled by I. W. T. Co.  
**FRIEDA.**—System, R. C. A., 1000; rates, 8 c. per word; station operated and controlled by R. C. A.  
**GARFIELD.**—W. I., 300, 450, 600.  
**GEORGE B. MACKENZIE.**—Call signal changed to KFGO.  
**GLEN RIDGE.**—W. I., 300, 450, 600.  
**GOOD WILL.**—Range, 300; system, R. C. A., 1000; w. I., 300, 600; service, PG; hours, X—rates 8 c. per word; station operated and controlled by R. C. A.  
**HADNOT.**—Station operated and controlled by S. O. R. S. (U. S. L.).  
**HAHATONKA.**—Station operated and controlled by S. O. R. S. (U. S. L.).  
**HALO.**—Station operated and controlled by S. O. R. S. (U. S. L.).  
**HALWAY.**—Station operated and controlled by S. O. R. S. (U. S. L.).  
**HICKMAN.**—Hours, X.  
**HUGOTON.**—Station operated and controlled by R. C. A. (U. S. L.).  
**HUGURNOT.**—System, R. C. A., 1000; w. I., 300, 450, 600.  
**JAMESTOWN.**—Station operated and controlled by R. C. A.  
**JOHANNA SMITH.**—Rates, North and South American service 4 c. per word, trans-oceanic service 8 c. per word.  
**KATHERINE.**—System, R. C. A., 1000.  
**KITCHEL.**—Name changed to Dunmore; P. Dougherty owner of vessel.  
**LAKE BRIDGE.**—Name changed to Cascade.  
**LAKE FAIRPORT.**—Range, 200; system, Navy-R. C. A., 1000; w. I., 300, 450, 600.  
**LAKE GERA.**—System, Navy-R. C. A., 1000; w. I., 300, 450, 600.  
**LAKE SEBAGO.**—System, Navy-Simon, 1000; w. I., 300, 450, 600; station operated and controlled by R. C. A.  
**LIBBY MAINE.**—W. I., 300, 450, 550, 600.  
**MANITOWOC.**—Station operated and controlled by I. W. T. Co.  
**MARICA.**—Name changed to Lillian Luckenbach; Luckenbach S. S. Co. owner of vessel.  
**MEDON.**—Name changed to Oduna; w. I., 300, 550, 600, 1800.  
**MELVILLE DOLLAR.**—W. I., 300, 450, 600.  
**MEVANIA.**—Station operated and controlled by S. O. R. S. (U. S. L.).  
**MILLER COUNTY.**—Sun Shipbuilding Co. owner of vessel.  
**MILLINOCKET.**—W. I., 300, 450, 600.  
**MINEOLA.**—System, R. C. A., 1000; w. I., 300, 450, 600.  
**MOSELLA.**—System, Federal arc, 1000 with chopper.  
**MUNDELTA.**—System, R. C. A., 480.  
**MUSKEGON.**—Station operated and controlled by I. W. T. Co.  
**NACOOCHIE.**—System, R. C. A., 1000; hours, X.  
**NEW HAVEN.**—W. I., 300, 460, 600.  
**NOMA.**—W. I., 300, 450, 525, 600; station operated and controlled by R. C. A.  
**NORTH KING.**—Alaska-Portland Packers Association owner of vessel.  
**OGONTZ.**—Station operated and controlled by I. W. T. Co. (U. S. L.).  
**OSCAR D. BENNETT.**—System, R. C. A., 1000.  
**PENNSYLVANIA SUN.**—Station operated and controlled by R. C. A.  
**PERFECTION.**—System, R. C. A., 1000; w. I., 300, 450, 600; Standard Transportation Co. owner of vessel.  
**PRINCESS.**—Name changed to Madison.  
**QUANTICO.**—System, R. C. A., 1000.  
**REDONDO (KYT).**—Rates, 8 c. per word; American Sugar Transit Corporation owner of vessel; station operated and controlled by R. C. A.  
**RICHMONCAL.**—System, Navy-R. C. A., 1000; w. I., 300, 450, 600; station operated and controlled by R. C. A.  
**RICHMOND (KDOQ).**—Aiken Towboat and Barge Co. owner of vessel.  
**ROSE CITY.**—System, R. C. A., 240.  
**SABINE SUN.**—Sun Oil Co. owner of vessel.  
**SAGADAHOC.**—Station operated and controlled by S. O. R. S.  
**SAGUACHE.**—System, Navy-Wireless Specialty Apparatus Co., 1000; w. I., 300, 450, 600.  
**SALINA.**—Station operated and controlled by S. O. R. S. (U. S. L.).  
**S. C. T. DODD.**—System, R. C. A., 1000.  
**SEA LION.**—System, R. C. A., 1000; rates, 8 c. per word.  
**SENATOR.**—Name changed to Admiral Fiske.

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SOCONY 94.—System, Navy—Marconi, 1000.  
 SPOKANE.—Name changed to Admiral Rogers; system, R. C. A., 1000.  
 STEEL VOYAGER.—Station operated and controlled by I. W. T. Co.  
 STORM KING (KDJM).—System, Navy—Lowenstein, 1000.  
 SUN.—Sun Oil Co. owner of vessel.  
 TIDEWATER.—Pocahontas Fuel Co. owner of vessel.  
 TUXPANOIL.—Station operated and controlled by S. O. R. S. (U. S. L.).  
 VENTURA.—System, Federal arc, 1000 with chopper.  
 WEST CELERON.—W. l., 300, 450, 600.  
 WEST NERIS.—W. l., 300, 450, 600.  
 WEST NIGER.—Station operated and controlled by R. C. A. (U. S. L.).  
 WEST TACOOK.—W. l., 300, 450, 600.  
 WILDWOOD.—Range, 300; system, Navy—Wireless Specialty Apparatus Co., 1000;  
 w. l., 300, 450, 600.  
 WINNEBAGO.—Station operated and controlled by I. W. T. Co.  
 W. R. CHAMBERLAIN, JR.—W. l., 300, 600; rates, 8 c. per word.  
 WYTHEVILLE.—System, Navy—Liberty, 1000.  
 Strike out all particulars of the following named vessels: Agron, Asunción, Babinda, Clausens, Colthrape, Eurana, Kiokee, Kiron, Kolda, Lake Hector, Mascotte, Nawitka, Nika, Santa Rita, and Wana.

## COMMERCIAL LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

KDID, *read* Oduna; KDIS, *read* Cascade; KDXA, *read* Vacoil; KGT, *read* Madison; KITV, *read* Dunmore; KNK, *read* Lillian Luckenbach; KUNT, call signal changed to KFGO; KUZZ, *read* Peter Kerr; KZAC, *read* Calapan, P. I. (Mindoro); WGE, *read* Admiral Rogers; WGS, *read* Admiral Fiske; WMEO, *read* F. A. Warner. Strike out all particulars following the call signals KELZ, KFR, KITS, KITT, KJA, KJG, KODP, KOKX, KOPM, KOQB, KOW, KUMR, KUMZ, KUVJ, KYX, WBR, WNN, and WTX.

## COMMERCIAL AIRPLANE STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1922, and to the International List of Radiotelegraph Stations, published by the Berns bureau.]

AIRLINE ARROW No. 1.—Strike out all particulars.

## BROADCASTING STATIONS, BY CALL SIGNALS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1922.]

KDYX (Honolulu, Hawaii).—W. l., add 485 (weather).  
 KDZQ (Denver, Colo.).—Station operated and controlled by William D. Pyle (Hal G. Nichols), 1247 Broadway.  
 KFCM (Richmond, Calif.).—Station operated and controlled by Richmond Radio Shop (Frank T. Doeing).  
 KFPQ (Colorado Springs, Colo.).—W. l., add 485 (weather).  
 KPHJ (Santa Barbara, Calif.).—Station operated and controlled by Fallon & Co.  
 KGW (Portland, Oreg.).—W. l., add 485 (weather).  
 KQW (San Jose, Calif.).—W. l., add 485 (weather).  
 KRE (Berkeley, Calif.).—Station operated and controlled by Berkeley Daily Gazette.  
 KSS (Long Beach, Calif.).—Station operated and controlled by Prest & Dean Radio Co. and Radio Research Society of Long Beach, Calif.  
 WCAD (Canton, N. Y.).—W. l., add 485 (weather).  
 WCAG (New Orleans, La.).—Station operated and controlled by Daily States Publishing Co. (Clyde R. Randall).  
 WCAJ (University Place, Nebr.).—W. l., 360 only.  
 WDAD (El Paso, Tex.).—W. l., 360 only.  
 WDAH (El Paso, Tex.).—Station operated and controlled by Trinity Methodist Church (South).  
 WDAP (Chicago, Ill.).—W. l., add 485 (market and weather).  
 WDAR (Philadelphia, Pa.).—W. l., changed to 400.  
 WEAX (Little Rock, Ark.).—W. l., 360 only.  
 WFAF (Poughkeepsie, N. Y.).—Station operated and controlled by H. C. Spratley Radio Co.  
 WFAM (St. Cloud, Minn.).—W. l., add 485 (weather).  
 WGAR (Fort Smith, Ark.).—W. l., 360 only.  
 WHAB (Galveston, Tex.).—Station operated and controlled by Clark W. Thompson.

WHAD (Milwaukee, Wis.).—W. I., 360 only.  
 WHN (Ridgewood, N. Y.).—W. I., add 485 (weather).  
 WIAY (Washington, D. C.).—W. I., add 485 (market).  
 WJAB (Lincoln, Nebr.).—Station operated and controlled by American Electric Co.  
 WJAJ (Dayton, Ohio).—W. I., add 485 (weather).  
 WKAL (Orange, Tex.).—W. I., add 485 (weather).  
 WKN (Memphis, Tenn.).—W. I., add 360.  
 WLAC (Raleigh, N. C.).—W. I., add 485 (market and weather).  
 WMAK (Lockport, N. Y.).—W. I., add 485 (weather).  
 WOAI (San Antonio, Tex.).—W. I., add 485 (weather).  
 WPAR (Beloit, Kans.).—Station operated and controlled by Ward Battery & Radio Co.  
 WRAY (Scranton, Pa.).—W. I., add 485 (weather).  
 WTAW (College Station, Tex.).—W. I., add 485 (market).  
 Strike out all particulars of the following-named stations: KDYB, Salt Lake City, Utah; KDYY, Denver, Colo.; KDZL, Ogden, Utah; KDZM, Centralia, Wash.; KFAS, Reno, Nev.; KFBV, Colorado Springs, Colo.; KFCO, Wallace, Idaho; KFGG, Astoria, Oreg.; KHD, Colorado Springs, Colo.; KLP, Los Altos, Calif.; KOG, Los Angeles, Calif.; KON, San Diego, Calif.; KQP, Hood River, Oreg.; KXS, Los Angeles, Calif.; KZI, Los Angeles, Calif.; WAH, El Dorado, Kans.; WBAB, Syracuse, N. Y.; WCAP, Decatur, Ill.; WCAQ, Defiance, Ohio; WEAC, Terre Haute, Ind.; WEAE, Blacksburg, Va.; WEAW, Anderson, Ind.; WFAD, Salina, Kans.; WFAS, Fort Wayne, Ind.; WGAB, Houston, Tex.; WLAM, Springfield, Ohio; WMB, Auburn, Me.; WNO, Jersey City, N. J.; WOAQ, Portsmouth, Va.; WOAY, Birmingham, Ala.; WRAJ, Pittsburgh, Pa.

#### 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, 1922, and to the International List of Radiotelegraph Stations, published by the Berne bureau.]

ASTORIA, OREG.—Call signal changed to NPE; W. I., 600, 975, 2700, 4525, 5000.  
 CAYEY, P. R.—Call signal changed to NAU.  
 Strike out all particulars of the following-named stations: Baltimore, Md.; Chatham, Mass. (regular station), Chatham, Mass. (compass station); Coco Solo, Canal Zone; Grand Island, La.; Miami, Fla.; North Head, Wash.; and Port Angeles, Wash.

#### 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, 1922, and to the International List of Radiotelegraph Stations, published by the Berne bureau.]

Strike out all particulars of the following-named vessels: Alameda, Alert, Brutus, Caesar, Canandaigua, Charles S. Osborne, Chicago, Coast Torpedo Boat No. 6, Columbia, Constellation (NEY), Constitution (NLZ), Culgoa, D-1, D-2, D-3, De Long, Dixie, Dolphin, Eagle 17, Eagle 31, F-2, F-3, G-2, G-3, G-4, Glacier, Graham, Gulfport, harbor tug No. 63, harbor tug No. 64, harbor tug No. 68, harbor tug No. 74, L-1, L-4, L-10, Leonidas, Long Beach, M-1, Maine, Minneapolis, Mochican, Monterey, N-4, N-5, N-6, N-7, Nanshan, Narragansett, Nero, Ozark, Ozette, Pawnee, Peoria, Potomac, Quincy, Raven, S-5, Saturn, S. P. 43 (Daraga), S. P. 54 (Patrol No. 6), S. P. 164 (May), S. P. 214 (Edithia), S. P. 249 (Hauoli), S. P. 265 (Pocomoke), S. P. 399 (Legonia), S. P. 493 (Cahill), S. P. 522 (Chas. Mann), S. P. 624 (Margaret), S. P. 573 (Easthampton), S. P. 642 (Felicia), S. P. 680 (Ardent), S. P. 681 (Breakwater), S. P. 707 (Endion), S. P. 714 (Galatea), S. P. 724 (Fearless), S. P. 726 (Orca), S. P. 765 (Adelante), S. P. 813 (Corona), S. P. 838 (John L. Lawrence), S. P. 909 (Eaglet), S. P. 951 (Utowanah), S. P. 1014 (Sea Rover), S. P. 1121 (Osborne), S. P. 1213 (Montauk), S. P. 1232 (Barnegat), S. P. 1234 (Cigarette), S. P. 2373 (Herreshoff Hull No. 322), S. P. 3218 (Resolute), S. P. 3297 (Winthrop), submarine chaser 62, submarine chaser 69, submarine chaser 71, submarine chaser 93, submarine chaser 104, submarine chaser 119, submarine chaser 121, submarine chaser 145, submarine chaser 147, submarine chaser 156, submarine chaser 177, submarine chaser 190, submarine chaser 195, submarine chaser 232, submarine chaser 237, submarine chaser 251, submarine chaser 253, submarine chaser 263, submarine chaser 264, submarine chaser 270, submarine chaser 273, submarine chaser 277, submarine chaser 278, submarine chaser 283, submarine chaser 284, submarine chaser 294, submarine chaser 298, submarine chaser 299, submarine chaser 303, submarine chaser 305, submarine chaser 308, submarine chaser 310, submarine chaser 332, submarine chaser 406, submarine chaser 409, submarine chaser 413, submarine chaser 424, submarine chaser 425, submarine chaser 427, submarine



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## GOVERNMENT LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out all particulars following the call signals NABG, NADQ, NAGJ, NALQ, NAMN, NARN, NAXI, NBL, NBZ, NCR, NCY, NDI, NDU, NDV, NEDN, NEDX, NEFZ, NEJX, NEKM, NEKP, NEP, NEQ, NESN, NEX, NEY, NEZG, NFT, NGB, NGE, NGH, NGQ, NHH, NHS, NIFT, NIKZ, NIMM, NIQB, NIQD, NIQT, NIQX, NIRB, NIRC, NJI, NJL, NJX, NKN, NKP, NLI, NLZ, NNA, NNH, NNK,>NNL, NNM, NNQ, NODM, NODR, NODT, NOFX, NOGN, NOJK, NOJM, NOKQ, NOKR, NOLF, NOLR, NOML, NOMR, NOPR, NOPZ, NOQQ, NOQS, NORJ, NORK, NORR, NORV, NOSC, NOSD, NOSL, NOSM, NOTB, NOTG, NOTJ, NOTN, NOTQ, NOTT, NOTX, NOVS, NOW, NOZC, NOZD, NOZK, NOZZ, NPE (North Head), NQK, NQP, NUBB, NUBC, NUBK, NUBM, NUBR, NUBS, NUBT, NUC, NUCG, NUCJ, NUCK, NUCR, NUCS, NUCT, NUCX, NUCZ, NUDK, NUDR, NUG, NUFL, NUGB, NUGJ, NUH, NULD, NUMR, NUMS, NUMT, NUN, NVF, NVI, NWM, NWB, NXA (both stations), NXP, NXQ, NXR, NXV, NXW, NXZ, NYA, NYB, NYN, NYQ, NYW, NYY, NZA, NZH, NZI, NZJ, NZK; NUZ call signal changed to NPE; NZR call signal changed to NAU.

## 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, 1922.]

ATLANTA, GA. (4XI).—W. I., 200, 275, variable.  
 BALTIMORE, MD. (3XT).—W. I., 140, 175, 200, 375.  
 BALTIMORE, MD. (3XX).—W. I., 200, 275.  
 CORVALLIS, OREG. (7XH).—W. I., 200, 375.  
 DELANCO, N. J. (3XP).—W. I., 200, 275, variable.  
 ENID, OKLA. (5XAEA).—Call signal changed to 5XBD.  
 LEXINGTON, KY. (9ZI).—Address 235 East Main Street.  
 MONTGOMERY, ALA. (5XBA).—W. I., 200, 375, variable.  
 MOUNT CLEMENS, MICH. (8XAE).—W. I., 270, variable.  
 PHILADELPHIA, PA. (3XB).—Station operated and controlled by Philadelphia Electric Co. (W. C. Eglin).  
 PHILADELPHIA, PA. (3KC).—W. I., 425.  
 READING, PA. (3XAH).—W. I., 180, 260.  
 TAKOMA PARK, MD. (3. XAJ).—W. I., 200, 240.  
 TAMPA, FLA. (4XJ).—W. I., 225, 250, 285, 325.  
 WASHINGTON, D. C. (3XAF).—W. I., 700, 1100, 2500.  
 WASHINGTON, PA. (8XG).—W. I., 225, 330.  
 WORCESTER, MASS. (1XZ).—W. I., 200, variable.  
 Strike out all particulars of the following named stations: Birmingham, Ala. (6ZI); Fresno, Calif. (6ZU); Hoboken, N. J. (2XAJ); New York, N. Y. (Municipal Building) (2XW); Oakland, Calif. (6ZAE); Piedmont, Calif. (6XAF); San Francisco, Calif. (6XAB); San Francisco, Calif. (6XAU); San Francisco, Calif. (6XO); Seattle, Wash. (7YD); Yuma, Ark. (6ZAK); and Yuma, Ark. (6ZL).

## MISCELLANEOUS.

## RECOMMENDATIONS OF THE NATIONAL RADIO COMMITTEE.

Secretary Hoover stated that the recommendations by the radio conference represent a step in ideal development of measures for the prevention of interference in public broadcasting.

The report recommends making available all wave lengths from 222 to 545 meters for public broadcasting, the various possible bands to be assigned to different stations, so as not only to reduce direct interference but also to build up zonal regions of distribution.

The department fully accepts the recommendations of the conference, but there are a number of difficulties in placing the plan abruptly into action. First, the hardship that it may cause to various stations to move arbitrarily to new wave lengths. Second, the difficulties introduced by the ship-to-shore communication which is now working to some extent on 300 meters and also on 450 meters.

The conference recommended that the ultimate development for ship communication be to assign for the general purpose of shipping the whole wave area from 600 to

800 meters, different bands being allotted within this area for different shipping purposes. The distress signals from ships now work on 600 meters, and the radio compass works on 800 meters. The ship-to-shore communications on 300 and 450 meters are altogether commercial traffic and would be more advantageously carried on with less interruption than to-day if these services were given the entire field around 700 meters.

In order to make progress in this direction of developing the area from 600 to 800 for ship communication it is proposed that all ships and all shore stations used for ship communications shall cease using 450 meters between the hours of 7 and 11 p. m., but may use 700 meters at this or any other time. The 300 meters wave length now assigned under the international convention is very little used and will be used for inland broadcasting, and it is not expected that the ships will avail themselves of the international agreement in this particular, as it has not proved of practical advantage except to a limited extent.

For internal broadcasting the department proposes to cooperate with the various stations with a view to developing a systematic assignment of wave lengths to the various stations within the broad confines of the recommendations of the conference. In order to carry this out without hardship the following classification of stations will be made:

*Class A stations* (that is, stations equipped to use power not exceeding 500 watts).—In this class it is proposed that the radio inspectors, in cooperation with the station owners, shall assign distinctive wave lengths to each station so far as is possible in the area from 222 to 300 meters. No station will be required to change from 360 unless it so desires.

*Class B stations* (that is, stations equipped to use from 500 to 1,000 watts).—In this class it is proposed to similarly offer to license these stations on special wave lengths from 300 to 345 and from 375 to 545 meters, having regard to the maintenance of some ship work on 450 meters as outlined above, and again no station will be required to change from 360 unless it so desires.

*Class C stations* (comprising all stations now licensed for 360-meters).—In this class no new licenses will be issued for stations on 360 meters until the plan is entirely realized. Stations which do not wish to move under the general plan may remain at 360 meters, but they will necessarily be subject to some interference at best. It is thought that by the above plan the stations can be gradually brought into accord without hardships.

Under the plan amateurs are given the whole area from 150 to 220, instead of being fixed upon 200, with special licenses at 375. The special licenses hitherto issued for amateurs at 375 will now be issued at 220. Certain special cases will be taken care of otherwise. It is proposed, in cooperation with the amateur associations, to develop an assignment of wave bands in classifications, so as to somewhat relieve the present interference among amateurs. It will be remembered that the number of wave bands which can be used among the short-wave area assigned to the amateurs is greater in proportion than among the longer wave lengths, and these arrangements expand the area hitherto assigned to amateurs. The full recommendations of the conference are appended hereto.

This conference was called by Secretary Hoover to consider what can be done from an administrative point of view to lessen the amount of interference in radio broadcasting. The meetings were held at the Department of Commerce on March 20 to 24, 1923.

The members of the conference were as follows. The representatives of the Government departments were designated by the several departments, and the other members were appointed by the Secretary of Commerce: Maj. Gen. George O. Squier, War Department; Com. D. C. Bingham, United States Navy, Navy Department; W. A. Wheeler, Department of Agriculture; John W. Sutherin, Post Office Department; L. J. Heath, Treasury Department; F. P. Guthrie, United States Shipping Board; Edwin H. Armstrong, Columbia University, New York; Dr. Alfred N. Goldsmith, secretary, Institute of Radio Engineers; Prof. L. A. Hazeltine, Stevens Institute of Technology; John V. L. Hogan, consulting radio engineer, New York; C. B. Cooper, C. B. Cooper Co., New York; Hiram Percy Maxim, president American Radio Relay League; Prof. C. M. Jansky, University of Minnesota; A. H. Griswold, American Telegraph & Telephone Co.; Leo Fitzpatrick, radio editor, Kansas City Star; D. B. Carson, Department of Commerce, Bureau of Navigation; W. D. Terrell, Department of Commerce, Bureau

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## RECOMMENDED WAVE ALLOCATIONS.

It is recommended that radio stations be assigned specific wave frequencies (wave lengths) within the wave band corresponding to the service rendered as given in the following table. Throughout this report both wave frequency and wave lengths are given. Wave length in meters is 300,000 divided by wave frequency in kilocycles per second. It is recommended that wave bands marked "exclusive" be used for no other type of service; those marked "nonexclusive" can be used for other types of radio communication, as indicated.

Wave frequency in kilocycles per second.	Wave length in meters.	Service.	Wave frequency in kilocycles per second.	Wave length in meters.	Service.
<i>Above.</i>	<i>Below.</i>		<i>Above.</i>	<i>Below.</i>	
2,300	130	Reserved (see note 1).	445	674	Government, CW, nonexclusive.
2,300	130	Government, CW, exclusive.	445	674	Marine and aircraft, CW, ICW, Spk, exclusive.
2,300	130	Reserved (see note 1).	375	800	Radio compass, CW, ICW, Spk, exclusive.
2,100	143	Government, CW, exclusive.	375	800	Marine, Ph, exclusive.
2,100	143	Reserved (see note 1).	315	952	Government, CW, ICW, Spk, exclusive.
2,000	150	Amateur, CW, ICW, Ph, exclusive.	315	952	Reserved.
2,000	150	Amateur, CW, ICW, Ph, Spk, exclusive.	300	1,000	Radio beacons, CW, ICW, Spk, exclusive.
1,700	176	Special amateur and technical and training schools, CW, exclusive.	300	1,000	Reserved.
1,700	176	Aircraft, CW, ICW, Ph, non-exclusive.	285	1,053	Marine, Ph, exclusive.
1,500	200	Class B broadcasting, Ph, non-exclusive (see note 2).	285	1,053	Government, CW, ICW, non-exclusive.
1,500	200	Reserved.	275	1,091	Marine, Ph, exclusive.
1,350	222	Class A broadcasting, Ph, exclusive (see note 3).	275	1,091	Government, CW, ICW, non-exclusive.
1,350	222	Marine, CW, ICW, Spk, non-exclusive (see note 4).	250	1,200	Marine, Ph, exclusive.
1,300	231	Class A broadcasting, Ph, exclusive (see note 3).	250	1,200	Government, CW, ICW, non-exclusive.
1,350	222	Marine, CW, ICW, Spk, exclusive (see note 5).	250	1,200	Marine, Ph, exclusive.
1,050	286	Class A broadcasting, Ph, exclusive (see note 3).	235	1,277	University, college, and experimental, CW, ICW, exclusive.
1,050	286	Marine and aircraft, CW, ICW, Spk, exclusive.	230	1,304	Government, CW, ICW, Spk, exclusive.
1,040	288	Class A broadcasting, Ph, exclusive (see note 3).	190	1,579	Marine and point-to-point, non-Government, CW, ICW, Spk, exclusive.
1,040	288	Marine and aircraft, CW, ICW, Spk, exclusive.	190	1,579	Government, CW, ICW, Spk, exclusive.
1,000	300	Marine and aircraft, CW, ICW, Spk, exclusive (see note 4).	120	2,500	Government, CW, ICW, Spk, exclusive.
1,000	300	Class A broadcasting, Ph, exclusive (see note 3).	95	3,158	
1,000	300	Marine, CW, ICW, Spk, non-exclusive (see note 4).			
967	309	Class A broadcasting, Ph, exclusive (see note 3).			
967	309	Marine, CW, ICW, Spk, exclusive (see note 5).			
667	450	Class A broadcasting, Ph, exclusive (see note 3).			
667	450	Marine and aircraft, CW, ICW, Spk, exclusive.			
667	450	Marine and aircraft, CW, ICW, Spk, exclusive (see note 4).			
500	600	Marine and aircraft, CW, ICW, Spk, exclusive (see note 4).			
500	600	Marine and aircraft, CW, ICW, Spk, exclusive.			
445	674	Marine and aircraft, CW, ICW, Spk, exclusive.			

NOTE 1.—Available for special licensing by the Department of Commerce.

NOTE 2.—Not more than six CW amateur stations to be licensed to use wave frequencies above 1,650 kc./s. (wave lengths below 296 meters) for communication across natural barriers.

NOTE 3.—A class A broadcasting station is a station of sufficient power to serve an extensive territory. Fifty territorial wave frequencies approximately 10 kc./s. apart are to be assigned by the Department of Commerce to local areas throughout the United States without duplication. The 10 such areas within each of 5 national zones are to have wave frequencies separated by approximately 50 kc./s.

NOTE 4.—The 1,000 and 500 kc./s. (300 and 600 meters) waves are for calling and distress purposes, with a minimum of traffic.

NOTE 5.—Mobile service on the 667 kc./s. (450 meters) wave is to be stopped between 7 and 11 p. m., local standard time, and to be transferred in so far and as soon as practicable to wave frequencies below 500 kc./s. (wave lengths above 600 meters).

## RESOLUTIONS.

That this conference, and the Department of Commerce subsequently, follow the practice of expressing wave frequency in kilocycles per second, with wave length in meters in parentheses thereafter.

That in assigning a wave band of 10,000 cycles to each class A broadcasting station they be distributed over five zones throughout the country, such that no stations in adjacent zones are closer together in frequency than 20 kilocycles, and that within each zone there be 10 stations separated by 50 kilocycles.

That only one wave frequency be assigned to a class A broadcasting station which

That every broadcasting station should be equipped with apparatus such as a tuned circuit coupled to the antenna and containing an indicating instrument or the equivalent for the purpose of maintaining the operating wave frequency within 2 kilocycles of the assigned wave frequency.

That the Department of Commerce establish qualifications for class A broadcasting stations, including a general minimum and locally suitable maximum power and a quality of program that will warrant assignment of a territorial wave frequency to each particular station, and that the qualifications be similar to those required of the present class B broadcasting stations.

That the Department of Commerce in its discretion assign class B broadcasting station licenses in which wave frequencies shall be specified and in which the power ratio between the class A and B stations shall be at least two in so far as is practical for a given locality.

That in granting licenses it is recommended that the Department of Commerce limit the use of power where undue interference would otherwise be caused.

That reading of telegrams or letters by broadcasting stations be not construed as point-to-point communication so long as the signer is not addressed in person and so long as the text matter is of general interest.

That simultaneous rebroadcasting shall be permitted only on a broadcasting wave frequency and with the authorization of the original broadcaster and of the Department of Commerce.

That the Department of Commerce be requested to insist upon the suppression of harmonic and other parasitic radiation from all radio stations: as, for example, by requiring the installation, if necessary, of coupled circuit transmitters at the earliest feasible date.

That spark-transmitting apparatus be replaced as rapidly as practicable by apparatus which will produce a minimum of interference.

That the amateur organizations of the United States study the time requirements of the broadcasting of religious services on Sunday and by mutual arrangement with the broadcasters determine upon silent periods which will make possible the reception of such religious services in any given locality.

That when the Government conducts services similar to commercial services for which waves or wave bands have been assigned the Government stations shall use the said waves or wave bands.

That the Government have the exclusive use of a band 1 kilocycle wide centered at each of the following frequencies: 92, 83, 81, 78, and 76 kilocycles, so far as is consistent with public service generally.

That where a line-radio installation produces interference with the reception of signals from beyond the State such line-radio station shall require a license from the Department of Commerce.

That the subject of interference caused by devices not used for radio communication purposes and which are not subject to the present radio law be referred to the projected sectional committee of the American Engineering Standards Committee, and that in the meantime the members of the conference offer to the Department of Commerce their cooperation in the solution of such immediate problems as may be of a character in which their aid could be of value.

That, in the judgment of the Second National Radio Conference, the prevention of "willful or malicious interference," as provided for by section 5 of the act of August 13, 1912, and the minimization of interference, as provided for by article 8 of the International Convention, require that the Department of Commerce shall, in its discretion, withhold or rescind station licenses to transmit on specified wave frequencies at certain times and on definite powers and with certain types of transmitters and when, in the judgment of the Department of Commerce, such interference would result or does result; and that it is the clear and manifest intent of section 1 through 4, and regulations 10, 12, and 18 of section 4 of the said act to give the Department of Commerce such authority to withhold or rescind licenses where such interference will result or does result; and that the Second National Radio Conference believes that a decision by the courts validating the above views will be greatly in the public interest; and that the Second National Radio Conference expresses its willingness to advise and assist the Department of Commerce in the support of the above resolutions in the event of litigation.

That a copy of the foregoing motion be sent to each concern, organization, or association engaged in manufacture of radio equipment or broadcasting by radio or otherwise interested in radio communication with a request for an expression of approval or disapproval of the motion and an agreement to abide by its provisions.

That the Second National Radio Conference desires to emphasize the limited

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locality of those desiring the establishment or maintenance of broadcasting and those interested in broadcasting in that locality, to the end that broadcasting conducted in each neighborhood by such a local association will receive public support and be handled in an economic and permanent fashion.

That the great expansion of radio communication has not been accompanied by a proportional increase in the radio personnel and facilities at the disposal of the Bureaus of Navigation and Standards of the Department of Commerce, and that the resulting strain on the inspection and technical forces of the Department of Commerce has been excessive, and has even forced the omission of important activities and investigations, and that the Second National Radio Conference strongly recommends that additional appropriations be granted to the Department of Commerce for its radio inspection personnel and equipment and for its research personnel and facilities; that a committee of three be appointed to wait upon the Secretary of Commerce to present the urgency of this need and the importance of the early provision of funds for these bureaus.

That the present conditions of radio interference with nonlocal reception and the resulting public dissatisfaction urgently require that the recommendations of the conference be accepted by the Secretary of Commerce and put into early operation by the Department of Commerce.

## INFORMATION REGARDING FOREIGN RADIO STATIONS.

In compliance with a number of requests the following information is published for the benefit of all concerned: Nauen, Germany, call letters, POZ; range, 6,500 miles; w.l. 3,100, 4,900, 5,600, 6,300, 8,700, 9,800, 13,000; Kootwijk, Sambek, Holland, call letters, PCG; range, 5,000-6,000 miles; w.l., 6,250, 8,400, 12,500, 16,800; Stavanger, Norway, call letters, LCM; w.l., 12,100; Bordeaux-Lafayette, France, call letters, LY; power, 500 KW arc; Lyons, France, call letters, YN; power, 60-200 KW; Eiffel Tower, France, call letters, FL; power, 40 KW; Basse Lande (Nantes), call letters UA; power, 200 KW.

## ALASKA STATIONS REOPENED.

Yakutat (KKA), opened February 25; Pirate Cove (KOXN), opened March 7; King Cove, (KJK), opened March 4; Ikatau, (KXW), opened March 5.

## HOURS OF PHILIPPINE ISLAND STATIONS CHANGED.

The following-named stations of the Philippine insular government are open on Sundays and holidays from 9 to 11 a. m.: Amuguis, Balabac, Batangas, Bongao, Cagayan, Cebu, Culion, Cuyo, Davao, Iloilo, Isabela de Basilan, Jolo, Port Lebak, Malabang, Malangas, Malita, Mati, Puerto Princesa, San Francisco, (Camotes), San Jose (Mindoro), Siasi, Zamboanga.

For further particulars of these stations see the annual list of Radio Stations of the United States, edition June 30, 1922, or Radio Service Bulletin for August, 1922, No. 64.

## U. S. S. "SCORPION" HANDLING TRAFFIC IN TURKISH WATERS.

This office has been advised by the United States Shipping Board that recently, the U. S. S. *Scorpion*, which is permanently stationed at Constantinople, has been equipped with an 8-kilowatt tube set which allows them to work 24 hours a day on a wave length of 975 meters. So far work with this set has been somewhat experimental, as it has just been installed, but it is anticipated that there will be very little difficulty in having ships get in prompt communication with the *Scorpion* if they can reach the prescribed wave length of 975 meters. The set of the *Scorpion* will be tuned very sharply to this wave length, however, for vessels which can not reach this wave (and it is understood that many can not go higher than 800 meters) it has been arranged for ships operating in the Black Sea to use the highest wave which can be reached in communicating with the destroyer, which is permanently stationed at Varna, Bulgaria, for communication purposes. This destroyer will listen in for traffic and will relay the messages to Constantinople. For ships in the Aegean and to the southward the vessel permanently stationed at Smyrna has been instructed to act in a similar capacity, however, although the destroyer at Varna can work continuously the destroyer at Smyrna is limited to four hours a day by the Turkish authorities. The hours for the Smyrna destroyer are 1-2 a. m., 5-6 a. m., 10-11 a. m. and 8-9 p. m., call letters BKBU. The letters of the Varna destroyer are NTX.

These regulations remain in force only in case Russia is not in a state of war, and the privileges enumerated above are extended only to nonbelligerent countries and are effective beginning March 1, 1923, and any violation of them is punishable accord-

**GOTHENBERG (SWEDEN) STATION REPLACES KARLSBORG (SWEDEN) STATION.**

The Swedish land radio station at Gothenberg will handle traffic with vessels in place of the radio station at Karlsborg, effective March 1, 1923. Gothenberg, call letters SAB, will listen in on 2,100 meters at 0700 and 1800 G.M.T., and will transmit on 2,700 meters c.w.

**INFORMATION FROM THE BERNE BUREAU.**

*Germany.*—The following modifications will be applied, beginning April 1, 1923, to the rates for radiograms: First, the coast charges of all German stations indicated in the International List of Radiotelegraph Stations which are open to PG service will be changed from 37.5 centimes per word to 40 centimes per word, no minimum. Second, the ship charges of all German stations indicated in the above-mentioned list which are open to PG service will be uniformly 40 centimes per word, no minimum. The reduced rates for certain ship stations will therefore be omitted. Third, the minimum interior rate (p. 345 of the list, columns 3 and 5), which is 1 franc 25 centimes for ordinary radiograms and 3 francs 75 centimes for urgent radiograms, will be omitted.

*City of Danzig.*—The following modifications will be applied, beginning April 1, 1923, to the rates for radiograms: First, the coast rate for Danzig will be changed from 37.5 centimes to 40 centimes per word, no minimum. Second, the ship rate of all Danzig stations will be uniformly 40 centimes per word, no minimum. Third, the minimum interior rate (p. 351 of the list, columns 3 and 5), which is 50 centimes for ordinary radiograms and 1 franc 50 centimes for urgent radiograms, will be omitted.

*Great Britain.*—The coast stations Castle Bromwich and Didsbury, Lancs are reopened.

*Brazil.*—The coast station Amarina is reopened.

*Hungary.*—Since January 1, last, the Csepel station transmits its meteorological bulletin at 10.10 instead of at 10.20 p. m., central-Europe time.

**REGULATIONS REGARDING RADIO COMMUNICATION IN RUSSIAN WATERS.**

This office has been advised that regulations have been issued by the Russian Government to the effect that all foreign naval, merchant, or private vessels in territorial or internal waters of the Russian Socialist Federation, Soviet Republic, or the Allied Soviet Republics are prohibited to exchange any messages within a 10-mile zone offshore in the vicinity of a shore radio station. However, foreign ships entering ports are allowed to finish the transmission of messages if the power of the transmitter is reduced. Ships at anchor in ports where there are no radio stations can use their radio sets upon obtaining special permission from the commander of the harbor. It is also necessary to get special permission to use cipher or code in radio communications in the prescribed area. The commander of the nearest port reserves the right to prohibit the exchange of radio messages by sealing the radio equipment for the entire time that the ships are in the 12-mile zone offshore. Foreign ships anchored in quarantine and desiring to use their radio equipment must comply with the schedule of days and hours fixed by the local radio stations on shore for exchange of traffic and then can only carry on communications with reduced power. The master of the vessel is authorized to conduct all negotiations with local authorities concerning radio communication regulations.

**STATIONS BROADCASTING MARKET OR WEATHER REPORTS AND MUSIC, CONCERTS, LECTURES, ETC., ALPHABETICALLY BY CALL LETTERS, LICENSED UP TO MARCH 1, 1923.**

[E=Entertainment (music, concerts, lectures, etc.); M=Market reports; W=Weather reports.]

Call signal.	Operated and controlled by—	Location and address.	Service.
KDKA	Westinghouse Electric & Manufacturing Co.	East Pittsburgh, Pa.....	E. M. W.
KDN	Leo J. Mayberg Co.....	San Francisco, Calif.....	E. M. W.
KDPM	Westinghouse Electric & Manufacturing Co.	Cleveland, Ohio.....	E.
KDPT	Southern Electrical Co.....	San Diego, Calif.....	E.
KDYL	Telegram Publishing Co.....	Salt Lake City, Utah.....	E. W.
KDYM	Savoy Theater.....	San Diego, Calif.....	E.
KDYQ	Oregon Institute of Technology.....	Portland, Oreg.....	E. W.
KDYS	The Tribune.....	Great Falls, Mont.....	E. W.
KDYW	Smith Hughes & Co.....	Phoenix, Ariz.....	E.
KDYX	Star Bulletin.....	Honolulu, Hawaii.....	E. W.
		Tucson, Ariz.....	E.

## RADIO SERVICE BULLETIN.

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STATIONS BROADCASTING MARKET OR WEATHER REPORTS AND MUSIC, CONCERTS, LECTURES, ETC., ALPHABETICALLY BY CALL LETTERS, LICENSED UP TO MARCH 1, 1923—CON.

Call signal.	Operated and controlled by—	Location and address.	Service.
KDZB	Frank E. Siefert.....	Bakersfield, Calif., 1402 Twentieth Street.	E.
KDZE	The Rhodes Co.....	Seattle, Wash.....	F.
KDZF	Auto Club of Southern California.....	Los Angeles, Calif.....	E.
KDZG	Cyrus Peirce & Co.....	San Francisco, Calif.....	E.
KDZH	Fresno Evening Herald.....	Fresno, Calif.....	E. W.
KDZI	Electric Supply Co.....	Wenatchee, Wash.....	E.
KDZK	Nevada Machinery & Electric Co.....	Reno, Nev.....	E.
KDZQ	William D. Pyle (Hal G. Nichols).....	Denver, Colo., 1247 Broadway.....	E.
KDZR	Bellingham Publishing Co.....	Bellingham, Wash.....	E.
KDZT	Seattle Radio Association.....	Seattle, Wash.....	E.
KDZX	God Tidings Tabernacle.....	San Francisco, Calif.....	E.
KDZZ	Kinney Bros. & Sipprell.....	Everett, Wash.....	E.
KFAD	McArthur Bros. Mercantile Co.....	Phoenix, Ariz.....	E.
KFAE	State College of Washington.....	Pullman, Wash.....	E.
KFAF	Western Radio Corp.....	Denver, Colo.....	E.
KFAJ	University of Colorado.....	Boulder, Colo.....	E.
KFAN	The Electric Shop.....	Moscow, Idaho.....	E.
KFAP	Standard Publishing Co.....	Butte, Mont.....	E.
KFAQ	City of San Jose.....	San Jose, Calif.....	E.
KFAR	Studio Lighting Service Co.....	Hollywood, Calif.....	E.
KFAT	S. T. Donohue.....	Eugene, Oreg., 681 Willamette Street.....	E.
KFAU	Independent School District of Boise City, Boise High School.....	Boise, Idaho.....	E. W.
KFAV	Abbot Kinney Co.....	Venice, Calif.....	E.
KFAW	The Radio Den (W. B. Ashford and T. White).....	Santa Ana, Calif.....	E.
KFAY	Virzin's Radio Service.....	Medford, Oreg.....	E. W.
KFAZ	C. H. Weatherill.....	Reedley, Calif., 1348 Z Street.....	E.
KFBB	E. A. Buttrey & Co.....	Havre, Mont.....	E. M. W.
KFBC	W. K. Azbill.....	San Diego, Calif., 5038 Cliff Place.....	E.
KFBD	Clarence V. Welch.....	Hanford, Calif., 315 North Douty Street.....	E.
KFBE	Reuben H. Horn.....	San Luis Obispo, Calif., 990 Monterey Street.....	E.
KFBG	First Presbyterian Church.....	Tacoma, Wash.....	E.
KFBH	Thomas Musical Co.....	Marshfield, Oreg.....	E.
KFBK	Kimball-Upton Co.....	Sacramento, Calif.....	E. W.
KFBL	Lesse Bros.....	Everett, Wash.....	E.
KFBS	Trinidad Gas & Electric Supply Co. and Chronicle News.....	Trinidad, Colo.....	E.
KFBU	The Cathedral.....	Laramie, Wyo.....	E.
KFCB	Nielsen Radio Supply Co.....	Phoenix, Ariz.....	E.
KFCD	Salem Electric Co.....	Salem, Oreg.....	E.
KPCP	Frank A. Moore.....	Walla Walla, Wash.....	E.
KFCH	Electric Service Station (inc.).....	Billings, Mont., 12 North Thirtieth Street.....	E.
KFCK	Colorado Springs Radio Co.....	Colorado Springs, Colo.....	E.
KFCM	Los Angeles Union Stock Yards.....	San Antonio, Calif.....	M.
KFCN	Richmond Radio Shop (F. T. Doering).....	Richmond, Calif.....	E.
KFCP	Ralph W. Flygare.....	Odgen, Utah, 2421 Jefferson Avenue.....	E.
KFCQ	Motor Service Station (N. R. Hood).....	Casper, Wyo.....	E.
KPCV	Red Mahaffey, jr.....	Houston, Tex.....	E.
KPCY	Western Union College.....	Le Mars, Iowa.....	E.
KPCZ	Omaha Central High School.....	Omaha, Nebr.....	E.
KPDA	Adler's Music Store.....	Baker, Oreg.....	E.
KPDB	Mercantile Trust Co. of California.....	San Francisco, Calif.....	E. M. W.
KPDC	Radio Supply Co. (E. B. Craney).....	Spokane, Wash.....	E.
KPDD	St. Michael's Cathedral.....	Boise, Idaho.....	E.
KPDF	Wyoming Radio Corporation.....	Casper, Wyo.....	E. W.
KPDH	University of Arizona.....	Tucson, Ariz.....	E.
KPDJ	Oregon Agricultural College.....	Corvallis, Oreg.....	E.
KPDL	Knight-Campbell Music Co.....	Denver, Colo.....	E.
KPDO	H. Everett Cutting.....	Bozeman, Mont., 420 West Koch Street.....	E.
KPDF	Hawkeye Radio & Supply Co.....	Des Moines, Iowa.....	E.
KPDR	Bullock's Hardware & Sporting Goods.....	York, Nebr.....	E.
KFDU	Nebraska Radio Electric Co.....	Lincoln, Nebr.....	E.
KFDV	Gilbrech & Stinson.....	Fayetteville, Ark.....	E.
KFEB	City of Taft.....	Taft, Calif.....	E.
KFER	Meyer & Frank Co.....	Portland, Oreg.....	E. M. W.
KFEJ	Guy Gresson.....	Tacoma, Wash., 1724 South Jay Street.....	E.
KFEL	Winger Radio Corporation.....	Denver, Colo.....	E.
KFEP	Radio Equipment Co.....	do.....	E.
KFRQ	J. L. Scroggin.....	Oak, Nebr.....	E.
KFER	Auto Electric Service Co.....	Fort Dodge, Iowa.....	E.
KFEV	Radio Electric Shop.....	Douglas, Wyo.....	E. W.
KFFA	Dr. R. O. Shelton.....	San Diego, Calif.....	E.
KFFB	Jenkins Furniture Co.....	Boise, Idaho.....	E.
KFFE	Eastern Oregon Radio Co.....	Pendleton, Oreg.....	E.

STATIONS BROADCASTING MARKET OR WEATHER REPORTS AND MUSIC, CONCERTS, LECTURES, ETC., ALPHABETICALLY BY CALL LETTERS, LICENSED UP TO MARCH 1, 1923—CON.

Call signal.	Operated and controlled by—	Location and address.	Service.
KFGB	Lowenthal Bros.	Pueblo, Colo.	E.
KFGF	Buchanan Stevens & Co.	Mount Vernon, Wash.	E.
KFGH	Leland Stanford University.	Stanford University, Calif.	E.
KFHJ	Fallon & Co.	Santa Barbara, Calif.	E.
KFI	Earle C. Anthony (Inc.)	Los Angeles, Calif.	E.
KFV	Foster-Bradbury Radio Store.	Yakima, Wash.	E.
KFZ	Doerr-Mitchell Electric Co.	Spokane, Wash.	E.
KGB	William A. Mullins Electric Co.	Tacoma, Wash.	E.
KGG	Hallock & Watson Radio Service	Portland, Oreg.	E.
KGN	Northwestern Radio Manufacturing Co.	do.	E.
KGO	Altadena Radio Laboratory.	Altadena, Calif.	E.
KGU	Marion A. Mulrony.	Honolulu, Hawaii.	E.
KGW	Portland Morning Oregonian.	Portland, Oreg.	E. W.
KGY	St. Martins College.	Lacey, Wash.	E.
KHJ	Times-Mirror Co.	Los Angeles, Calif.	E. W.
KHQ	Louis Wasmer.	Seattle, Wash.	E.
KJJ	The Radio Shop.	Sunnyvale, Calif.	E.
KJQ	C. O. Gould.	Stockton, Calif.	E.
KJR	Northwest Radio Service Co.	Seattle, Wash.	E.
KJS	Bible Institute of Los Angeles.	Los Angeles, Calif.	E.
KLB	J. J. Dunn & Co.	Pasadena, Calif.	E.
KLN	Monterey Electric Shop.	Monterey, Calif.	E.
KL8	Warner Bros.	Oakland, Calif.	E.
KLX	Tribune Publishing Co. (Oakland Tribune).	do.	E.
KLZ	Reynolds Radio Co.	Denver, Colo.	E. M. W.
KMC	W. W. Lindsay, Jr.	Reedley, Calif.	E.
KMJ	San Joaquin Light & Power Corporation.	Fresno, Calif.	E. W.
KMO	Love Electric Co.	Tacoma, Wash.	E.
KNI	T. W. Smith.	Eureka, Calif., Humboldt National Bank Building.	E.
KNJ	Roswell Public Service Co.	Roswell, N. Mex.	E. M. W.
KNN	Bullock's.	Los Angeles, Calif.	E.
KNT	Grays Harbor Radio Co.	Aberdeen, Wash.	E.
KNV	Radio Supply Co.	Los Angeles, Calif.	E.
KNX	Electric Lighting Supply Co.	do.	E.
KOA	Young Men's Christian Association.	Denver, Colo.	W. W.
KOB	New Mexico College of Agriculture and Mechanic Arts.	State College, N. Mex.	E. W.
KOP	Detroit Police Department.	Detroit, Mich.	E.
KPO	Hale Bros.	San Francisco, Calif.	E.
KQI	University of California.	Berkeley, Calif.	E.
KQV	Doubleday-Hill Electric Co.	Pittsburgh, Pa.	E.
KQW	Charles D. Herrold.	San Jose, Calif.	E. W.
KQY	Stubbs Electric Co.	Portland, Oreg.	E.
KRE	Berkeley Daily Gazette.	Berkeley, Calif.	E.
KSD	Post Dispatch.	St. Louis, Mo.	E. W.
KSL	The Emporium.	San Francisco, Calif.	E.
KSS	Prest & Dean Radio Co. and Radio Research Society of Long Beach, Calif.	Long Beach, Calif.	E.
KTW	First Presbyterian Church.	Seattle, Wash.	E.
KUO	Examiner Printing Co. (San Francisco Examiner).	San Francisco, Calif.	E. M. W.
KUS	City Dye Works & Laundry Co.	Los Angeles, Calif.	E.
KUY	Coast Radio Co.	El Monte, Calif.	E.
KWG	Portable Wireless Telephone Co.	Stockton, Calif.	E.
KWH	Los Angeles Examiner.	Los Angeles, Calif.	E. W.
KXD	Modesto Herald Publishing Co.	Modesto, Calif.	E.
KYI	Bakersfield Californian (A. Harrell).	Bakersfield, Calif.	E.
KYJ	Leo J. Meyberg Co.	Los Angeles, Calif.	E. W.
KYQ	Electric Shop.	Honolulu, Hawaii.	E.
KYW	Westinghouse Electric & Manufacturing Co.	Chicago, Ill.	E. M. W.
KZC	Public Market, Department & Market Stores Co.	Seattle, Wash.	E.
KZM	Preston D. Allen.	Oakland, Calif.	E.
KZN	The Deseret News.	Salt Lake City, Utah.	E. W.
KZV	Wenatchee Battery & Motor Co.	Wenatchee, Wash.	E. W.
WAAB	Valdemar Jensen.	New Orleans, La., 137 South St. Patrick Street.	E.
WAAC	Tulane University.	New Orleans, La.	E.
WAAD	Ohio Mechanics Institute.	Cincinnati, Ohio.	E.
WAAP	Chicago Duffy Drivers Journal.	Chicago, Ill.	E. M. W.
WAAB	Commonwealth Electric Co.	St. Paul, Minn.	E.
WAAC	Eastern Radio Institute.	Boston, Mass.	E.
WAAD	Gimbel Bros.	Milwaukee, Wis.	E. M. W.
WAAL	Beamish Electric Co.	Minneapolis, Minn.	E.
WAAM	I. R. Nelson Co.	Newark, N. J.	E.



## RADIO SERVICE BULLETIN.

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STATIONS BROADCASTING MARKET OR WEATHER REPORTS AND MUSIC, CONCERTS, LECTURES, ETC., ALPHABETICALLY BY CALL LETTERS, LICENSED UP TO MARCH 1, 1923—CON.

Call signal.	Owned and controlled by—	Location and address.	Service.
WAAQ	New England Motor Sales Co.	Greenwich, Conn.	E.
WAAE	Georgia Radio Co.	Decatur, Ga.	E.
WAAW	Omaha Grain Exchange.	Omaha, Nebr.	E. M.
WAAY	Yahring-Rayner Piano Co.	Youngstown, Ohio.	E.
WAAZ	Hollister-Miller Motor Co.	Emporia, Kans.	E.
WBAA	Purdue University.	West Lafayette, Ind.	E.
WBAD	Sterling Electric Co.	Minneapolis, Minn.	E.
WBAF	Fred M. Middleton.	Moorestown, N. J., 337 Chester Avenue	E.
WBAG	Diamond State Fibre Co.	Bridgeport, Pa.	E. M. W.
WBAH	The Dayton Co.	Minneapolis, Minn.	E.
WBAN	Wireless Phone Corp.	Paterson, N. J.	E.
WBAO	James Millikin University.	Decatur, Ill.	E.
WBAP	Wortham-Carter Publishing Co. (Star Telegram).	Fort Worth, Tex.	E. M. W.
WBAU	Republican Publishing Co.	Hamilton, Ohio.	E.
WBAV	Erner & Hopkins Co.	Columbus, Ohio.	E. W.
WBAW	Marietta College.	Marietta, Ohio.	E.
WBAX	John H. Stenger, Jr.	Wilkes-Barre, Pa.	E.
WBAY	American Telephone & Telegraph Co.	New York, N. Y.	E.
WBL	T & H Radio Co.	Anthony, Kans.	E.
WBS	D. W. May (Inc.)	Newark, N. J.	E.
WBT	Southern Radio Corporation.	Charlotte, N. C.	E. M. W.
WBU	City of Chicago.	Chicago, Ill.	E.
WBZ	Westinghouse Electric & Manufacturing Co.	Springfield, Mass.	E.
WCAB	Newburgh News Printing & Publishing Co.	Newburgh, N. Y.	E.
WCAC	John Fink Jewelry Co.	Fort Smith, Ark.	E.
WCAD	St. Lawrence University.	Canton, N. Y.	E. W.
WCAE	Kaufmann & Baer Co.	Pittsburgh, Pa.	E.
WCAG	Daily States Publishing Co.	New Orleans, La.	E.
WCAH	Entrekin Electric Co.	Columbus, Ohio.	E.
WCAJ	Nebraska Wesleyan University.	University Place, Nebr.	E.
WCAK	Alfred P. Daniel.	Houston, Tex., 2504 Bagby Street.	E.
WCAL	St. Olaf College.	Northfield, Minn.	E.
WCAM	Villanova College.	Villanova, Pa.	E.
WCAO	Sanders & Stayman Co.	Baltimore, Md.	E.
WCAR	Alamo Radio Electric Co.	San Antonio, Tex.	E.
WCAS	William Hood Dunwoody Industrial Institute.	Minneapolis, Minn.	E.
WCAT	South Dakota State School of Mines.	Rapid City, S. Dak.	E. W.
WCAU	Durham & Co.	Philadelphia, Pa.	E. M.
WCAV	J. C. Dice Electric Co.	Little Rock, Ark.	E.
WCAW	Quincy Electric Supply Co.	Quincy, Ill.	E. M.
WCAX	University of Vermont.	Burlington, Vt.	E.
WCAY	Kesselman O'Driscoll Co.	Milwaukee, Wis.	E. W.
WCAZ	Robert E. Compton & Carthage College.	Carthage, Ill.	E.
WCE	Findley Electric Co.	Minneapolis, Minn.	E.
WCK	Stix-Baer & Fuller Dry Goods Co.	St. Louis, Mo.	E.
WCM	University of Texas.	Austin, Tex.	E. M.
WCN	Clark University.	Worcester, Mass.	E. M. W.
WCX	Detroit Free Press.	Detroit, Mich.	E. M. W.
WDAC	Illinois Watch Co.	Springfield, Ill.	E.
WDAD	Central Kansas Radio Supply.	Lindsborg, Kans.	E.
WDAE	Tampa Daily Times.	Tampa, Fla.	E. M. W.
WDAF	Kansas City Star.	Kansas City, Mo.	E. M. W.
WDAG	J. Laurance Martin.	Amarillo, Tex.	E.
WDAH	Trinity Methodist Church (South).	El Paso, Tex.	E.
WDAI	Hughes Electrical Corporation.	Syracuse, N. Y.	E. W.
WDAJ	Atlanta & West Point R. R. Co.	College Park, Ga.	E. W.
WDAK	The Courant.	Hartford, Conn.	E.
WDAL	Florida Times-Union.	Jacksonville, Fla.	E. M. W.
WDAO	Automotive Electric Co.	Dallas, Tex.	E.
WDAP	Mid West Radio Central (Inc.)	Chicago, Ill.	E. M. W.
WDAR	Lit Bros.	Philadelphia, Pa.	E.
WDAS	Samuel A. Waite.	Worcester, Mass.	E.
WDAU	Slocum & Kiburn.	New Bedford, Mass.	E.
WDAV	First National Bank.	Centerville, Iowa.	E.
WDAY	Fargo Radio Service Co. (K. M. Hance).	Fargo, N. Dak.	E. W.
WDM	Church of the Covenant.	Washington, D. C.	E.
WDT	Ship Owners Radio Service.	Stapleton, N. Y.	E.
WDZ	James L. Bush.	Tuscola, Ill.	E.
WEAA	Fallain & Latrop.	Flint, Mich.	E.
WEAB	Standard Radio Equipment Co.	Fort Dodge, Iowa.	E. M. W.
WEAD	Northwest Kansas Radio Supply Co.	Atwood, Kans.	E.
WEAF	Western Electric Co.	New York, N. Y.	E.
WEAG	Nichols-Hiteline-Bassett Laboratory.	Edgewood, R. I.	E.
WEAH	Wichita Board of Trade and Lander Radio Co.	Wichita, Kans.	E. M. W.
WEAI	Cornell University.	Ithaca, N. Y.	E.

STATIONS BROADCASTING MARKET OR WEATHER REPORTS AND MUSIC, CONCERTS, LECTURES, ETC., ALPHABETICALLY BY CALL LETTERS, LICENSED UP TO MARCH 1, 1923—CON.

Call signal.	Operated and controlled by—	Location and address.	Service.
WEAK	Julius B. Abercrombie.....	St. Joseph, Mo.....	E.
WEAM	Borough of North Plainfield.....	North Plainfield, N. J.....	E.
WEAN	Shepard Co.....	Providence, R. I.....	E. W.
WEAO	Ohio State University.....	Columbus, Ohio.....	E. M. W.
WEAP	Mobile Radio Co.....	Mobile, Ala.....	E. M. W.
WEAR	Baltimore American & News Publishing Co.....	Baltimore, Md.....	E. W.
WEAS	Hecht Co.....	Washington, D. C.....	E.
WEAT	John J. Fogarty.....	Tampa, Fla., 707 Azalea Street.....	E.
WEAU	Davidson Bros. Co.....	St. Louis, Mo.....	E. W.
WEAV	Sheridan Electric Service Co.....	Rushville, Nebr.....	E.
WEAX	T. J. M. Dady.....	Little Rock, Ark., P. O. box 614.....	E.
WEAY	Iris Theater (Will Horowitz, jr.).....	Houston, Tex.....	E.
WEB	Benwood, Co.....	St. Louis, Mo.....	E.
WEH	Midland Refining Co.....	Tulsa, Okla.....	E. M. W.
WEI	Hurlbert-Still Electrical Co.....	Houston, Tex.....	E. W.
WRW	St. Louis University.....	St. Louis, Mo.....	E. M. W.
WEY	Corsadio Co.....	Wichita, Kans.....	E. W.
WFAA	Dallas News and Dallas Journal.....	Dallas, Tex.....	E. M. W.
WFAB	Carl P. Woese.....	Syracuse, N. Y.....	E.
WFAC	Superior Radio Co.....	Superior, Wis.....	E.
WFAP	H. C. Spradley Radio Co.....	Poughkeepsie, N. Y.....	E.
WFAQ	Radio Engineering Laboratory.....	Waterford, N. Y.....	E.
WFAH	Electric Supply Co.....	Port Arthur, Tex.....	E.
WFAJ	Hi-Grade Wireless Instrument Co.....	Asheville, N. C.....	E.
WFAM	Times Publishing Co.....	St. Cloud, Minn.....	E. W.
WFAN	Hutchinson Electric Service Co.....	Hutchinson, Minn.....	E. M. W.
WFAQ	Missouri Wesleyan College and Cameron Radio Co.....	Cameron, Mo.....	E.
WFAT	Daily Argus-Leader.....	Sioux Falls, S. Dak.....	E. M. W.
WFAU	Edwin C. Lewis.....	Boston, Mass., 121 Federal Street.....	E.
WFAV	University of Nebraska.....	Lincoln, Nebr.....	E. W.
WFAW	Miami Daily Metropolis.....	Miami, Fla.....	E.
WFAZ	Daniels Radio Supply Co.....	Independence, Kans.....	E.
WFAZ	South Carolina Radio Shop.....	Charleston, S. C.....	E. W.
WFI	Strawbridge & Clothier.....	Philadelphia, Pa.....	E. M.
WGAD	Spanish-American School of Radiotelegraphy.....	Ensenada, P. R.....	E.
WGAH	New Haven Electric Co.....	New Haven, Conn.....	E.
WGAJ	W. H. Gass.....	Shenandoah, Iowa.....	E.
WGAK	Macon Electric Co.....	Macon, Ga.....	E.
WGAL	Lancaster Electric Supply & Construction Co.....	Lancaster, Pa.....	E.
WGAM	Orangeburg Radio Equipment Co.....	Orangeburg, S. C.....	E.
WGAN	Cecil E. Lloyd.....	Pensacola, Fla., 215 West Romana Street.....	E.
WGAQ	Glenwood Radio Corporation (W. G. Paterson).....	Shreveport, La.....	E.
WGAR	Southwest American.....	Fort Smith, Ark.....	E.
WGAT	American Legion, Department of Nebraska.....	Lincoln, Nebr.....	E.
WGAU	Marcus G. Limb.....	Wooster, Ohio, South Buckeye Street.....	E.
WGAW	Ernest C. Albright.....	Altocora, Pa.....	E.
WGAX	Radio Electric Co.....	Washington Court House, Ohio.....	E.
WGAY	Northwestern Radio Co.....	Madison, Wis.....	E.
WGAZ	South Bend Tribune.....	South Bend, Ind.....	E.
WGF	The Register and Tribune.....	Des Moines, Iowa.....	E. W.
WGI	American Radio & Research Corporation.....	Medford Hillside, Mass.....	E. M. W.
WGL	Thomas F. J. Howlett.....	Philadelphia, Pa., 2803 North Broad Street.....	E.
WGM	Atlanta Constitution.....	Atlanta, Ga.....	E.
WGB	Federal Telephone & Telegraph Co.....	Buffalo, N. Y.....	E. M. W.
WGV	Interstate Electric Co.....	New Orleans, La.....	E. M.
WGY	General Electric Co.....	Schenectady, N. Y.....	E. W.
WHA	University of Wisconsin.....	Madison, Wis.....	E. M. W.
WHA A	State University of Iowa.....	Iowa City, Iowa.....	E.
WHAB	Clark W. Thompson.....	Galveston, Tex.....	E. W.
WHAC	Cole Bros. Electric Co.....	Waterloo, Iowa.....	E.
WHAD	Marquette University.....	Milwaukee, Wis.....	E.
WHA E	Automotive Electric Service Co.....	St. Louis, Mo.....	E.
WHA G	University of Cincinnati.....	Cincinnati, Ohio.....	E.
WHA H	Hader Supply Co.....	Joplin, Mo.....	E.
WHA I	Radio Equipment & Manufacturing Co.....	Davenport, Iowa.....	E.
WHA K	Roberts Hardware Co.....	Clarksburg, W. Va.....	E.
WHA L	Lansing Capital News.....	Lansing, Mich.....	E.
WHA M	University of Rochester (Eastman School of Music).....	Rochester, N. Y.....	E. M. W.
WHA O	Frederic A. Hill.....	Savannah, Ga., 1223 East Duffy Street.....	E.
WHA P	Otto & Kuhns.....	Decatur, Ill.....	E.
WHA Q	Semmes Motor Co.....	Washington, D. C.....	E.
WHA R	Department Radio & Electric Co.....	Atlantic City, N. J.....	E.

## RADIO SERVICE BULLETIN.

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STATIONS BROADCASTING MARKET OR WEATHER REPORTS AND MUSIC, CONCERTS, LECTURES, ETC., ALPHABETICALLY BY CALL LETTERS, LICENSED UP TO MARCH 1, 1923—CON.

Call signal.	Operated and controlled by—	Location and address.	Service.
WHAS	Courier-Journal and Louisville Times.	Louisville, Ky.	E. W.
WHA V	Wilmington Electrical Specialty Co.	Wilmington, Del.	E. E.
WHA W	Pierce Electrical Co.	Tampa, Fla.	E. E.
WHAY	Huntington Press.	Huntington, Ind.	E. E.
WHA Z	Rensselaer Polytechnic Institute.	Troy, N. Y.	E. E.
WHB	Sweeney School Co.	Kansas City, Mo.	E. M. W.
WHD	West Virginia University.	Morgantown, W. Va.	E. E.
WHK	Radiovox Co. (Warren R. Cox).	Cleveland, Ohio.	E. E.
WHN	Ridgewood Times Printing & Publishing Co.	Ridgewood, N. Y.	E. W.
WIAB	Joslyn Automobile Co.	Rockford, Ill.	E. E.
WIAC	Galveston Tribune.	Galveston, Tex.	E. W.
WIAD	Ocean City Yacht Club.	Ocean City, N. J.	E. E.
WIAE	Mrs. Robert B. Zimmerman.	Vinton, Iowa.	E. E.
WIAP	Gustav A. De Cortin.	New Orleans, La.	E. E.
WIAH	Continental Radio & Manufacturing Co.	Newton, Iowa.	E. E.
WIAI	Heer Stores Co.	Springfield, Mo.	E. W.
WIAJ	Fox River Valley Radio Supply Co. (Quinn Bros.).	Necnah, Wis.	E. E.
WIAK	Journal-Stockman Co.	Omaha, Nebr.	E. M. W.
WIAO	School of Engineering of Milwaukee and Milwaukee News.	Milwaukee, Wis.	E.
WIAQ	Chronicle Publishing Co.	Marion, Ind.	E.
WIAR	Paducah Evening Sun.	Paducah, Ky.	E. E.
WIAS	Burlington Hawkeye-Home Electric Co.	Burlington, Iowa.	E. E.
WIAT	Leon T. Neel.	Turkio, Mo.	E. E.
WIAU	American Trust & Savings Bank.	Le Mars, Iowa.	E. E.
WIAV	New York Radio Laboratories.	Binghamton, N. Y.	E. E.
WIAW	Saginaw Radio & Electric Co.	Saginaw, Mich.	E. E.
WIAY	Woodward & Lothrop.	Washington, D. C.	E. M.
WIAZ	Electric Supply Sales Co.	Miami, Fla.	E. E.
WIK	K. & L. Electric Co.	McKeesport, Pa.	E. E.
WIL	Continental Electrical Supply Co.	Washington, D. C.	E. E.
WIP	Gimbel Bros.	Philadelphia, Pa.	E. W.
WIZ	Cino Radio Manufacturing Co.	Cincinnati, Ohio.	E. M.
WJAB	American Electric Co.	Lincoln, Nebr.	E. E.
WJAD	Jackson's Radio Engineering Laboratories.	Waco, Tex.	E. W.
WJAG	Norfolk Daily News.	Norfolk, Nebr.	E. W.
WJAJ	Young Men's Christian Association.	Dayton, Ohio.	E. W.
WJAK	White Radio Laboratory.	Stockdale, Ohio.	E. M. W.
WJAM	D. M. Peabam.	Cedar Rapids, Iowa.	E. E.
WJAN	Peoria Star.	Peoria, Ill.	E. W.
WJAP	Kelley-Duluth Co.	Duluth, Minn.	E. E.
WJAQ	Copper Publications.	Topeka, Kans.	E. E.
WJAR	The Outlet Co.	Providence, R. I.	E. E.
WJAS	Pittsburgh Radio Supply House.	Pittsburgh, Pa.	E. E.
WJAT	Kelly-Vawter Jewelry Co.	Marshall, Mo.	E. E.
WJAX	Union Trust Co.	Cleveland, Ohio.	E. M. W.
WJAZ	Chicago Radio Laboratory.	Chicago, Ill.	E. E.
WJD	Richard H. Howe.	Granville, Ohio.	E. E.
WJH	White & Boyer Co.	Washington, D. C.	E. E.
WJX	De Forest Radio Telephone & Telegraph Co.	New York, N. Y.	E.
WJZ	Westinghouse Electric & Manufacturing Co.	Newark, N. J.	E. M. W.
WKA A	H. F. Paar.	Cedar Rapids, Iowa, 1444 Second Avenue East.	E. W.
WKAC	Star Publishing Co.	Lincoln, Nebr.	E.
WKAD	Charles Looff (Crescent Park).	East Providence, R. I.	E.
WKAF	W. S. Radio Supply Co.	Wichita Falls, Tex.	E. E.
WKAH	Planet Radio Co.	West Palm Beach, Fla.	E. E.
WKAJ	Cassius County News.	Okemah, Okla.	E. E.
WKAJ	Gray & Gray.	Orange, Tex.	E. W.
WKAJ	Alabama Radio Manufacturing Co.	Montgomery, Ala.	E. E.
WKAP	Dutee W. Flint.	Cranston, R. I.	E. E.
WKAQ	Radio Corporation of Porto Rico.	San Juan, P. R.	E. E.
WKA R	Michigan Agriculture College.	East Lansing, Mich.	E. E.
WKA S	L. E. Lines Music Co.	Springfield, Mo.	E. E.
WKA V	Laconia Radio Club.	Laconia, N. H.	E. E.
WKA W	Turner Cycle Co.	Beloit, Wis.	E. E.
WKAX	William A. McFarlane.	Bridgeport, Conn.	E. E.
WKAY	Brenau College.	Gainsville, Ga.	E. E.
WKC	Joseph M. Zamolski Co.	Baltimore, Md.	E. E.
WKN	Riechman-Cresby Co.	Memphis, Tenn.	E. E.
WKY	WKY Radio Shop.	Oklahoma, Okla.	E. W.
WLAC	North Carolina State College.	Raleigh, N. C.	E. M. W.
WLAG	Cutting & Washington Radio Corporation.	Minneapolis, Minn.	E. M. W.
WLAH	Samuel Woodworth.	Syracuse, N. Y.	E. E.
WLA I	Waco Electrical Supply Co.	Waco, Tex.	E. M.

STATIONS BROADCASTING MARKET OR WEATHER REPORTS AND MUSIC, CONCERTS, LECTURES, ETC., ALPHABETICALLY BY CALL LETTERS, LICENSED UP TO MARCH 1, 1923—CON.

Call signal.	Operated and controlled by—	Location and address.	Service.
WLAL	Tulsa Radio Co.	Tulsa, Okla.	E.
WLAN	Putnam Hardware Co.	Houlton, Me.	E.
WLAP	W. V. Jordan	Louisville, Ky., 306 West Breckan- ridge Street.	E.
WLAQ	Arthur E. Schilling	Kalamazoo, Mich., 108 Elm Street	E.
WLAS	Central Radio Supply Co.	Hutchinson, Kans.	E.
WLAT	Radio & Specialty Co.	Burlington, Iowa	E.
WLAV	Electric Shop	Pensacola, Fla.	E.
WLAW	Police department, city of New York	New York, N. Y.	E.
WLAX	Putnam Electric Co. (Greencastle com- munity broadcasting station)	Greencastle, Ind.	E.
WLAY	Northern Commercial Co.	Fairbanks, Alaska	E.
WLAZ	Hutton & Jones Electric Co.	Warren, Ohio	E.
WLB	University of Minnesota	Minneapolis, Minn.	E. M. W.
WLC	Hamilton Manufacturing Co.	Indianapolis, Ind.	E. W.
WLW	Crosley Manufacturing Co.	Cincinnati, Ohio	E. M. W.
WMAW	Radio Supply Co.	Oklahoma, Okla.	E.
WMAC	J. E. Page (Olive B. Meredith)	Cazenovia, N. Y., Farnwood Street	E.
WMAD	Atchinson County Mail	Rock Port, Mo.	E.
WMAF	Round Hills Radio Corporation	Dartmouth, Mass.	E.
WMAH	Tueker Electric Co.	Liberal, Kans.	E.
WMAI	General Supply Co.	Lincoln, Nebr.	E.
WMAJ	Drivers Telegram Co.	Kansas City, Mo.	E. M.
WMAK	Norton Laboratories	Lockport, N. Y.	E. W.
WMAI	Trenton Hardware Co.	Trenton, N. J.	E.
WMAJ	Beaumont Radio Equipment Co.	Beaumont, Tex.	E. W.
WMAN	Broad Street Baptist Church	Columbus, Ohio	E.
WMAF	Utility Battery Service	Easton, Pa.	E.
WMAQ	Fair Corporation and Chicago Daily News	Chicago, Ill.	E.
WMAH	Waterloo Electrical Supply Co.	Waterloo, Iowa	E.
WMAI	Paramount Radio Corporation	Duluth, Minn.	E. W.
WMAV	Alabama Polytechnic Institute	Auburn, Ala.	E. M.
WMAW	Wahpeton Electric Co.	Wahpeton, N. Dak.	E.
WMAK	K. & K. Radio Supply Co.	Ann Arbor, Mich.	E.
WMAI	Kingshighway Presbyterian Church	St. Louis, Mo.	E.
WMAZ	Mercer University	Macon, Ga.	E.
WMC	Commercial Appeal	Memphis, Tenn.	E. M. W.
WMH	Precision Equipment Co.	Cincinnati, Ohio	E. M. W.
WMU	Doubleday-Hill Electric Co.	Washington, D. C.	E.
WNAB	Park City Daily News	Bowling Green, Ky.	E.
WNAC	Shepard Stores	Boston, Mass.	E.
WNAD	Oklahoma Radio Engineering Co.	Norman, Okla.	E.
WNAK	Manhattan Radio Supply Co.	Manhattan, Kans.	E.
WNAL	R. J. Rockwell	Omaha, Nebr., 5019 Capitol Avenue	E.
WNAM	Ideal Apparatus Co.	Evansville, Ind.	E.
WNAN	Syracuse Radio Telephone Co.	Syracuse, N. Y.	E.
WNAP	Wittenberg College	Springfield, Ohio	E.
WNAQ	Charleston Radio Electric Co.	Charleston, S. C.	E.
WNAR	C. C. Rhodes	Butler, Mo.	E.
WNAS	Texas Radio Corporation and Austin Statesman	Austin, Tex.	E.
WNAT	Lenni Bros. Co.	Philadelphia, Pa.	E.
WNAV	Peoples Telephone and Telegraph Co.	Knoxville, Tenn.	E.
WNAW	Peninsular Radio Club	Fort Monroe, Va.	E.
WNAX	Dakota Radio Apparatus Co.	Yankton, S. Dak.	E.
WNAY	Ship Owners Radio Service	Baltimore, Md.	E.
WNJ	Shotton Radio Manufacturing Co.	Albany, N. Y.	E.
WOOA	Dr. Walter Hardy	Ardmore, Okla.	E.
WOAB	Valley Radio	Grand Forks, N. Dak.	E.
WOAC	Mus Radio Co.	Lima, Ohio	E.
WOAD	Friday Battery & Electric Corporation	Sigourney, Iowa	E.
WOAE	Midland College	Fremont, Nebr.	E.
WOAF	Tyler Commercial College	Tyler, Tex.	E.
WOAG	Apollo Theatre (Belvidere Amusement Co.)	Belvidere, Ill.	E.
WOAH	Palmetto Radio Corporation	Charleston, S. C.	E.
WOAI	Southern Equipment Co.	San Antonio, Tex.	E. W.
WOAJ	Ervin Electrical Co.	Parsons, Kans.	E.
WOAK	Collins Hardware Co.	Frankfort, Ky.	E.
WOAL	William E. Woods	Webster Groves, Mo.	E.
WOAN	Yaughn Conservatory of Music	Lawrenceburg, Tenn.	E.
WOAO	Lyradion Manufacturing Co.	Mishawaka, Ind.	E.
WOAP	Kalamazoo College	Kalamazoo, Mich.	E.
WOAR	Henry P. Lundskow	Kenosha, Wis.	E.
WOAS	Bailey's Radio Shop	Middletown, Conn.	E.
WOAT	Boyd M. Hamp	Wilmington, Del.	E.
WOAV	Sowder Boling Piano Co.	Evansville, Ind.	E.
WOAV	Pennsylvania National Guard, 112th In- fantry, 2d Battalion	Erie, Pa.	E.

## RADIO SERVICE BULLETIN.

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STATIONS BROADCASTING MARKET OR WEATHER REPORTS AND MUSIC, CONCERTS, LECTURES, ETC., ALPHABETICALLY BY CALL LETTERS, LICENSED UP TO MARCH 1, 1923—CON.

Call signal.	Operated and controlled by—	Location and address.	Service.
WOAZ	Penick Hughes Co.	Stamford, Tex.	E.
WOC	Palmer School of Chiropractic.	Davenport, Iowa.	E. W.
WOE	Buckeye Radio Service Co.	Akron, Ohio.	E.
WOI	Iowa State College.	Ames, Iowa.	E. M. W.
WOK	Pine Bluff Co.	Pine Bluff, Ark.	E.
WOO	John Wansmaker.	Philadelphia, Pa.	E. M. W.
WOQ	Western Radio Co.	Kansas City, Mo.	E. M. W.
WOR	L. Bamberger & Co.	Newark, N. J.	E. F.
WOS	Missouri State Marketing Bureau.	Jefferson City, Mo.	E. M. W.
WOU	Metropolitan Utilities District.	Omaha, Nebr.	E. M.
WOZ	Palladium Printing Co.	Richmond, Ind.	E. M. W.
WPA	Fort Worth Record.	Fort Worth, Tex.	E. M. W.
WPAA	Anderson & Webster Electric Co.	Wahoo, Nebr.	E.
WPAB	Pennsylvania State College.	State College, Pa.	E.
WPAC	Donaldson Radio Co.	Okmulgee, Okla.	E.
WPAD	W. A. Winboldt & Co.	Chicago, Ill.	E.
WPAF	Peterson Radio Co.	Council Bluffs, Iowa.	E.
WPAH	Wisconsin Department of Markets.	Waupaca, Wis.	M.
WPAJ	Deolittle Radio Corporation.	New Haven, Conn.	E.
WPAK	North Dakota Agricultural College.	Agricultural College, N. Dak.	E. W.
WPAL	Superior Radio & Telephone Equipment Co.	Columbus, Ohio.	E.
WPAM	Auerbach & Guettel.	Topeka, Kans.	E.
WPAP	Theodore D. Phillips.	Winchester, Ky., 222 Lexington Ave.	E.
WPAQ	General Sales & Engineering Co.	Frostburg, Md.	E.
WPAR	Ward Battery & Radio Co.	Beloit, Kans.	E.
WPAS	J. & M. Electric Co.	Amsterdam, N. Y.	E.
WPAT	St. Patrick's Cathedral.	El Paso, Tex.	E.
WPAU	Concordia College.	Moorehead, Minn.	E. W.
WPAV	Paul Tinetti & Son.	Laurium, Minn.	E.
WPAW	Radio Installation Co.	Wilmington, Del.	E.
WPAX	S-W Radio Co. (J. R. Shumate, jr.)	Thomasville, Ga.	E.
WPAY	Bangor Radio Laboratory.	Bangor, Me.	E.
WPAZ	Dr. John B. Koch.	Charleston, W. Va.	E.
WPE	Central Radio Co.	Independence, Mo.	E.
WPF	Nashawag Poultry Farm.	New Lebanon, Ohio.	E. M. W.
WPI	Electric Supply Co.	Clearfield, Pa.	E.
WPM	Thomas J. Williams.	Washington, D. C.	E.
WPO	United Equipment Co.	Memphis, Tenn.	E.
WQAA	Horace A. Beale, jr.	Parkeburg, Pa.	E.
WQAB	Southwest Missouri State Teachers College.	Springfield, Mo.	E.
WQAC	E. B. Gish.	Amarillo, Tex.	E.
WQAD	Whitall Electric Co.	Waterbury, Conn.	E.
WQAE	Moore Radio News Station.	Springfield, Vt.	E.
WQAF	Sandusky Register.	Sandusky, Ohio.	E.
WQAH	Brock-Anderson Electrical Engineering Co.	Lexington, Ky.	E.
WQAJ	Ann Arbor Times News.	Ann Arbor, Mich.	E.
WQAK	Appel-Higley Electric Co.	Dubuque, Iowa.	E.
WQAL	Coles County Telephone & Telegraph Co.	Maitoon, Ill.	E.
WQAM	Electrical Equipment Co.	Miami, Fla.	E.
WQAN	Scranton Times.	Scranton, Pa.	E. W.
WQAO	Calvary Baptist Church.	New York, N. Y.	E.
WQAQ	West Texas Radio Co.	Ahlene, Tex.	E.
WQAR	Press Publishing Co.	Muncie, Ind.	E.
WQAS	Price-Walter Co.	Lowell, Mass.	E.
WQAT	Radio Equipment Corporation.	Westhampton, Va.	E.
WQAV	Huntington & Guerry (Inc.)	Greenville, S. C.	E.
WQAW	Catholic University.	Washington, D. C.	E.
WQAY	Gaston Music & Furniture Co.	Hastings, Nebr.	E.
WRAA	William M. Rice Institute.	Houston, Tex.	E.
WRAB	Board of Public Education.	Savannah, Ga.	E.
WRAC	State Normal School.	Mayville, N. Dak.	E.
WRAD	Taylor Radio Shop.	Marion, Kans.	E.
WRAM	Lombard College.	Galesburg, Ill.	E.
WRAN	Black Hawk Electrical Co.	Waterloo, Iowa.	E.
WRAO	Radio Service Co.	St. Louis, Mo.	E.
WRAU	Jacob C. Thomas.	David City, Nebr.	E.
WRAV	Amarillo Daily News.	Amarillo, Tex.	E.
WRAY	Antioch College.	Yellow Springs, Ohio.	E.
WRAY	Radio Sales Corporation.	Scranton, Pa.	E. W.
WRK	Doron Bros. Electric Co.	Hamilton, Ohio.	E.
WRL	Union College.	Schenectady, N. Y.	E.
WRM	University of Illinois.	Urbana, Ill.	E.
WRP	Federal Institute of Radio Telegraphy.	Camden, N. J.	E.
WRR	City of Dallas, Police and Fire Signal Department.	Dallas, Tex.	E. W.
WRW	Tarrytown Radio Research Laboratory.	Tarrytown, N. Y.	E.
WSAA	B. S. Sprague Electrical Co.	Marietta, Ohio.	E.
WSAR	Southeast Missouri State Teachers' College.	Cane Girardeau, Mo.	E.

STATIONS BROADCASTING MARKET OR WEATHER REPORTS AND MUSIC, CONCERTS, LECTURES, ETC., ALPHABETICALLY BY CALL LETTERS, LICENSED UP TO MARCH 1, 1923—COD

Call signal.	Operated and controlled by—	Location and address.	Service.
WSAH	A. J. Leonard, Jr.	Chicago, Ill.	E.
WSAJ	Grove City College	Grove City, Pa.	E.
WSAL	Franklin Electric Co.	Brookville, Ind.	E.
WSAS	State of Nebraska, Department of Agriculture.	Lincoln, Nebr.	E. M. W.
WSAT	Plainview Electric Co.	Plainview, Tex.	E.
WSAV	Clifford W. Vick Radio Construction Co.	Houston, Tex.	E.
WSB	Atlanta Journal	Atlanta, Ga.	E. M. W.
WSL	J. & M. Electric Co.	Utica, N. Y.	E. M.
WSY	Alabama Power Co.	Birmingham, Ala.	E. W.
WTAC	Penn Traffic Co.	Johnstown, Pa.	E.
WTAS	George D. Carpenter	Elgin, Ill. (near)	E.
WTAU	Ruegg Battery & Electric Co.	Tecumseh, Nebr.	E.
WTAW	Agricultural and Mechanical College of Texas.	College Station, Tex.	E. M.
WTG	Kansas State Agricultural College	Manhattan, Kans.	W.
WTF	George M. McBride	Bay City, Mich., 611 Midland Street	E.
WWAC	Sanger Bros.	Waco, Tex.	E.
WWAD	Wright & Wright (Inc.)	Philadelphia, Pa.	E.
WWAX	Worinser Bros.	Laredo, Tex.	E.
WWAY	Marigold Gardens	Chicago, Ill.	E.
WWB	Daily News Printing Co.	Canton, Ohio	E.
WWI	Ford Motor Co.	Dearborn, Mich.	E.
WWJ	Detroit News	Detroit, Mich.	E. M. W.
WWL	Loyola University	New Orleans, La.	E.
WWZ	John Wanamaker	New York, N. Y.	E.

#### REFERENCES TO CURRENT RADIO PERIODICAL LITERATURE.

The list of radio references which is usually published in this bulletin monthly is omitted this month on account of the unusual size of this edition. Readers of the RADIO SERVICE BULLETIN who find these lists of references to current radio periodical literature of real use and desire to have their publication continued are requested to write to the Bureau of Navigation, Department of Commerce, Washington, D. C., expressing their views in the matter. If a reasonable number of requests for the continuance of these lists are not received, their publication will be discontinued.

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