

# DEPARTMENT OF COMMERCE

# RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION

Washington, April 1, 1925—No. 96

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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 = Continental service.		
	X = No regular hours.		
F. T. Co.	= Federal Telegraph Co.		
I. W. T. Co.	= Independent Wireless Telegraph Co.		
K. & C.	= Kilbourne & Clark Manufacturing Co.		
R. C. A.	= Radio Corporation of America.		
S. O. R. S.	= Ship Owners' Radio Service.		
W. S. A. Co.	= Wireless Specialty Apparatus Co.		
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.		



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

[b=ship station; a=land station]

Call signal	Name of station	Call signal	Name of station
KDHS	Wm. Boyce Thompson.....b	KZBC	Nucanu.....b
KDW	Star of Zealand.....b	KZBD	Pronto.....b
KEL	Bolinas, Calif.....c	KZBF	Pompey.....b
KEY	Dundas, Alaska.....c	KZBG	Panay.....b
KFFA	Trader.....b	KZBH	Bustamante.....b
KFVB	Bridget.....b	KZCN	Waterfall, Alaska.....c
KIO	Kahuku, Hawaii.....c	WEV	D. E. Callender.....b
KJB	Chignik, Alaska.....c	WFD	Missouri.....b
KMP	Medha Nelson (moored vessel).....c	WFM	Minnesota.....b
KNJ	Nushagak, Alaska.....c	WKC	Philip D. Block.....b
ENV	Wrangell, Alaska (Star of Russia, moored vessel).....c	WNP	El Oceano.....b
KOM	Naknek, Alaska.....c	WPE	St. Louis, Mo.....c
ERI	Loring, Alaska (Star of Greenland, moored vessel).....c	WRA	Austin, Tex.....c
KVN	Shakan, Alaska.....c	WRB	Miami, Fla.....c
KZAY	Florence D.....b	WRP	Pinecrest, Fla.....c
		WTX	Hawaiian Standard.....b

*Broadcasting stations, alphabetically by names of States and cities*

[Additions to the List of Radio Stations of the United States, edition of June 30, 1924]

State and city	Call signal	State and city	Call signal
Arkansas: Camden.....	KFVC	Ohio:	
California: San Pedro.....	KFVD	Akron.....	WADQ
Florida:		Cincinnati.....	WHBR
St. Petersburg.....	WHBN	Cleveland.....	WDBK
Do.....	WIBC	Elyria.....	WGBL
Georgia: Columbus.....	WHBV	Mechanicsburg.....	WHBS
Illinois:		Oklahoma: Tulsa.....	WLAL
Chicago.....	WENR	Pennsylvania:	
Chicago (portable).....	WHBM	Johnstown.....	WHBP
Downers Grove.....	WHBT	Philadelphia.....	WHBW
Indiana:		Pennsylvaniawny.....	WHBX
Anderson.....	WHBU	Rhode Island: Pawtucket.....	WHBO
Logansport.....	WHBL	Tennessee: Memphis.....	WHBQ
Kansas: Manhattan.....	KFVH	Texas:	
Michigan:		Fort Worth.....	KFJE
Flint.....	WTHS	Houston.....	KFVI
Owosso.....	WSMH	Wisconsin:	
New York:		Madison.....	WIBA
Brooklyn.....	WHAP	West De Pere.....	WHBY
New York.....	WMCA		
Richmond Hill.....	WBOQ		
Rochester.....	WHBC		

**RADIO SERVICE BULLETIN**

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

Call signal	Location of station	Station operated and controlled by—	Power (watts)	Wave length	Frequency (kilo-cycles)
KFJE	Fort Worth, Tex., 400 West Seventh Street.	W. E. Branch.....	60	354	1,180
KFVC	Camden, Ark., 214 South Adams Street.	Bensberg's Music Co.....	10	342	1,240
KFVD	San Pedro, Calif., 1825 South Pacific Avenue.	McWhinnie Electric Co.....	60	305.4	1,440
KFVH	Manhattan, Kans., 221 Poyntz Street.	Whan Radio Shop.....	10	318.8	1,370
KFVI	Houston, Tex.....	Fifty-sixth Cavalry Brigade, Headquarters Troop.	10	345	1,210
WADC	Akron, Ohio.....	Allen Theater.....	100	258	1,160
WBOQ	Richmond Hill, N. Y., 70 Van Wyck Boulevard.	A. H. Grebe & Co.....	100	232	1,270
WDBK	Cleveland, Ohio, 13918 Union Avenue.	M. F. Bros Furniture, Hardware and Radio Store.	100	327	1,330
WENR	Chicago, Ill.....	All American Radio Corporation			
WGBL	Elyria, Ohio, 630 Lodi Street.....	Elyria Radio Association.....	10	277	1,320
WHAP	Brooklyn, N. Y., 250 Flatbush Avenue.	Wm. H. Taylor Finance Corporation.	50	240	1,250
WHBL	Logansport, Ind., 1214 Erie Avenue.	James H. Slusser.....	50	320	1,360
WHBM	Chicago, Ill. (portable), 1338 South State Street.	C. L. Carroll.....	20	323	1,290
WHBN	St. Petersburg, Fla.....	First Avenue Methodist Church	10	358	1,100
WHBO	Pawtucket, R. I.....	Young Men's Christian Association.	50	321	1,300
WHBP	Johnstown, Pa., 101 Main Street....	Johnstown Automobile Co.....	10	356	1,170
WHBQ	Memphis, Tenn., Bellevue and Peabody Avenues.	Men's Fellowship Class of St. John's M. E. Church South.	10	233	1,290
WHBR	Cincinnati, Ohio, 3204 Vine St.....	Scientific Electric & Mfg. Co.....	20	215.7	1,340
WHBS	Mechanicsburg, Ohio.....	Edward W. Locke.....	10	208.2	1,440
WHBT	Downers Grove, Ill., 332 North Prince Avenue.	Thomas W. Tizzard, Jr.....	10	200.8	1,450
WHBU	Anderson, Ind., 1002 Meridian Street.	B. L. Bing's Sons.....	10	218.8	1,370
WHBV	Columbus, Ga., 2014 Talbot Avenue.	Fred Rays Radio Shop.....	20	244	1,230
WHBW	Philadelphia, Pa., 4916 Chestnut Street.	D. R. Kienle.....	100	215.7	1,300
WHBX	Punxsutawney, Pa., 206 Greenwood Avenue.	J. W. Bowser.....	50	212.6	1,410
WHBY	West De Pere, Wis.....	St. Norbert's College.....	50	250	1,200
WHBC	Rochester, N. Y., 26 South Madison, Wis.....	Hickson Electric Co.....	100	228	1,180
WIBA	Madison, Wis.....	Capital Times Studio.....	100	230	1,370
WIBC	St. Petersburg, Fla., 434 Second Avenue North.	L. M. Tate Post No. 50, Veterans of Foreign Wars.	100	222	1,350
WLAL	Tulsa, Okla.....	First Christian Church.....	150	250	1,200
WAMC	New York, N. Y.....	Hotel McAlpin (Greely Square Hotel Co.)	500	340.7	880
WBMH	Owosso, Mich., 207 Washington Street.	Shattuck Music House.....	10	240	1,250
WTES	Flint, Mich.....	Flint Senior High School.....	250	218.8	1,370

*Government land stations, alphabetically by names of stations*

[Additions to the List of Radio Stations of the United States, edition of June 30, 1924, and to the International List of Radiotelegraph Stations published by the Berne bureau]

Station	Call signal	Wave length	Service	Hours	Station controlled by—
France Field, Canal Zone (Cristobal). <sup>1</sup>	WYP.....	1,600.....	O		United States Army.
St. John, Virgin Islands <sup>1</sup>	NBO.....	347, 1694.....	O	X	United States Navy.

<sup>1</sup> Range, 250; United States Army v. t. telegraph; hours, 7 a. m.—7 p. m.

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*Government ship stations, alphabetically by names of stations*

[Additions to the List of Radio Stations of the United States, edition of June 30, 1924, and to the International List of Radiotelegraph Stations published by the Berne bureau]

Station	Call signal	Wave length	Service	Hours	Station controlled by—
Mississippi <sup>1</sup> .....	WYCT	600, 700.....	O	X	War Department, Mississippi River Commission.

<sup>1</sup> Range, 100; system, United States Army v. t. telegraph.*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
NBO	St. John, Virgin Islands.....c	WYP	France Field, Canal Zone (Cristobal).....c
WYCT	Mississippi.....b		

*Special land stations, alphabetically by names of stations*

[Additions to the List of Radio Stations of the United States, edition of June 30, 1924]

Station	Call signal	Station controlled by—
Brooklyn, N. Y.....	2XN	Peoples Pulpit Association, 124 Columbia Heights.
Buffalo, N. Y.....	8YP	Seneca Vocational School.
Dayton, Ohio.....	8XAK	S. M. K. Radio Corp., 39 East Third Street.
New Haven, Conn.....	1XB	Doolittle Radio Corp., 116 Crown Street.
New York, N. Y.....	2XT	R. C. A.
Santa Monica, Calif.....	6XAG	Edward N. Willis, 921 Pennsylvania Avenue.
Schenectady, N. Y.....	2XAA	Watson P. Dutton, Route 58, Box 30.
Tucson, Ariz.....	8XAW	University of Arizona.
Washington, D. C.....	3XAA	Catholic University of America.

*Special land stations grouped by districts*

Call signal	District and station	Call signal	District and station
1XB	First district: New Haven, Conn.	6XAG	Sixth district:
2XAA	Second district:	6XAW	Santa Monica, Calif.
2XN	Schenectady, N. Y.	8XAK	Tucson, Ariz.
2XT	Brooklyn, N. Y.	8YP	Eighth district:
8XAA	New York, N. Y.		Dayton, Ohio.
	Third district: Washington, D. C.		Buffalo, N. Y.

## 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, 1924, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

BEAUMONT, TEX.—W. l., 600, 685.  
 BELFAST, ME. (WCE).—Hours, X.  
 BELFAST, ME. (WGU).—Hours, X.  
 BOLINAS, CALIF. (KET).—W. l., strike out 99.  
 CANDLE, ALASKA.—W. l., 600, 625, 725.

CARLISLE, ALASKA.—W. l., 600, 675, 1,610.  
 CEIBA, P. R.—W. l., 600, 1610.  
 CHIGNIK, ALASKA (KNP).—System, R. C. A., 1000; w. l., 600, 625, 706, 1,650.  
 CHOMLY, ALASKA.—W. l., 600, 900, 1,650; hours, 7 a. m.—midnight.  
 DALY, ALASKA.—W. l., 600, 725.  
 DEARBORN, MICH.—Range, 150.  
 EGEKIK, ALASKA.—W. l., 600, 706, 900.  
 EKUK, ALASKA.—System, Halcun, 1000; w. l., 600, 650, 900.  
 FLINT, MICH.—Range, 150.  
 FORT MORGAN, ALA.—W. l., 600, 730, 1713.  
 GREENSBURG, PA.—W. l., 1199.  
 HILO, HAWAII.—W. l., 550, 600.  
 HONOLULU, HAWAII (KOG).—W. l., 550, 600.  
 HUNTERS BAY, ALASKA.—W. l., 600, 700.  
 KASAAN, ALASKA.—W. l., 600, 700.  
 KAUNAKAKAI, HAWAII.—W. l., 550, 600.  
 KAWAIHAE, HAWAII.—W. l., 550, 600.  
 KENAI, ALASKA (KLD).—W. l., 600, 725.  
 KOGGIUNG, ALASKA (KVV).—W. l., 600, 630, 900, 1,600.  
 LOCKANOK, ALASKA.—System, K. & C., 1,000; w. l., 600, 900.  
 LOS ANGELES, CALIF. (KVT).—W. l., strike out 300.  
 NEW BRUNSWICK, N. J. (WIR).—W. l., 74.  
 NEW ORLEANS, LA.—W. l., strike out 300.  
 NUSHAGAK, ALASKA (KKAÆ).—W. l., 550, 600, 900, 1,650.  
 PILLAR BAY, ALASKA.—W. l., 600, 725.  
 PYBUS BAY, ALASKA.—W. l., 600, 900, 1,650; hours, 7 a. m.—midnight.  
 QUADRA, ALASKA (KHD).—W. l., 600, 900, 1,650; hours, 7 a. m.—midnight.  
 QUADRA, ALASKA (KOR).—W. l., 600, 700.  
 ROCHESTER, N. Y.—W. l., 135, 145.  
 ROSE INLET, ALASKA.—W. l., 600, 900, 1,650; hours, 7 a. m.—midnight.  
 SAN DIEGO, CALIF. (KVU).—W. l., strike out 300.  
 UYAK, ALASKA.—W. l., 600, 725.  
 WAHIAWA, HAWAII.—Range, 200-400; w. l., strike out 300.  
 WAILUKU, HAWAII.—W. l., 550, 600.  
 WARREN, ALASKA.—W. l., 600, 725, 1,610.  
 WYANDOTTE, MICH.—W. l., 1,790; service, P.  
 YAKUTAT, ALASKA.—W. l., 600, 900.  
 YES BAY, ALASKA.—W. l., 600, 900, 1,650; hours, 7 a. m.—midnight.  
 Strike out all particulars of the following-named stations: Culver City, Calif. (KZY) and Los Angeles, Calif. (KWH).

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, 1924, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

ABERCOS.—W. l., 450, 600, 706, 800, 875.  
 BANNACK.—Station operated and controlled by I. W. T. Co.  
 B. H. TAYLOR.—System, W. S. A. Co., 1,000; w. l., 600, 706.  
 BIBCO.—W. l., 450, 600, 706, 800.  
 BRUSH.—W. l., 450, 600, 706, 800, 875.  
 BURNWELL.—Name changed to Alpha.  
 CASPER.—System, Navy-W. S. A. Co., 1,000; w. l., 450, 600, 706, 800.  
 CASTLE TOWN.—Station operated and controlled by I. W. T. Co.  
 CETHANA.—W. l., 600, 706; rates, 8 cents per word; station operated and controlled by owner of vessel.  
 CITY OF LOS ANGELES.—System, Navy-R. C. A., 1,000 and F. T. Co. are; w. l., 600, 706, 800, 1,800, 2,100, 2,400.  
 CITY OF SPOKANE.—W. l., 450, 600, 706, 800, 875.  
 COLDWATER.—W. l., 600, 706, 800.  
 COMMERCIAL GUIDE.—Range, 400; w. l., 450, 600, 706, 800.  
 COMMERCIAL SPIRIT.—W. l., 450, 600, 706, 800.  
 CONEHATTA.—W. l., 450, 600, 706, 800.  
 CUBA (KDLK).—W. l., 450, 600, 800.  
 DELFINA.—W. l., 600, 706, 800.  
 ELENA VALDEZ.—Station operated and controlled by owner of vessel.  
 EOCENE.—Station operated and controlled by I. W. T. Co.  
 FELTORN.—W. l., 600, 706, 800.

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**FREDERIC EWING.**—W. L., 600, 706, 800.  
**GOVERNOR JOHN LIND.**—System, Navy-W. S. A. Co., 1,000; w. l., 600, 706, 800.  
**HADNOT.**—System, Navy-W. S. A. Co., 1,000; w. l., 600, 706, 800.  
**SUDURCO.**—W. l., 450, 600, 706, 800.  
**HALEAKALA (KORL).**—W. l., 450, 600, 706, 800.  
**HAMILTON.**—System, Lowenstein, 1,000 and I. W. T. Co. arc; w. l., 600, 706, 800, 1,800, 2,100, 2,400.  
**HENRY S. GROVE.**—W. l., 600, 706, 1,800, 2,100, 2,400.  
**HERBERT G. WYLIE.**—W. l., 450, 600, 706, 800.  
**ILLINOIS (KFMC).**—Goltra Barge Line owner of vessel.  
**IOWA.**—Goltra Barge Line owner of vessel.  
**JANE NETTLETON.**—W. l., 600, 706, 800.  
**JOHN A. KLING.**—W. l., 600, 706, 800; station operated and controlled by owner of vessel.  
**KATHERINE.**—Call signal changed to KZBB.  
**LAKE HARMINIA.**—Station operated and controlled by R. C. A.  
**LANCASTER.**—W. l., 600, 706, 800.  
**LEHIGH.**—W. l., 450, 600, 706, 800.  
**LILLIAN.**—W. l., 600, 706, 800.  
**MAJOR WHEELER.**—W. l., 600, 706, 800.  
**MAKENA.**—System, Navy-R. C. A., 1,000; w. l., 600, 800.  
**MAUI.**—Range, 100-300; system, R. C. A. v. t. telephone and telegraph and R. C. A., 1,000; w. l., 600, 706, 800, 870.  
**MEXICO.**—System, R. C. A., 1,000; w. l., 600, 706, 800.  
**MILLINOCKET.**—W. l., 600, 706, 800.  
**MISSOURIAN.**—W. l., 450, 600, 706, 800, 1,800.  
**M. J. SCANLON.**—System, Navy-Lowenstein, 1,000; w. l., 600, 706, 800; Hammond Lumber Co. owner of vessel; station operated and controlled by R. C. A.  
**MOHAWK.**—System, Navy-Lowenstein, 1,000; w. l., 600, 706, 800, 875.  
**MONTPELIER.**—System, R. C. A., 1,000; w. l., 600, 706, 800; station operated and controlled by owner of vessel.  
**MOUNT EVANS.**—W. l., 450, 600, 706, 800, 875.  
**MUNBOMO.**—Range, 200; w. l., 600, 706, 800; station operated and controlled by I. W. T. Co.  
**NEW HAVEN.**—System, Navy-Lowenstein, 1,000; w. l., 600, 706, 800, 875.  
**NEWPORT.**—W. l., 600, 706, 800.  
**NORTH KING.**—W. l., 600, 706, 800.  
**OAKPARK.**—W. l., 450, 600, 706, 800.  
**OAKSPRING.**—System, R. C. A., 1,000; w. l., 450, 600, 706, 800.  
**ONEONTA.**—Range, 150; w. l., 600, 706.  
**ORLEANS.**—Oriental Navigation Co. owner of vessel.  
**PERFECTION.**—W. l., 600, 706, 800.  
**PLYMOUTH (KXH).**—System, Navy-Lowenstein, 1,000; w. l., 600, 706, 800, 875.  
**PORTO RICO.**—Station operated and controlled by I. W. T. Co.  
**PRESIDENT ARTHUR.**—Range, 300-500; system, Navy-Lowenstein, 1,000 and Federal arc; w. l., 450, 600, 706, 800, 875, 1,800, 2,100, 2,400; American Palestine Line owner of vessel; station operated and controlled by F. T. Co.  
**PRESIDENT GRANT.**—Station operated and controlled by R. C. A.  
**ROBIN HOOD.**—Station operated and controlled by I. W. T. Co.  
**ROMULUS (KZAN).**—Name changed to *Loyte*.  
**ST. HELIERS.**—W. l., 450, 600, 706, 800.  
**SALVATION LASS.**—W. l., 450, 600, 706, 800, 875.  
**SANTA OLIVIA.**—System, Navy-Lowenstein, 1,000.  
**SANTA ROSALIA.**—W. l., 450, 600, 706, 800.  
**S. O. Co. No. 93.**—W. l., 600, 706, 800.  
**SOCONY 94.**—W. l., 600, 706, 800.  
**SOUTHSEAS.**—W. l., 450, 600, 706, 800.  
**SPRAY (KFKO).**—W. l., 600, 706, 800.  
**STOCKTON.**—W. l., 600, 706, 800, 1,800, 2,100, 2,400.  
**STORM KING (KDJM).**—W. l., 450, 600, 706, 800.  
**SUCROSA.**—W. l., 450, 600, 706, 800.  
**TOMALVA.**—System, Navy-R. C. A., 1,000; w. l., 450, 600, 706, 800; station operated and controlled by R. C. A.  
**TONAWANDA.**—System, K. & C., 1,000; w. l., 600, 706, 800.  
**TULSAGAS.**—Associated Oil Co. owner of vessel.  
**WALTER D. MUNSON.**—Station operated and controlled by I. W. T. Co.  
**WEST CACTUS.**—W. l., 600, 706, 800.  
**WEST FARALON.**—W. l., 600, 706, 800, 2,100, 2,400.

WEST HARSHAW.—W. L., 450, 600, 706, 800, 875.

WEST HESSELING.—W. L., 450, 600, 706, 800.

WEST NERIS.—W. L., 450, 600, 706, 800, 875.

WILLIAM G. MATHER.—Range, 200; system, Wireless Improvement Co., 1,000; w. l., 600, 706, 800, 875; station operated and controlled by owner of vessel.

WILSON.—Range, 150; system, K. & C., 1,000; w. l., 600, 706; service, PG; hours, X; rates, North and South American service 6 cents per word; station operated and controlled by owner of vessel.

W. M. TUPPER.—Station operated and controlled by I. W. T. Co.

Strike out all particulars of the following-named vessels:

Absaroka.	Copalgrove.	Ingold.
Agawam.	Coperas.	James Otis.
Alberta.	Coquitt.	Jefferson County.
Aleona.	Corapeak.	Jekyl.
Allies.	Cornucopia.	J. F. Penrose.
Amolco.	Coskata.	John Adams.
Andrew Jackson.	Cottonwood.	Johnson City.
Anthracite Bridge.	Courageous.	John Stevens.
Arden.	Craincreek.	Kamecit.
Artemis (WQS).	Cranenest.	Kianop.
Ashland County.	Crathorne.	Kittegaun.
Askawake.	Crawl Keys.	Lake Akkra.
Asquam.	Craycroft.	Lake Annette.
Assinippi.	Cushnoc.	Lake Arline.
Atlanta of Texas.	Dade County.	Lake Beacon.
Babboosic.	Dallas.	Lake Balnora.
Bar Harbor.	Daniel Webster.	Lake Bledsoe.
Bellingham.	Dauperata.	Lake Buckeye.
Bensalem.	Decatur Bridge.	Lake Canaverel.
Bethlehem Bridge.	Defiance.	Lake Cathoon.
Betsy Bell.	Des Moines Bridge.	Lake Catherine.
Boston Bridge.	Detroit-Wayne.	Lake Charles.
Bound Brook.	Donald McKay.	Lake Charlotte.
Brasher.	East Chicago.	Lake Chelan.
Calaveras.	Easterling.	Lake Copley.
Calico rock.	Eastern Breeze.	Lake Crystal.
Calispell.	Eastern Queen.	Lake Delancey.
Calvert.	Eastern Temple.	Lake Duncan.
Cambridge (KIRB).	Escambia.	Lake Eckhart.
Cedar Spring.	Fargo.	Lake Eliko.
Ceralvo.	Federal Bridge.	Lake Elkwood.
Cerroso.	Firholiffe.	Lake Ellenorah.
Cerro Gardo.	Franklin County.	Lake Ellsworth.
Chamberino.	Fresno.	Lake Elmwood.
Chambles.	Galveston.	Lake Elsab.
Chaparel.	Gaston.	Lake Elsinore.
Chappell.	Goodspeed.	Lake Elva.
Chattanooga.	Gree.	Lake Elwin.
Chautauqua.	Greenland.	Lake Ennis.
Chepadoa.	Gunston Hall.	Lake Fagundus.
Chickamauga.	Hartford.	Lake Fairfax.
Chipehung.	Haelehurst.	Lake Fanbush.
City of Alma.	Hawarden.	Lake Pandango.
City of Dalhart.	Haxtum.	Lake Farge.
City of Elwood.	Henry Clay.	Lake Faribault.
City of Fort Worth.	Henry County.	Lake Farragut.
City of Lordsburg.	H. F. Morse.	Lake Favonia.
City of Rayville.	Hickman.	Lake Faxon.
City of Sherman.	Hico.	Lake Fear.
City of Vernon.	Hillsborough County.	Lake Felder.
Clark Mills.	Hinckley.	Lake Fenn.
Cold Spring.	Holyoke Bridge.	Lake Fernalda.
Connorsville.	Houston.	Lake Figart.
Consort.	Hybert.	Lake Fiscus.
Continental Bridge.	Iceland.	Lake Fitch.

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Lake Flatonia.	Lake Gaba.	Sawokh.
Lake Floris.	Lake Sapor.	Schuylkill Bridge.
Lake Fluma.	Lake Shawano.	Siletz.
Lake Fouda.	Lake Silver.	Sioux Falls.
Lake Fontana.	Lake Strabo.	Star of Greenland.
Lake Fontacet.	Lake St. Clair.	Star of Russia.
Lake Forsby.	Lake St. Regis.	Stramenleaf.
Lake Fostoria.	Lakeview.	Syros.
Lake Fouché.	Lake Washburn.	Tampa (KOVX).
Lake Fray.	Lake Wilson.	Texarkana.
Lake Frechorn.	Lake Winona.	Tona.
Lake Freed.	Lake Wisconsin.	Tonesit.
Lake Freeland.	Lake Yahara.	Triumph.
Lake Freezeout.	Lake Yelverton.	Tuckanuck.
Lake Frugality.	Lake Yemassee.	Unioi.
Lake Frumet.	Lake Ypsilanti.	Vanada.
Lake Furgard.	Lake Zaleski.	Virginia Bridge.
Lake Furlough.	Lansdowne.	Wacosta.
Lake Furnas.	Lordship Manor.	Walden.
Lake Gakona.	Manatee.	Walkill.
Lake Galewood.	Masco.	Ward.
Lake Gardner.	Massillon Bridge.	Wathena.
Lake Gaspar.	Masufa.	Waubesa.
Lake Gatun.	Mercoer Victory.	Waukau.
Lake Gedney.	Minooka.	Waukeshia.
Lake Getaway.	Mitchell.	Wauwatosa.
Lake Giddings.	Monmouth.	Waxahachie.
Lake Gita.	Monroe.	West Alcoa.
Lake Girardeseu.	Montgomery (KIJP).	West Apaum.
Lake Glasco.	Mount Shasta.	West Ashawa.
Lake Glaucus.	Mount Vernon.	West Cape.
Lake Globe.	Mt. Vernon Bridge.	West Compo.
Lake Glencoe.	Nantaaket.	West Cussota.
Lake Gormanis.	Nashoba.	Western Ally.
Lake Grainger.	National Bridge.	Western Chief.
Lake Grampian.	Nasco.	Western City.
Lake Grampus.	Neshobee.	Western Hero.
Lake Grandon.	New England.	Western Maid.
Lake Gratin.	New Orleans (KDFB).	Western Star.
Lake Gravella.	New Windsor.	Western Wave.
Lake Gravity.	Nipmuc.	Westford.
Lake Gretna.	Noocalula.	West Galeta.
Lake Grogan.	Oakland.	West Hartley.
Lake Harris.	Oklahoma City.	West Helix.
Lake Helen.	Oldham.	West Honaker.
Lake Hemlock.	Orani.	West Hosokie.
Lake Hewes.	Orion.	West Lashaway.
Lakehurst.	Osawatomie.	Westmead.
Lake Inaba.	Oskaloosa.	Westmount.
Lake Janet.	Ozette.	West Raritana.
Lake Larga.	Paganset.	West View.
Lake Lemando.	Palisades.	Westwood.
Lake Lora.	Pasadena.	West Zeda.
Lake Lida.	Passaic Bridge.	West Zucker.
Lake Louise.	Pawtucket.	West Zula.
Lake Mary.	Peekskill.	W. H. Talbot.
Lake Maurepas.	Phoenix Bridge.	Wichita.
Lake Medford.	Potter.	William H. Webb.
Lake Miraflores.	Poughkeepsie.	Willimantic.
Lake Ontario.	President Fillmore.	Winona County.
Lake Osweya.	Proctor.	Worcester.
Lake Pachuta.	Quillwark.	Yaka.
Lake Pearl.	Red Mountain.	Yaksa.
Lake Pewaukee.	Riverside Bridge.	Yomachichi.
	Rock Island.	Yosemite (KYS).

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

KIMS, read Alpha; KIZK, call changed to KZBB; KZAN, read Leyte; strike out all particulars following the call signals, KDAW, KDBW, KDCA, KDCD, KDCI, KDCN, KDCO, KDCZ, KDDF, KDEC, KDEZ, KDFB, KDFC, KDFX, KDGM, KDGS, KDHG, KDIK, KDIR, KDIX, KDJG, KDJK, KDKP, KDLM, KDMU, KDMV, KDNP, KDNR, KDOI, KDPN, KDQB, KDQE, KDQG, KDSM, KEBR, KEBS, KEBT, KECJ, KECK, KEDG, KEDM, KEFD, KEFJ, KEFK, KEFL, KEFM, KEGG, KEGJ, KEGP, KEGT, KEJD, KEJF, KEJK, KEJN, KEGK, KEKJ, KEKP, KEND, KENJ, KENP, KEPP, KEPQ, KEQB, KERF, KESN, KESZ, KETM, KEVB, KEVP, KEVS, KEZB, KEZC, KEZD, KEZF, KEZL, KEZZ, KFCE, KFD, KFFJ, KFH, KFNI, KGAE, KHE, KHW, KIBB, KIBG, KIBJ, KIBL, KICV, KIDD, KIDN, KIDS, KIDV, KIFK, KIFQ, KIGB, KIGG, KIJK, KIJP, KIJV, KIJX, KIJZ, KIKB, KIKD, KIKF, KIKL, KILM, KIMB, KIMJ, KIND, KINK, KINS, KINZ, KIPB, KIPD, KIQK, KIQN, KIRJ, KIRR, KIRV, KISN, KISV, KITC, KITF, KITG, KITM, KIU, KIVG, KIVM, KIXC, KIXN, KIXT, KIZJ, KIZR, KJUJ, KKEO, KKEU, KLAU, KLAU, KLEA, KLEA, KLEB, KLEU, KLOE, KLOI, KLOO, KLOU, KLUO, KMB, KMEU, KMH, KMIO, KMOO, KMUE, KMUU, KNAI, KNAO, KNAU, KOBD, KOFB, KOCB, KOCG, KOCN, KOCF, KOCQ, KOCZ, KODG, KOFJ, KOFL, KOFT, KOPX, KOFZ, KOGK, KOGS, KOJP, KOJQ, KOJX, KOKK, KOKM, KOLJ, KOLK, KOLV, KOLZ, KOMR, KOMS, KOMX, KOMZ, KONJ, KONL, KONN, KONP, KONQ, KONX, KOPB, KOPP, KOQX, KORF, KOS, KOSF, KOSR, KOSX, KOTF, KOTQ, KOTT, KOTV, KOVL, KOVX, KOXB, KOXJ, KOXK, KOZD, KOZN, KOZT, KOZV, KQEO, KQOO, KQUA, KQUO, KREI, KREO, KRIL, KSIL, KSOE, KSOO, KTAI, KTIO, KTOO, KTUE, KTUU, KUBP, KUBR, KUBS, KUCB, KUCD, KUCF, KUCG, KUCJ, KUCK, KUCR, KUCS, KUDM, KUFF, KUGR, KUKC, KUKD, KUKG, KULC, KULL, KURL, KUMV, KUNK, KUNS, KUPG, KUPX, KUQP, KUQN, KURB, KURN, KUTB, KUTK, KUTV, KUZM, KVA, KVIA, KVOI, KVOO, KVOU, KVUE, KVUO, KVUU, KWA, KWH, KXAE, KXAU, KXEA, KXEO, KXIE, KXIL, KXII, KXIO, KXOU, KXUE, KYS, KZA, KZAO, KZAU, KZIE, KZIL, KZOA, KZOE, KZOI, KZUU, KZY, WBLA, WBUA, WBUL, WBUO, WCIA, WCIO, WCUA, WCUU, WDEI, WDIE, WDIO, WDIU, WDUI, WDUO, WDUU, WEU, WFAE, WFEI, WFOA, WFOU, WFUL, WGOO, WHH, WJIA, WJIL, WKAI, WKAU, WKEL, WKEO, WKO, WKUU, WKW, WLAI, WLEA, WLEO, WLEU, WLII, WLIO, WLO, WLUO, WLUU, WMEU, WNA, WNAE, WNAI, WNEI, WNIU, WNL, WPAI, WPIU, WQEO, WQS, WREA, WSEA, WSEU, WSOO, WSUA, WTAA, WTEE, WTEI, WTEO, WTEU, WTF, WTUI, WVAE, WVIA, WVUA, WWC, WXEO, WXUO, WZOE, WZOI, WZOO.

## 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, 1924]

KFBL (Everett, Wash.).—Power, 20.  
 KFCB (Phoenix, Ariz.).—Power, 50.  
 KFGH (Stanford University, Calif.).—W. l., 270, fy. kc., 1,110.  
 KFI (Los Angeles, Calif.).—Power, 2,000.  
 KFJI (Astoria, Oreg.).—W. l., 246, fy. kc., 1,220.  
 KFMR (Sioux City, Iowa).—Power, 100.  
 KFOJ (Moberly, Mo.).—Power, 10.  
 KFOY (St. Paul, Minn.).—Address 711 Dayton Avenue.  
 KFPT (Salt Lake City, Utah).—Call signal changed to KSL, power, 1,000; w. l., 299.8, fy. kc., 1,000.  
 KFQH (Burlingame, Calif.).—W. l., 220, fy. kc., 1,360.  
 KFRC (San Francisco, Calif.).—Station operated and controlled by City of Paris Dry Goods Co.; w. l., 268, fy. kc., 1,120.  
 KFRU (Bristow, Okla.).—Station operated and controlled by Etherical Radio Co.  
 KFUQ (San Francisco, Calif.).—Call signal changed to KJBS; w. l., 236, fy. kc., 1,270.  
 KFWA (Ogden, Utah).—W. l., 261, fy. kc., 1,150.  
 KIR (Seattle, Wash.).—Power, 1,000.

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KLS (Oakland, Calif.).—W. l., 242, fy. kc., 1,240.  
 KOB (State College, N. Mex.).—Power, 750.  
 KOP (Detroit, Mich.).—Fy. kc., 1,080.  
 KTW (Seattle, Wash.).—Power, 750; w. l., 454.3, fy. kc., 660.  
 WABX (Mount Clemens, Mich.—near).—Power, 500; w. l., 246, fy. kc., 1,220.  
 WNJ (Newark, N. J.).—Power, 100.  
 WDBP (Superior, Wis.).—W. l., 242, fy. kc., 1,240.  
 WABN (La Crosse, Wis.).—Station operated and controlled by Ben A. Ott.  
 WDBR (Boston, Mass.).—W. l., 261, fy. kc., 1,150.  
 WSRO (Hamilton, Ohio).—Power, 100.  
 WHBB (Stevens Point, Wis.).—Station operated and controlled by Copps Co.  
 WBS (Newark, N. J.).—Power, 200.  
 WWL (New Orleans, La.).—Power, 100.  
 WGBG (Thrifton, Va.).—Power, 10.  
 WFBE (Seymour, Ind.).—Power, 10.  
 WCB D (Zion, Ill.).—Power, 1,500.  
 WDBX (New York, N. Y.).—Power, 50.  
 WAFD (Port Huron, Mich.).—W. l., 256, fy. kc., 1,170.  
 WEAH (Wichita, Kans.).—Power, 100.  
 WSL (Utica, N. Y.).—W. l., 242, fy. kc., 1,240.  
 WCBU (Arnold, Pa.).—Fy. kc., 1,360.  
 WCCO (St. Paul—Minneapolis, Minn.).—Power, 1,500.  
 WMH (Cincinnati, Ohio).—Call signal changed to WKRC; station operated and controlled by Kodel Radio Corp., 120 West Third Street; power, 1,000.  
 WBAX (Wilkes-Barre, Pa.).—Power, 10.  
 WHDI (Minneapolis, Minn.).—Power, 500.  
 WBBP (Petoskey, Mich.).—Power, 100; w. l., 238, fy. kc., 1,260.  
 WRAF (Laporte, Ind.).—Power, 100.  
 WABI (Bangor, Me.).—Station operated and controlled by Bangor Hydro-Electric Co.  
 WMU (Washington, D. C.).—Power, 50.  
 WEBZ (Savannah, Ga.).—Power, 50.  
 WWI (Dearborn, Mich.).—Power, 500.  
 WRR (Dallas, Tex.).—Power, 350.  
 WSAN (Allentown, Pa.).—Power, 50.  
 WABW (Wooster, Ohio).—Power, 50.  
 Strike out all particulars of the following-named stations: KDPT (San Diego, Calif.); KDYM (San Diego, Calif.); KDZE (Seattle, Wash.); KFCEP (Ogden, Utah); KFEX (Minneapolis, Minn.); KPHR (Seattle, Wash.); KFJZ (Fort Worth, Tex.—Texas National Guard); KFKV (Butte, Mont.); KPLA (Butte, Mont.); KFLE (Denver, Colo.); KFNZ (Burlingame, Calif.); KFOD, Wallace, Idaho; KFOU (Richmond, Calif.); KEPH (Salt Lake City, Utah); KFQN (Portland, Oreg.); KFQX (Seattle, Wash.); KFRJ (Conway, Ark.); KFRO (Fort Worth, Tex.); KNT (Kukak Bay, Alaska); KWH (Los Angeles, Calif.); WAAN (Columbia, Mo.); WABH (Sandusky, Ohio); WCAV (Little Rock, Ark.); WCBO (Memphis, Tenn.); WCVB (Tullahoma, Tenn.); WCBW (Macon, Ga.); WDBI (St. Petersburg, Fla.); WEBX (Nashville, Tenn.); WIK (McKeesport, Pa.); WJAN (Peoria, Ill.); WKAN (Montgomery, Ala.); WMAH (Lincoln, Nebr.); WPAU (Moorhead, Minn.); WSAV (Houston, Tex.).

## 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, 1924, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

FORT STEVENS, OREG. (N.ZS-radio compass).—Call signal changed to NPE.  
 SAN DIEGO, CALIF. (regular station).—W. l., strike out 1,538, add 2,998.

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

NES (Fort Stevens, Oreg.), call signal changed to NPE.

## 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, 1924]

CINCINNATI, OHIO (8XAY).—Changed to Harrison, Ohio.  
 OAKLAND, CALIF. (6XBL).—Changed to Berkeley, Calif., 902 Santa Fe Avenue.  
 Strike out all particulars of the following-named stations: Buffalo, N. Y. (8XAB);

## MISCELLANEOUS

## AMATEUR RADIO STATIONS RESTRICTED IN COMMUNICATION WITH COMMERCIAL OR GOVERNMENT STATIONS

[General Letter No. 285a]

APRIL 1, 1925.

*To Supervisors of Radio and Owners of Amateur Radio Stations.*

The regulations governing the operation of amateur stations, dated December 28, 1924, paragraph under intercommunication, are amended to read as follows: "Amateur stations are not permitted to communicate with commercial or Government stations unless authorized by the Secretary of Commerce, except in an emergency or for testing purposes which may be construed to cover official Government business. No variation of amateur wave lengths is permitted, and the amateur quiet hours restriction must be observed. This restriction does not apply to communication with small pleasure craft such as yachts and motor boats, which may have difficulty in establishing communication with commercial or Government stations."

D. B. CARSON, Commissioner.

Approved:

S. B. DAVIS, Acting Secretary of Commerce.

## OPERATOR'S LICENSE SUSPENDED

License No. 8945, issued at New York, September 6, 1923, has been suspended for a period of 30 days on account of the holder of the license having violated article 6 of the International Convention service regulations, in that he carried on an unofficial conversation, and also for violation of article 8 of the International Convention, in that he caused interference to other stations.

## NEW YORK HARBOR WEATHER CONDITIONS TRANSMITTED BY MARION AND TUCKERTON STATIONS

Weather conditions involving barometric pressure, temperature, wind direction, velocity, state of sky, state of sea, and visibility at Sandy Hook, N. J., are now broadcast for the benefit of navigation approaching New York harbor from the stations operated by the Radio Corporation of America at Marion, Mass. (WCC), on 2,200 meters, continuous wave, and at Tuckerton, N. J. (WSC). These observations are taken at 8 a. m. and 4 p. m., and are sent out at 9 a. m. and 5 p. m., seventy-fifth meridian, respectively.

## CHANGE IN TIME SIGNAL OF WELLINGTON, NEW ZEALAND

The call signal of Hector Observatory radio station (VLY) is now used for these wireless time signals instead of the call signal of Wellington (VLW). The time signals are, however, still automatically transmitted through the latter station. The preliminary signals in both groups of time signals have been amended to:

— (dash of 2 seconds duration) VLY sent every 15 seconds

The termination of the signals is given by:

AR VLY VA

The approximate location of this station is latitude 41° 16' S., longitude 174° 46' E.—*Admiralty Notice to Mariners, No. 280, 1925, London.*

## CHANGE IN WAVE LENGTH OF FLAMBOROUGH RADIO COMPASS STATION

On and after April 1, this year, Flamborough radio compass station, call signal BYN, position 54° 06' 49" N., 0° 04' 56" W., will use a wave length of 600 meters only, both for transmitting and receiving instead of 450 meters as formerly.

## SAN FRANCISCO AND BLUNTS REEF LIGHT VESSELS FOG SIGNALS

Masters of vessels and radio operators are advised that weather reports will not be furnished by these fog-signal stations when the radio-fog signal is in operation and are requested not to ask for weather reports during such periods.

## EXPERIMENTAL BROADCASTING OF ICE REPORTS BY SCHEVENINGEN STATION

Ice reports containing data concerning ice conditions in Netherlands harbors and approaches will be broadcast experimentally, as occasion arises, by Scheveningen radio station, call letters POH, on 1,800 meters, apart at 1,115 and 2,315

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latter preceding the navigational warning. These reports will be transmitted in code, the particulars of which are given below.

Beginning with the words "Ijsbericht, ice report," the code consists of two groups of four figures, and as the harbors concerned are always signaled in the same order as given in the list, each figure, therefore, represents the navigational conditions existing in the locality designated by its relative position.

List of harbors	Navigational conditions
(a) Delfzijl (Ems).	1. Navigation practicable.
(b) Harlingen (Zuider Zee).	2. Navigation difficult for sailing vessels.
(c) Amsterdam (North Sea Canal).	4. Navigation very difficult; closed for sailing vessels.
(d) Zaandam (Voorzaan).	5. Navigation only practicable for large steamers.
(e) Helder (Zuider Zee).	7. Navigation closed.
(f) Rotterdam (Waterway).	
(g) Dordrecht (North).	
(h) Dordrecht (Mallegat).	

*Example.*—Ijsbericht ice report 4511 1111.

*Decoded.*—Ice intelligence, ice report. Delfzijl: Navigation very difficult; closed to sailing vessels. Harlingen: Navigation only practicable for large steamers. Amsterdam, Zaandam, Helder, Rotterdam, Dordrecht (North), and Dordrecht (Mallegat): Navigation practicable.

The broadcasting of ice reports will begin when navigation is closed to small steamers and motor vessels at any of the harbors named above and will cease when navigation is reopened (vide Code Signal 5).—*Notice to Mariners 4 (165), Admiralty, London, 1925.*

#### REGULATIONS GOVERNING THE USE OF RADIO ON FOREIGN WARSHIPS IN GREEK WATERS

**ARTICLE 1.**—Foreign warships in the waters of Greek naval ports and naval bases, or at anchorage near them, must, in order to use their radiotelegraphic and radiotelephonic apparatus, ask permission to do so from the commander of the naval base or the port, who also must be informed of the system used, the wave length made use of in sending messages, and the hours proposed for sending.

**ART. 2.**—Foreign warships in Greek ports where there are no naval bases must comply with the regulations following: Transmitting with a wave length of 600 meters, except for sounding out a danger signal or answering such a signal, is forbidden. Interference with messages of Government radiotelegraphic stations, stationary or portable, is forbidden. Transmitting must be cut off upon request by (a) any naval authority, (b) the port authorities, and (c) any permanent shore station. Prolonged transmission should be avoided if the waves transmitted are not purely continuous. If there be Greek warships in port, the consent of the ranking commander should be sought. (Athens, October 26, 1924.)—*Received through the Department of State, Washington, Hydrographic Bulletin, March 18, 1925.*

#### CHANGE IN WAVE LENGTH OF KARACHI STATION

Emissions by the Karachi, British Indies, coast station, of information concerning meteorological conditions and information destined to navigators, when there is any, are now sent on 600 meters instead of 2,000 meters as formerly.

#### STANDARD FREQUENCY STATIONS

As a result of measurements by the Bureau of Standards upon the transmitted waves of a limited number of radio transmitting stations, data are given in each month's Radio Service Bulletin on such of these stations as have been found to maintain a sufficiently constant frequency to be useful as frequency standards. There may be many other stations maintaining their frequency just as constant as these, but these are the only ones observed. There is, of course, no guaranty that the stations named below will maintain the constancy shown. The transmitted frequencies from these stations can be utilized for standardizing wave meters and other apparatus by the procedure given in Bureau of Standards

tion. A copy of that letter circular can be obtained by a person having actual use for it upon application to the Bureau of Standards, Washington, D. C.

Station	Owner	Location	Assigned frequency (kilocycles)	Period covered by measurements (months)	Number of times measured	Deviations from assigned frequencies noted in measurements	
						Average	Greatest since Feb. 20, 1925
						Per cent	Per cent
WQL	Radio Corporation of America.	Coram Hill, L. I., N. Y.	17.13	3	25	0.1	0.2
NBS	United States Navy	Annapolis, Md.	17.50	19	142	.2	.6
WCI	Radio Corporation of America.	Barnegat, N. J.	17.95	1	7	.1	.3
WGG	do.	Tuckerton, No. 1, N. J.	18.86	19	147	.2	.2
WSO	do.	Marion, Mass.	25.80	19	111	.3	.4
WEAF	American Telegraph & Telephone Co.	New York, N. Y.	610	3	35	.0	.0
WCAP	Chesapeake & Potomac Telephone Co.	Washington, D. C.	640	18	81	.1	.1
WRC	Radio Corporation of America.	do.	640	15	61	.1	.2
WSB	Atlanta Journal	Atlanta, Ga.	700	18	70	.1	.1
WGY	General Electric Co.	Schenectady, N. Y.	750	21	115	.1	.1
WBZ	Westinghouse Electric & Manufacturing Co.	Springfield, Mass.	900	11	29	.1	.1
KDKA	do.	East Pittsburgh, Pa.	970	18	143	.1	.3

<sup>1</sup> New frequency assigned Jan. 13, 1925 (formerly 890 kilocycles).

<sup>2</sup> New frequency assigned Dec. 31, 1924 (formerly 920 kilocycles).

#### COOPERATIVE INVESTIGATION OF RADIO WAVE PHENOMENA

The continuing expansion in the uses of radio and the unexpected phenomena encountered in the very high frequencies now so extensively used make important the determination of the laws and causes of the vagaries of radio transmission. Fuller knowledge of these phenomena is necessary before radio can fully grapple with the limitations at present imposed upon it by atmospheric disturbances, interference, and fading. To this end a number of university and other laboratories are engaging in a measurement program under the direction of the Bureau of Standards. The work in view includes measurements on field intensity, fading, direction variation, and atmospheric disturbances at the broadcast and higher frequencies.

The first series of observations were made in connection with the solar eclipse of January 24. Cooperating in the program initiated by G. W. Pickard, quantitative measurements of the signal intensity variations and direction shifts of transmission from several stations were conducted by the Bureau of Standards and a number of other laboratories, most of them in the northeastern part of the United States and southern part of Canada. Records were made on the morning of the eclipse and, for comparison purposes, on two days before and two days after. These observations showed the eclipse gave rise to effects intermediate between those characterizing day and night. Much interest was stimulated in the measurement work, and an increasing number of laboratories are preparing apparatus for participation in the further work.

In a second series of observations started on March 24 the object of study was the marked changes of transmission occurring at sunset. All participants concentrated on the transmission of a single broadcasting station, WGY of the General Electric Co., Schenectady, N. Y., during the 2½ hours centering approximately at sunset (5 to 7.30 p. m.). In order to include a variety of weather conditions, measurements were made on six days scattered over the period of March 24 to April 3. The results of these observations, which have just closed, will be studied and a report issued at a later date.

The details of future cooperative tests to be arranged will be determined to a

tories interested in measurements of radio wave phenomena are invited to communicate with the Bureau of Standards, Washington, D. C., relative to participation in the investigation. The apparatus required for recording signal intensity variations can be constructed for the most part from the equipment of the average college or commercial radio laboratory. Measurements of field strength and direction require the construction or assembly of somewhat specialized apparatus.

#### STANDARD RADIO FREQUENCY TRANSMISSIONS, APRIL TO JULY

The Bureau of Standards transmits twice a month radio signals of definitely announced frequencies for use by the public in standardizing wave meters and transmitting and receiving apparatus. The signals are transmitted from the bureau's station, WWV, Washington, D. C., and from station 6XBM, Stanford University, California.

The transmissions are by unmodulated continuous-wave telegraphy. A complete frequency transmission includes a "general call," a "standard frequency signal," and "announcements." The "general call" is given at the beginning of the 8-minute period and continues for about 2 minutes. This includes a statement of the frequency. The "standard frequency signal" is a series of very long dashes with the call letters (WWV or 6XBM) intervening. This signal continues for about 4 minutes. The "announcements" are on the same frequency as the "standards frequency signal" just transmitted and contain a statement of the frequency. An announcement of the next frequency to be transmitted is then given. There is then 4-minute interval while the transmitting set is adjusted for the next frequency.

The signals can be heard and utilized by stations equipped for continuous-wave reception at distances within about 500 to 1,000 miles from the transmitting stations. Information on how to receive and utilize the signals is given in Bureau of Standards Letter Circular No. 92, which may be obtained on application from the Bureau of Standards, Washington, D. C. Even though only a few points are received, persons can obtain as complete a wave-meter calibration as desired by the method of generator harmonics. Information on that method will be supplied by the Bureau on request.

The schedule of standard frequency signals from both the Bureau of Standards and Stanford University is as follows:

#### Schedule of frequencies in kilocycles

[Approximate wave lengths in meters in parentheses]

Time <sup>1</sup>	Apr. 5	Apr. 20	May 5	May 20	June 5	July 20
10 to 10.08 p. m. ....	1,500 (200)	2,000 (150)	125 (2,400)	300 (1,000)	550 (545)	1,800 (200)
10.12 to 10.20 p. m. ....	1,650 (182)	2,300 (91)	133 (2,254)	315 (852)	620 (478)	1,850 (182)
10.24 to 10.32 p. m. ....	1,800 (167)	2,600 (83)	143 (2,097)	345 (808)	730 (411)	1,900 (167)
10.36 to 10.44 p. m. ....	2,000 (150)	4,000 (75)	155 (1,934)	375 (800)	850 (353)	2,000 (150)
10.48 to 10.56 p. m. ....	2,200 (138)	4,400 (68)	166.5 (1,800)	425 (705)	980 (300)	2,200 (138)
11 to 11.08 p. m. ....	2,450 (122)	4,900 (61)	205 (1,455)	500 (600)	1,130 (268)	2,450 (122)
11.12 to 11.20 p. m. ....	2,700 (111)	5,400 (55)	260 (1,153)	600 (500)	1,300 (251)	2,700 (111)
11.24 to 11.32 p. m. ....	3,000 (100)	6,000 (50)	315 (952)	690 (450)	1,500 (200)	3,000 (100)

<sup>1</sup> Eastern standard time for WWV, Washington, D. C. Pacific standard time for 6XBM, California.

#### 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

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