

# DEPARTMENT OF COMMERCE

# RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION

Washington, June 1, 1925—No. 98

## CONTENTS

	Page	Miscellaneous—Continued.	Page
Abbreviations.....	1	Ancona (Italy) station open to general public service correspondence.....	13
New stations.....	2	Radio circuit between Tutuila, Samoa, and Papeete.....	13
Alterations and corrections.....	4	Picture apparatus may be used by amateurs	13
Miscellaneous:		Broadcasting stations alphabetically by States and cities.....	13-16
Time of transmission of weather reports by New Orleans (NAT) naval station.....	12	Changes in Tennessee amateur stations.....	16
300 and 600 meters discontinued on Great Lakes.....	12	Comparison of methods of measuring radio field intensities.....	17
Operator's license suspended.....	12	An improved type of wave-meter resonance indicator.....	17
Wireless distress messages.....	12	Sunset fading tests.....	17
Cape Ray (Newfoundland) radio beacon changed.....	12	A study of the season variation of radio-frequency phase difference of laminated phenolic insulating materials.....	18
Experimental radio fog signal established at Scilly Isles, England.....	12	Standard frequency stations.....	18
Fog signal established on Lake Huron Light-ship.....	12	References to current radio periodical literature.....	19-20
Hamsholm (Denmark) light station fog signal	13		
General call signal assigned to British naval coast stations.....	13		

## ABBREVIATIONS

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

Name	= Name of station.
Loc.	= Geographical location. O=west longitude. N=north latitude. S=south latitude.
Call	= Call letters assigned.
System	= Radio system used and sparks per second.
Range	= Normal range in nautical miles.
W. l.	= Wave lengths assigned: Normal wave lengths in italics.
Service	= Nature of service maintained.
	PG=General public.
	PR=Limited public.
	RC=Radio compass station.
	FS=Fog signal.
	P=Private.
	O=Government business exclusively.
Hours	= Hours of operation:
	N=Continuous service.
	X=No regular hours.
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.

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

Station	Call signal	Wave lengths	Service	Hours	Station controlled by—
Cleveland, Ohio.....	WMI	600, 875.....	PG	N	Great Lakes Radio Telegraph Co.
Culver City, Calif. <sup>1</sup> .....	KJU	146.....	P	X	Cecil B. De Mille, City of Dallas, police and fire signal department.
Dallas, Tex. <sup>1</sup> .....	KVP	146.....	P	X	
Naknek, Alaska (Hyades-moored vessel). <sup>2</sup>	KPB	600, 725.....	FX	X	Naknek Packing Co.
Pottsville, Pa. <sup>3</sup> .....	WDS	137.....	FX	X	Pennsylvania Power & Light Co.

<sup>1</sup> Range, 50; system, composite v. t. telephone and telegraph.

<sup>2</sup> Loc. (approximately) O 92° 47' 00", N. 32° 46' 00"; range, 25; system, composite v. t. telegraph.

<sup>3</sup> Loc. (approximately) O 156° 25' 00", N. 58° 43' 20"; range, 150; system, W. S. A. Co., 1000.

<sup>4</sup> Loc. (approximately) O 76° 16' 00", N. 40° 42' 00"; range, 150; system, composite v. t. telephone and telegraph.

## Commercial ship stations, alphabetically by names of vessels

[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]

Name of vessel	Call signal	Rates	Service	Hours	Owner of vessel	Station controlled by—
Alcotia.....	KFVQ		PG	X	Mrs. Strickler Coles, Visayan Stevedore Transportation Co.	Owner of vessel.
Campeador <sup>1</sup> .....	KZBV					
Cherokee.....	WEO	8	PG	N	Cherokee-Seminole Steamship Corporation.	
Dodoca <sup>2</sup> .....	KXO	8	PG	X	Cary Davis Tug & Barge Co.	I. W. T. Co.
Eloise <sup>3</sup> .....	KFVT		P	X	John C. Piver	Owner of vessel.
John McCartney Kennedy	WPJ		PG	X	Valley Camp Steamship Co.	Intercity Radio Telegraph Co.
John W. Allen <sup>4</sup> .....	WPK		PG	X	do.	Do.
Mahoe <sup>5</sup> .....	KZR	8	PG	X	Young Bros. (Ltd.)	I. W. T. Co.
Mazama <sup>6</sup> .....	KNUO	8	PG	X	Mazama Steamship Co.	Do.
Mount Baker <sup>7</sup> .....	KEN	8	PG	X	Red Salmon Canning Co.	Owner of vessel.
Rosamond.....	KZZ		PG	X	Pacific Freighters Co.	
S. B. Way <sup>8</sup> .....	WPO		PG	X	Valley Camp Steamship Co.	Intercity Radio Telegraph Co.
Speelacks.....	WAYG				A. Y. Gowan	
Star of Russia <sup>1</sup> .....	KFFJ	8	PG	X	Alaska Packers Association	Owner of vessel.
William C. Atwater.	WPB		PG	X	Wilson Transit Co.	

<sup>1</sup> Range, 150; system, Navy-Lowenstein, 1,000; w. l., 300, 600, 750, 952.

<sup>2</sup> Range, 150; system, K. & C., 1,000; w. l., 600, 706, 800.

<sup>3</sup> Range, 50; system, composite v. t. telegraph; w. l., 110.

<sup>4</sup> Range, 150; system, Navy-Lowenstein, 1,000; w. l., 715, 800, 875; rates, Great Lakes service, 4 cents per word.

<sup>5</sup> Range, 150; system, Navy-Lowenstein, 1,000; w. l., 600, 706, 800.

<sup>6</sup> Range, 200; system, Navy-K. & C., 1,000; w. l., 600, 706, 800.

<sup>7</sup> Range, 200; system, Gray & Danielson, 240; w. l., 600, 706, 800.

<sup>8</sup> Range, 150; system, R. C. A., 1,000; w. l., 600, 706, 800.

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

[b=ship station; c=land station]

Call signal	Name of station	Call signal	Name of station		
KEN	Mount Baker.....	b	KZBV	Campeador.....	b
KFFJ	Star of Russia.....	b	KZR	Mahoe.....	b
KFVQ	Alcotia.....	b	KZZ	Rosamond.....	b
KFVT	Eloise.....	b	WAYG	Speelacks.....	b
KJU	Culver City, Calif.....	c	WDS	Pottsville, Pa.....	c
KNUO	Mazama.....	b	WMI	Cleveland, Ohio.....	c
KPB	Naknek, Alaska (Hyades-moored vessel).....	c	WPB	William C. Atwater.....	b
			WPJ	John McCartney Kennedy.....	b
			WPK	John W. Allen.....	b

## RADIO SERVICE BULLETIN

3

*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
Alabama: Birmingham.....	WBRC	Kansas: Junction City.....	KFJC
California: Chico.....	KFWH	Missouri:	
Colorado: Denver, Colo. (near).....	KFVR	Cape Girardeau.....	KFVS
Illinois:		Kansas City.....	KWKC
Chicago (portable).....	WIBJ	New York: Flushing.....	WIBI
Do.....	WIBL	Ohio: Toledo.....	WIBK
Deerfield.....	WHT	Texas: Houston.....	KPRC
Joliet.....	WJBI	Washington: Seattle.....	KTCL

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

Call signal	Location of station (address)	Station operated and controlled by—	Power (watts)	Wave length	Frequency (kilo-cycles)
KFJC	Junction City, Kans.....	Episcopal Church (R. B. Fegan)	10	218.8	1,370
KFVR	Denver, Colo. (near), Moonlight Ranch, Route 6.....	Eugene Ross.....	50	248	1,230
KFVS	Cape Girardeau, Mo., 312 South Frederick Street.....	Cape Girardeau Battery Station (Oscar C. Hirsch), F. Wallington Morse, Jr.....	50	224	1,340
KFWH	Chico, Calif.....	Post Dispatch.....	100	254	1,180
KPRC	Houston, Tex.....	American Radio Telephone Co.....	500	298.9	1,010
KTCL	Seattle, Wash.....	Wilson Duncan Studios.....	1,000	303.9	980
KWKC	Kansas City, Mo., Werby Building.....		100	236	1,270
WBRC	Birmingham, Ala., 1913 Fifth Avenue North.....	Bell Radio Corporation.....	10	248	1,210
WHT	Deerfield, Ill. (419 North Michigan Boulevard, Chicago, Ill.).....	Radiophone Broadcasting Corporation.....	1,500	238	1,260
WIBI	Flushing, N. Y., 269 Amity Street.....	Frederick B. Zittel, jr.....	5	218.8	1,370
WIBJ	Chicago, Ill. (portable), 36 South State Street.....	O. L. Carrell.....	50	215.7	1,330
WIBK	Toledo, Ohio.....	University of the City of Toledo.....	100	203.4	1,480
WIBL	Chicago, Ill. (portable), 179 West Washington Street.....	McDonald Radio Co.....	250	215.7	1,330
WJBI	Joliet, Ill., 104 Summit Street.....	H. M. Couch.....	100	214.2	1,400

*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 Bernese bureau]

Station	Call signal	Wave length	Service	Hours	Station controlled by—
Toro Point, Canal Zone <sup>1</sup> .....	NAX	800	RC	N	United States Navy.
Point St. George, Calif. <sup>1</sup> .....	NYW	800	RC	N	Do.

<sup>1</sup> Loc. O 79° 36' 38", N 69° 22' 31"; system. United States Navv. 1,000.

4

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

Station	Call signal	Wave length	Service	Hours	Station controlled by—
Ammunition Lighter No. 8.....	NEMP		O	X	United States Navy.
Chicago.....	NDI		O	XX	Do.
Eagle 22.....	NEKF		O	XX	Do.
Inca.....	NESN		O	XX	Do.
Old Constellation.....	NEPR		O	XX	Do.
Saco.....	NEQJ		O	XX	Do.
Wanda.....	NEGQ		O	XX	Do.
Wildcat.....	NIVM		O	X	United States Coast and Geodetic Survey.
Zumbrota.....	NELD		O	X	United States Navy.

*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
NAX	Torre Point, Canal Zone..... c	NEPR	Old Constellation..... b
NDI	Chicago..... b	NEQJ	Saco..... b
NEGQ	Wanda..... b	NESN	Inca..... b
NEKF	Eagle 22..... b	NIVM	Wildcat..... b
NELD	Zumbrota..... b	NYW	Point St. George, Calif..... c
NEMP	Ammunition Lighter No. 8..... b		

*Special land stations, alphabetically by names of stations*

[Additions to the List of Radio Stations of the United States, edition of June 26, 1924]

Station	Call signal	Station controlled by—
Essex, Mont.....	7KAN	Great Northern Railway Co.
Glacier Park, Mont.....	7XAM	Do.
Hanover, N. H.....	1YB	Dartmouth College.
Harrison, Ohio.....	8XAL	Croceley Radio Corp.
Los Angeles, Calif. (portable).....	6XAU	Times-Mirror Co., 100 North Broadway.
Monmouth, Ill.....	9XP	Post Office Department.
New York, N. Y.....	2XAL	Experimenter Publishing Co.
Do.....	2XV	Robert M. Lacey and Frank E. Miller, 17 West Fifty-fourth Street.
Pullman, Wash.....	7XW	State College of Washington.
Summit, Mont.....	7XAK	Great Northern Railway Co.
Whitefish, Mont.....	7KAL	Do.

*Special land stations, grouped by districts*

Call signal	District and station	Call signal	District and station
1YB	First district: Hanover, N. H.		Seventh district—Continued.
2XAL	Second district:	7XAM	Glacier Park, Mont.
2XV	New York, N. Y.	7KAN	Essex, Mont.
6XAU	Do.	7XW	Pullman, Wash.
	Sixth district: Los Angeles, Calif.	8XAL	Eighth district: Harrison, Ohio.
	Seventh district:	9XP	Ninth district: Monmouth, Ill.
7XAK	Summit, Mont.		
7KAL	Whitefish, Mont.		

## 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]

AKUTAN, ALASKA.—W. I., 600, 625; service, P.  
Do. Do. W. I. 600 640

## RADIO SERVICE BULLETIN

5

BIG CREEK (Camp 63), CALIF.—W. L., 1,585, 1,635, 1,675.  
 BUFFALO, N. Y.—System, composite, 1,000; hours 6 a. m.—midnight.  
 CAMP EUSTIS, VA. (Flagship Division 1).—Loc. O 76° 37' 31", N 37° 08' 15";  
 range, 300, system, Navy, 1,000; w. l., 600, 706, 875; service, P.  
 CHATHAM, MASS. (WIM).—System, R. C. A. v. t. telegraph; w. l., 600, 735.  
 CLEVELAND, OHIO (KDPM).—System, Westinghouse v. t. telegraph.  
 ELDORADO, KANS.—System, composite, v. t. telegraph; w. l., 1,599, 1,910.  
 FALSE PASS, ALASKA.—W. l., 600, 650, 1,650; service, P.  
 FUNTER, ALASKA.—W. l., 600, 625; service, P.  
 HARRISBURG, PA.—W. l., 202.3, 1,199.  
 HAWK INLET, ALASKA.—W. l., 600, 725; service, P.  
 HILLSBORO, OREG. (KGH).—W. l., 4,300, 6,316, 8,696.  
 KANATAK, ALASKA (near).—W. l., 600, 875, 1,750.  
 LIHUE, HAWAII.—W. l., 550, 600, 675; service, PG; rates, ship service, 10 cents  
 per word.  
 MIAMI BEACH, FLA.—W. l., 600, 650, 1,599.  
 OWENSBORO, N. J.—System, De Forest v. t. telegraph.  
 POTTSVILLE, PA.—Changed to West Reading, Pa., loc. (approximately) O 75°  
 57' 00", N 40° 20' 00"; w. l., 1,199.  
 MARION, MASS. (WCC).—System, R. C. A. v. t. telegraph; w. l., 600, 2,200, 2,300.  
 MARION, MASS. (Mattapoisett—WRQ).—W. l., 13,500.  
 NEW BRUNSWICK, N. J. (WIZ).—W. l., 43.  
 ROCKY POINT, N. Y. (WQN).—W. l., 57.  
 ROCKY POINT, N. Y. (WQO).—W. l., 35.  
 ST. CROIX FALLS, WIS.—System, composite, v. t. telephone and telegraph.  
 SALTCHUCK, ALASKA.—Range, 150; system, Navy-Lowenstein, 1,000 w. l., 600,  
 875.  
 SEATTLE, WASH. (KPE).—W. l., add 706, 1,900.  
 SIGINAKA ISLAND, ALASKA.—W. l., 600, 650.  
 TULSA, OKLA.—System, composite, v. t. telegraph.  
 Strike out all particulars of the following-named stations: Culver City, Calif.  
 (portable—KYI); Culver City, Calif. (portable—KYJ); Fresno, Calif.; Hauto,  
 Pa.; Jordan, Mont.; Oakland, Calif. (portable); Port Arthur, Tex. (WKI);  
 San Francisco, Calif. (portable—KTA).

## 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]

A. E. R. SCHNEIDER.—W. l., 600, 706, 715, 800; rates, Great Lakes, 4 cents per  
 word.  
 AGWIMARS.—W. l., 600, 706, 800.  
 AFOUNDIRA.—W. l., 600, 706, 800.  
 ALLEGHANY.—W. l., 600, 706, 800.  
 ANCON.—W. l., 600, 706, 800; rates, North and South American service 4 cents  
 per word; transoceanic service, 8 cents per word.  
 BEACON OIL.—W. l., 600, 706, 800.  
 BELFAST.—W. l., 600, 706, 800.  
 BETTERTON.—Station operated and controlled by owner of vessel.  
 BOLIVAR.—W. l., 600, 706, 800.  
 BUSTAMENTE.—Range, 300; w. l., 300, 450, 600; service, O; hours, X; station  
 operated and controlled by owner of vessel.  
 CADDO.—W. l., 600, 706, 800.  
 CAIRO.—W. l., 600, 1,100; Inland Waterways Corporation (Mississippi Warrior  
 Service) owner of vessel.  
 CARACAS.—W. l., 600, 706, 800.  
 CASSIMIR.—W. l., 600, 706, 800.  
 CASTLE TOWN.—Charles Nelson Co. owner of vessel.  
 CEBU.—Range, 200; system, International Radio Telegraph Co., 1,000; w. l.,  
 300, 450, 600, 800; service, PG; hours, X; rates, 8 cents per word.  
 CEDARHURST.—W. l., 600, 706, 800.  
 CENTAURUS.—W. l., 600, 706, 800.  
 CHARLES BROWER.—Range, 300; w. l., 600, 706, 800, 1,800, 2,100, 2,400.  
 CHARLES H. CRAMP.—W. l., 600, 706, 800, 1,800, 2,100, 2,400.  
 CHARLES M. EVEREST.—W. l., 600, 706, 800.  
 CHATTANOOGA CITY.—W. l., 450, 600, 706, 800.

- CITY OF LOWELL.—System, Lowenstein, 1,000; w. l., 600, 706, 875.  
 CITY OF ROME.—W. l., 600, 706, 800.  
 CITY OF SAVANNAH.—W. l., 600, 706, 800.  
 CLARE.—Station operated and controlled by R. C. A.  
 CLAUSKEUS.—W. l., 600, 706, 800.  
 CLETUS SCHNEIDER.—W. l., 600, 715, 800; rates, Great Lakes service, 4 cents per word.  
 COLLINGSWORTH.—W. l., 600, 706, 800.  
 COMET.—W. l., 600, 706, 800.  
 CRIPPLE CREEK.—W. l., 600, 706, 800.  
 DEROCHE.—W. l., 600, 706, 800.  
 DOLLY C.—System, Navy-Lowenstein, 1,000; w. l., 600, 706, 800; rates, 5 cents per word; station operated and controlled by owner of vessel.  
 DONNA LANE.—I. C. Jacobson owner of vessel.  
 DRYDEN.—W. l., 600, 706, 1,800, 2,100, 2,400.  
 EASTERN GLEN.—W. l., 450, 600, 706, 800.  
 EDWARD LUCKENBACH.—W. l., 600, 706, 800.  
 EFFNA.—W. l., 450, 600, 706, 800, 875.  
 EL OCEANA.—Range, 150; system, R. C. A. v. t. telegraph; w. l., 600, 706, 800, 875.  
 ETHAN ALLEN.—W. l., 450, 600, 706, 800, 875, 2,100, 2,400.  
 ETHEL.—Range, 200; system, Navy-R. C. A., 1,000; w. l., 600, 706, 800.  
 FAIRFIELD CITY.—W. l., 450, 600, 706, 800.  
 FLORENCE D.—Range, 200; system, Marconi, 1,000; w. l., 300, 600; service, PG; hours, X; rates, 8 cents per word; Cadwallader-Gibson Lumber Co. owner of vessel; station operated and controlled by owner of vessel.  
 FORTUNA.—Station operated and controlled by owner of vessel.  
 GEORGE L. OLSON.—W. l., 600, 706, 800; Oliver J. Olson & Co. owner of vessel.  
 GLACIER.—Range, 200; system, Haleun, 120; w. l., 600, 706, 800; rates, 8 cents per word; station operated and controlled by owner of vessel.  
 GRACE DOLLAR.—W. l., 450, 600, 706, 800, 1,800.  
 GULFLAND.—W. l., 600, 706, 800.  
 GULFTRADE.—W. l., 600, 706, 800.  
 HARRY LUCKENBACH.—W. l., 600, 706, 800.  
 HASTINGS.—W. l., 450, 600, 706, 800.  
 HELEN.—Station operated and controlled by R. C. A.  
 HERMAN FRASCH.—W. l., 600, 706, 800.  
 H. M. FLAGLER.—System, I. W. T. Co. arc and Lowenstein, 1,000; w. l., 600, 706, 800, 1,800, 2,100, 2,400.  
 HOWARD.—W. l., 600, 706, 800.  
 HYADES.—W. l., 600, 706, 800; Naknek Packing Co. owner of vessel; station operated and controlled by owner of vessel.  
 I. C. WHITE.—W. l., 600, 706, 800.  
 IDALIA.—System, add composite v. t. telegraph.  
 IRIS.—W. l., 600, 706, 800.  
 JACKSONVILLE.—New York Shipbuilding Corp. owner of vessel; station operated and controlled by R. C. A.  
 JOHN ANDERSON.—Range, 150; system, R. C. A., 1,000; w. l., 600, 706, 800, 875; rates, Great Lakes service, 4 cents per word; station operated and controlled by owner of vessel.  
 JOLEE.—W. l., 600, 706, 800.  
 JULIA LUCKENBACH.—W. l., 600, 706, 800.  
 KADIAK.—System, Navy-Lowenstein, 1,000; w. l., 600, 706, 800.  
 KANAK.—System, R. C. A., 1,000; w. l., 600, 706, 800.  
 KATHERINE.—W. l., 600, 852; station operated and controlled by owner of vessel.  
 KBARNY.—System, Navy-Wireless Improvement Co., 1,000; w. l., 600, 706, 800.  
 KVICHAK.—Range, 150; system, R. C. A., 1,000; w. l., 600, 706, 800.  
 LAKE OGDEN.—Name changed to Trujillo; Atlantic & Caribbean Steam Navigation Co. owner of vessel; station operated and controlled by R. C. A.  
 LAKE SLAVI.—System, Navy-R. C. A., 1,000; w. l., 600, 706, 800; station operated and controlled by owner of vessel.  
 LEVISA.—W. l., 600, 706, 800.  
 LEYTE.—W. l., add 800.  
 LILLIAN LUCKENBACH.—W. l., 600, 706, 800.  
 LUZON.—Range, 300; system, K. & C., 1,000; w. l., 300, 600; service, PG; hours, X; rates, 8 cents per word; station operated and controlled by owner of vessel.  
 .. .. . W. l. 600 706 800 1 800 2 100 2 400

## RADIO SERVICE BULLETIN

7

- MILLINOCKET.—System, composite, 1,000.
- MINDORO.—Range, 150; system, K. & C., 1,000; w. l., 300, 600, 950; service, O; hours, X; station operated and controlled by owner of vessel.
- MONTGOMERY CITY.—W. l., 450, 600, 706, 800.
- MOOSITAUKA.—Name changed to Maoi; range, 150; system, Navy-Simon, 1,000; w. l., 600, 706, 800; Matson Navigation Co. owner of vessel; station operated and controlled by owner of vessel.
- MOUNT CLINTON.—Matson Navigation Co. owner of vessel.
- MUNALBRO.—System, I. W. T. Co., 1,000; station operated and controlled by I. W. T. Co.
- MUNRIO.—W. l., 600, 706, 800; station operated and controlled by I. W. T. Co.
- MUNWOOD.—Station operated and controlled by I. W. T. Co.
- MYSTIC.—System, Navy-R. C. A., 1,000.
- NORMAN BRIDGE.—W. l., 600, 706, 800.
- NORTH KING.—W. l., 600, 706, 800.
- NORTHLAND (WGJ).—W. l., 600, 706, 800.
- NTRA. SRA. DE ALBA.—Range, 250; system, composite, 1,000; w. l., 300, 600; service, PG; hours, X; rates, 8 cents per word; station operated and controlled by owner of vessel.
- NUUANU.—Range, 150; system, Marconi, 240; w. l., 300, 600; service, PG; hours, X; rates, 8 cents per word; Malaysian Navigation Co. owner of vessel; station operated and controlled by owner of vessel.
- OZARK.—W. l., 600, 706, 800.
- PANAY (KZBG).—Range, 150; system, Marconi, 1,000; w. l., 600; service PG; hours, X; rates, 8 cents per word.
- PASTORES.—W. l., 600, 706, 800.
- PEQUONNOCK.—System, Lowenstein, 1,000; w. l., 600, 706, 800, 875.
- PHILIP D. BLOCK.—Range, 200; system, composite, 1,000; w. l., 600, 706, 800; rates, Great Lakes service, 4 cents per word; Pioneer S. S. Co. owner of vessel; station operated and controlled by owner of vessel.
- POMPEY.—Range, 300; system, Navy, 1,000; w. l., 300, 450, 600, 800; service, PG; hours, X; rates, 8 cents per word; National Coal Co. owner of vessel; station operated and controlled by owner of vessel.
- PRESIDENT LINCOLN.—Dollar Steamship Line owner of vessel.
- PRESIDENT PIERCE.—W. l., 450, 600, 1,800, 2,100, 2,400.
- PRONTO.—Range, 200; system, Telefunken, 1,000; w. l., 300, 600; service, PG; hours, X; rates, 8 cents per word; Ramon Soriano owner of vessel; station operated and controlled by owner of vessel.
- PROVIDENCE.—System, Navy-Lowenstein, 1,000; w. l., 600, 706, 800, 875.
- PRUSA.—System, Navy, W. S. A. Co., 1,000; w. l., 450, 600, 706, 800.
- RANSOM B. FULLER.—W. l., 600, 706, 800.
- RICHARD PECK.—System, Lowenstein, 1,000; w. l., 600, 706, 800, 875.
- R. J. HANNA.—W. l., 600, 706, 800.
- ROBIN GRAY.—W. l., 600, 706, 800; station operated and controlled by I. W. T. Co.
- ROSE CITY.—Range, 300; system, R. C. A., 1,000; w. l., 600, 706, 800; station operated and controlled by owner of vessel.
- SAGUACHE.—W. l., 450, 600, 706, 800.
- St. ANTHONY.—Station operated and controlled by I. W. T. Co.
- SALINA.—System, Navy-R. C. A., 1,000; w. l., 450, 600, 706, 800, 875.
- SANTA ISABEL.—System, Navy-R. C. A., 1,000; w. l., 600, 706, 800.
- SATOCO.—System, Navy, 1,000; w. l., 600, 706, 800.
- SCANTIC.—W. l., 600, 706, 800.
- S. C. T. DODD.—W. l., 600, 706, 800.
- SIDNEY M. HAUPTMAN.—W. l., 600, 706, 800.
- SISKIYOU.—W. l., 600, 706, 800.
- SIXAOLA.—System, composite, 1,000; w. l., 600, 706, 800.
- SOCONY.—W. l., 600, 706, 800.
- SOCONY 85.—W. l., 600, 800.
- SOCONY 89.—W. l., 600, 706, 800.
- SPRAY (KDYB).—System, composite, 1,000; w. l., 600, 706.
- STANLEY DOLLAR.—W. l., 600, 706, 800.
- STANWOOD.—System, U. S. Navy, 1,000; w. l., 600, 706, 800.
- STAR OF FRANCE.—W. l., 600, 706, 800.
- STAR OF SCOTLAND.—W. l., 600, 706, 800.
- STAR OF ZEALAND.—Range, 150; system, Navy-Lowenstein, 1,000; w. l., 600.



**STEEL EXPORTER.**—W. I., 450, 600, 706, 800.  
**SURINAME.**—W. I., 600, 706, 800.  
**SUSANA II.**—W. I., 300, 600, 850; rates, 8 cents per word.  
**UTACARBON.**—W. I., 600, 706, 800.  
**UTOWANA.**—Range, 50; system, R. C. A. v. t. telegraph; w. I., 600, 706, 800, 875; service, PG; hours, X; rates, 8 cents per word; station operated and controlled by owner of vessel.  
**VENUE.**—Range, 300; system, K. & C., 1,000; rates, 8 cents per word.  
**VIZCAYA.**—W. I., 300, 600, 900; rates, 8 cents per word; station operated and controlled by owner of vessel.  
**VOLCANO.**—W. I., 600, 1,100; Inland Waterways Corp. (Mississippi Warrior Service) owner of vessel.  
**WARWICK.**—W. I., 600, 706, 2,100, 2,400; station operated and controlled by F. T. Co.  
**WEST ARROW.**—W. I., 450, 600, 706, 800.  
**WEST CAMAK.**—W. I., 600, 706, 800.  
**WEST CAERMONA.**—W. I., 450, 600, 706, 800, 1,800, 2,100, 2,400.  
**WEST HIKA.**—System, Navy-R. C. A., 1,000; w. I., 450, 600, 706, 800.  
**WEST JESTER.**—W. I., 450, 600, 706, 800, 875.  
**WEST NORRANUS.**—W. I., 600, 706, 800.  
**W. F. BURDELL.**—W. I., 450, 600, 706, 800.  
**WHITNEY OLSON.**—W. I., 600, 706, 800.  
**WINONA COUNTY.**—Range, 300; system, Navy, 1,000; w. I., 450, 600, 706, 800; service, PG; hours, N; rates, 8 cents per word.  
 Strike out all particulars of the following-named vessels:

Ablanset.  
 Abraham Lincoln.  
 Accomac.  
 Alamosa.  
 Ambridge.  
 Amcross.  
 Aniwa.  
 Ariipa.  
 Asabeth.  
 Auburn.  
 Auditor.  
 Bartholomew.  
 Bavington.  
 Bay Head.  
 Bayway.  
 Belfort.  
 Benoni.  
 Bessemer.  
 Bonnie Brook.  
 Brandywine.  
 Brookline.  
 Buffalo Bridge.  
 Cabrille.  
 Canoga.  
 Castana.  
 Castle Wood.  
 Charlot.  
 Chebaulip.  
 Chestnut Hill.  
 Chicomico.  
 Cocaponset.  
 Clairton.  
 Coquina.  
 Corsicana.  
 Costigan.  
 Cotati.  
 Dan F. Hanlon.  
 Darden.  
 Dartford.  
 Davenport.  
 Davidson County

Delavan.  
 Democracy.  
 Deranof.  
 Diablo.  
 Dinsmore.  
 East Cape.  
 Eastern Admiral.  
 Eastern Belle.  
 Eastern Chief.  
 Eastern Crag.  
 Eastern Cross.  
 Eastern Crown.  
 Eastern Guide.  
 Eastern King.  
 Eastern Leader.  
 Eastern Light.  
 Eastern Maid.  
 Eastern Pilot.  
 Eastern Shore.  
 Eastern Star.  
 Eastern Sun.  
 Eastern Tempest.  
 Elinor.  
 Englewood.  
 Epitacio Pessoa.  
 Evansville.  
 Everglades.  
 Evergreen City.  
 Faraby.  
 Federal (WDOO).  
 Fishkill.  
 Fort Armstrong.  
 Fort Pitt Bridge.  
 Fort Wayne.  
 Galahad.  
 Galesburg.  
 Garibaldi.  
 Gateway City.  
 Gladysbe.  
 Goliah.  
 Guaro.

Haddon.  
 Hathaway.  
 Hatchie.  
 Havilah.  
 Hayden.  
 Haymon.  
 Haynie.  
 Heber.  
 Henry Steers.  
 Homestead.  
 Hopateong.  
 Ice King.  
 Independent Bridge.  
 Indiana Bridge.  
 Indianapolis.  
 Intan.  
 Iroquois (KUTQ).  
 Irvington.  
 Isanti.  
 Inspector.  
 Jackson.  
 Jandew.  
 John Englis.  
 John Jay.  
 John M. Connelly.  
 John Roach.  
 Kayseeka.  
 Kehuku.  
 Keketicut.  
 Kekoskee.  
 Kishacoquillas.  
 Kootenai.  
 Kosciusko.  
 Lake Allen.  
 Lake Alvada.  
 Lake Blanchester.  
 Lake Butler.  
 Lake Cahoon.  
 Lake Calistoga.  
 Lake Candelaria.  
 Lake Cannonsburg.



## RADIO SERVICE BULLETIN

9

Lake Como.	Lake Treba.	Provincetown.
Lake Crescent.	Lakeville.	Putnam.
Lake Deval.	Laurel.	Python.
Lake Elizabeth.	Lilmae.	Quinnipiac.
Lake Elkwater.	Lithopolis.	Quittacas.
Lake Ellerslie.	Lockport.	Remus.
Lake Ellicott.	Loretta.	Ripon.
Lake Ellithorpe.	Luella.	Romulus.
Lake Ellsbury.	Lycoming.	Rushville.
Lake Elmhurst.	Manham.	Sabotawan.
Lake Elmont.	Manhattan Island.	Saccarappa.
Lake Elmsford.	Maquan.	Sacramento.
Lake Elon.	Margus.	Sag Harbor.
Lake Elpueblo.	Mariners Harbor.	Salaam.
Lake Fabyan.	Marne.	Semiola.
Lake Falun.	Marsodak.	St. Johns County.
Lake Fandon.	Massick.	Sharon.
Lake Fanquler.	McCreary County.	Sinasta.
Lake Fansdale.	Mercer.	South Pole.
Lake Farabee.	Merry Mount.	Springfield.
Lake Farber.	Middlebury.	Surinam.
Lake Faresman.	Milwaukee Bridge.	Susquehanna (KOLN).
Lake Farley.	Mohinkis.	Suwied.
Lake Peodora.	Moline.	Tashmoo.
Lake Fernando.	Monana.	Tenafly.
Lake Ferrona.	Monasses.	Terre Haute.
Lake Fibre.	Monomac.	Toledo Bridge.
Lake Fife.	Montclair.	Tolosa.
Lake Fighting.	Moosehausic	Union Liberty.
Lake Flag.	Moravia Bridge.	Vincennes Bridge.
Lake Flanders.	Mulpua.	Waco.
Lake Floravista.	Muscatine.	Wakulla.
Lake Fluvanna.	Nacata.	Wampum.
Lake Folcroft.	Narcissus.	Wassaic.
Lake Fondulac.	Namasket.	Waterbury.
Lake Foxboro.	Nameaug.	Watsonwan.
Lake Fraley.	Nantahala	Wauconda.
Lake Frazee.	Naugus.	Wekika.
Lake Friar.	Nemaha.	West Alsek.
Lake Frolono.	Neshaminy.	West Amargosa.
Lake Gaither.	Newburgh.	West Avenal.
Lake Galata.	Nockum.	Westboro.
Lake Galera.	Nokatay.	Westbrook.
Lake Ganado.	Nonantum.	West Bridge.
Lake Gano.	North Pole.	West Canon.
Lake Garza.	Norumbega.	West Cherow.
Lake Gazette.	Onokama.	Westchester.
Lake Geneva.	Opelika.	West Coast.
Lake Gert.	Opequan.	West Cobalt.
Lake Geysar.	Oronoke.	West Cressy.
Lake Girth.	Osaqumsick.	West Elcasco.
Lake Gradan.	Oscoda.	Western Belle.
Lake Gravett.	Oshkosh.	Western Cross.
Lake Greeubrier.	Oskawa.	Western Hope.
Lake Haresti.	Ossineke.	Western King.
Lake Ikatan.	Ozaukee.	Western Light.
Lake Inglenook.	Panola.	Western Pride.
Lake Kytile.	Parksville.	Western Queen.
Lake Ledan.	Petoskey.	Western Sea.
Lake Licoco.	Pittsburgh Bridge.	Western Scout.
Lake Lillicusun	Plow City.	Western Spirit.
Lake Markham.	Polar Bear.	West Galoe.
Lake Mattato.	Polar Sea.	West Grama.
Lake Narka.	Polar Star.	West Grove.
Lake Pickaway.	Pontia.	Westhampton.
Lake Singara.	Portsmouth.	West Hargrave.
Lake Travasa.	Portman.	West Hill.

West Harts.  
West Hassayampa.  
West Hembrie.  
West Henshaw.  
West Hepburn.  
Westfield.  
West Indian.  
West Kyska.  
West Lianga.

West Loquassuck.  
West Pocasset.  
West Point.  
West Vaca.  
Westward Ho.  
West Wind.  
Wheeling Mold.  
Wilcox.  
Winston-Salem.

Winyah.  
Woodmansta.  
Wynooche.  
Yaklok.  
Yapalaga.  
Yesoking.  
York Harbor.  
Yukon (WXEU).  
Zirkel.

KHU, read Trujillo; KOKG, read Maoi; WMB, read West Reading, Pa.; strike out all particulars following the call signals: KDAC, KDAV, KDAY, KDBU, KDCR, KDCV, KDCY, KDDJ, KDDU, KDEV, KDFD, KDFE, KDFP, KDFS, KDCG, KDCX, KDCY, KDDJ, KDDU, KDEV, KDFD, KDFE, KDFP, KDJH, KDKC, KDKN, KDKU, KDMI, KDMM, KDNU, KEBN, KEBP, KEBQ, KEBX, KECL, KEDJ, KEDK, KEDP, KEDZ, KEFN, KEFS, KEFZ, KEGN, KEGX, KEJJ, KEJS, KEJV, KEKD, KEKM, KEKN, KEKQ, KEKR, KEKT, KELB, KELC, KELM, KELN, KEMX, KENC, KENG, KENS, KEPD, KEPF, KEPM, KEQM, KEQN, KEQR, KERN, KERR, KESB, KESM, KESP, KEVN, KEVZ, KEXL, KEXN, KEZN, KFDI, KPE, KFEO, KFO, KFUI, KGA, KIBF, KIBK, KIDJ, KIDR, KIFJ, KIGK, KIGT, KIGX, KIJB, KIJJ, KIKC, KIKG, KIKQ, KIKR, KIKT, KILN, KILX, KIMM, KIMV, KINF, KINJ, KINP, KINT, KINX, KIPC, KIPF, KIPN, KIQB, KIQF, KIRB, KIRK, KIRN, KIRP, KIRQ, KITN, KITQ, KIVJ, KIXF, KIXG, KIXM, KIXP, KIXQ, KIXS, KIXX, KIZF, KIZG, KJAA, KJAE, KJAO, KJAU, KJEI, KJH, KJI, KJM, KJOO, KJUA, KJUO, KJY, KKEU, KLAA, KLEI, KLIE, KMOE, KNAA, KNEA, KOBT, KOBZ, KOCC, KOCE, KOCK, KOCM, KODK, KOFF, KOFN, KOFM, KOFF, KOFO, KOPV, KOGB, KOGD, KOGF, KOGJ, KOGQ, KOGT, KOGX, KOJB, KOJJ, KOJV, KOJZ, KOKN, KOKR, KOLN, KOLS, KOMB, KOMF, KOMK, KOND, KONG, KOPC, KOPF, KOPJ, KOQG, KOQP, KOQT, KOQZ, KORP, KORS, KOXD, KOSQ, KOTB, KOTX, KOVD, KOVF, KOVG, KOVS, KOXC, KOXD, KOXG, KOXM, KOZF, KOZG, KOZX, KQIO, KQOI, KRAA, KROE, KROI, KROO, KROU, KRUE, KSEI, KSOA, KSR, KTA, KTAU, KTEE, KTIE, KTIU, KTOA, KTOU, KTUA, KUBT, KUCC, KUCM, KUCN, KUDR, KUDS, KUFC, KUGM, KUGN, KUGP, KUJK, KUJS, KUJT, KUJV, KUKP, KUKL, KUKP, KULD, KULF, KULJ, KULN, KUMB, KUMX, KUNG, KUNJ, KUNL, KUNM, KUNQ, KUPK, KUPS, KUPR, KUPV, KURF, KURP, KURR, KURT, KUSR, KUTF, KUTQ, KUTR, KUVG, KUXF, KUXR, KUZP, KVEI, KVG, KVII, KVOE, KVR, KWB, KWV, KXAA, KXAJ, KXEU, KXIU, KXU, KXUA, KYI, KYJ, KZAA, KZEA, KZIO, KZUE, WAP, WAQ, WBUE, WCL, WCOU, WDH, WDIA, WDIL, WDOE, WDOO, WDOU, WDS, WDU, WEP, WFEA, WFIA, WFN, WFOI, WPUU, WGAA, WGAE, WGIA, WGIE, WGOE, WGOI, WGOU, WGT, WGUA, WGUI, WJIE, WJOA, WJOI, WJOU, WJV, WKAO, WKEA, WKEE, WKI, WKIL, WKIO, WKIU, WKUI, WKX, WKZ, WLAU, WLI, WLUI, WMUI, WMUO, WNEA, WNIO, WOP, WPAE, WPAO, WPIL, WQEA, WQEE, WREE, WROE, WRUO, WSEO, WSP, WSUU, WTAI, WTAO, WTUE, WTW, WVAA, WVEU, WWK, WXAA, WXE, WXEU, WZOU, WZUE.

## 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, 50.  
KFLR (Albuquerque, N. Mex.).—Power, 200.  
KFOO (Salt Lake City, Utah).—W. l., 236; fy. kc., 1,270.  
KFQB (Fort Worth, Tex.).—W. l., 263; fy. kc., 1,140.  
KFRW (Olympia, Wash.).—Power, 50; w. l., 218.8; fy. kc., 1,370.  
KFVO (Kirkville, Mo.).—Call signal changed to KFKZ.  
KUOM (Missoula, Mont.).—Power, 250.  
WABL (Storrs, Conn.).—Changed to Mansfield, Conn.; call signal changed to WCAC; power, 500.  
WAMD (Minneapolis, Minn.).—Power, 500.  
WBAK (Harrisburg, Pa.).—W. l., 275; fy. kc., 1,090.  
WBBG (Mattapoisett, Mass.).—Power, 100.

## RADIO SERVICE BULLETIN

11

- WCAH (Columbus, Ohio).—Power, 500.  
 WCBA (Allentown, Pa.).—Power, 15.  
 WCBD (Zion, Ill.).—Power, 2,000.  
 WCBZ (Chicago Heights, Ill.).—Changed to Homewood, Ill.; call signal changed to WOK.  
 WCTS (Worcester, Mass.).—Power, 500.  
 WDAY (Fargo, N. Dak.).—W. l., 261; fy. kc., 1,150.  
 WDBO (Winter Park, Fla.).—Power, 100.  
 WGAQ (Shreveport, La.).—Call signal changed to KWKH.  
 WGBQ (Menomonie, Wis.).—Power, 100.  
 WGBW (Spring Valley, Ill.).—Station operated and controlled by Hub Radio Shop and Valley Theater; power, 10; w. l., 256; fy. kc., 1,170.  
 WGBX (Orono, Me.).—Power, 100.  
 WHAR (Atlantic City, N. J.).—Power, 500.  
 WHBA (Oil City, Pa.).—Power, 10.  
 WHBP (Johnstown, Pa.).—Power, 100.  
 WIBO (Chicago, Ill.).—Power, 500.  
 WJAK (Greentown, Ind.).—Power, 100.  
 WMBB (Chicago, Ill.).—Station operated and controlled by American Bond & Mortgage Co.  
 WRAX (Gloucester City, N. J.).—Power, 250.  
 WSAG (St. Petersburg, Fla.).—Power, 250.  
 WSAP (New York, N. Y.).—Call signal changed to WSDA.  
 WTAQ (Ossco, Wis.).—Power, 100.  
 WWAE (Joliet, Ill.).—Changed to Plainfield, Ill.; station operated and controlled by Electric Park (Lawrence J. Crowley).  
 Strike out all particulars of the following-named stations: KFBE (San Luis Obispo, Calif.); KFQG (Los Angeles, Calif.); KFRP (Redlands, Calif.); WABM (Saginaw, Mich.); WCBL (Houlton, Me.); WCBY (Buck Hill Falls, Pa.); WDBF (Youngstown, Ohio); WGBN (La Salle, Ill.); WGBO (San Juan, P. R.); WRAL (St. Croix Falls, Wis.); WRAN (Waterloo, Iowa); WSL (Utica, N. Y.).

## 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]

- AKIAK, ALASKA.—Loc. (approximately) O 161° 10' 00", N 61° 00' 00"; range, 150; system, K. & C., 1,000; w. l., 300, 425, 600; service, O; hours, X.  
 GREAT LAKES, ILL.—W. l., strike out 600.

## GOVERNMENT SHIP 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]

- Strike out all particulars of the following-named vessels: Ajax, Albatross, Cayuga, Choptank, Cumberland, Cyan, Hancock, Harbor Tug No. 67, Hartford, Helori, Hercules, L-5, L-6, L-7, L-8, Mansfield, Onondaga, Oregon, Peacock, Pentucket, Rocket, Samoset, Sebago, Warbler, Willet.

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

- Strike out all particulars following the call signals: NAFF, NAKD, NEFS, NEKR, NGV, NIFV, NHI, NIKD, NIKM, NIKN, NMZ, NQY, NRO, NSZ, NTD, NUL, NULG, NUMV, NUT, NUU, NUV, NYR, NYS, NYT, NYU.

## 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]

- ERIE, PA. (8XC).—Address, 649 West Ninth Street.  
 FORTH WORTH, TEX. (5YS).—Station operated and controlled by Brantley Draughon Business College (Oba R. Garrett).  
 HARRISON, OHIO (8XAY).—Road Cincinnati, Ohio.  
 LOS ANGELES, CALIF. (6XP).—Address, 2903 South Rimpau Boulevard.  
 NEWARK, N. J. (2YRF).—Station operated and controlled by Public Service

Strike out all particulars of the following-named stations: Cherrydale, Va (3XAS); Cleveland, Ohio (8XAC); Connellsville, Pa. (8XBI); Culver City Calif. (6XAB); Fresno, Calif. (6XU); Los Angeles, Calif. (6XBA); Los Angeles, Calif. (6XBP); Los Angeles, Calif. (6XBS); Los Angeles, Calif. (6XBX); Los Angeles, Calif. (6XL); Los Angeles, Calif. (6XT); Los Angeles, Calif. (portable-6XZ); Marietta, Ohio (8XB); Oakland, Calif. (6XA); Polytechnic, Mont. (7XAG); Princeton, N. J. (3XM); Richmond, Calif. (6XBU); Salt Lake City, Utah (6XBW); San Diego, Calif. (6XBT); San Fernando, Calif. (6XAN); Schenectady, N. Y. (2XAB); Seattle, Wash. (7YC); Stockton, Calif. (6XAL); Whittier, Calif. (6XJ).

#### MISCELLANEOUS

##### TIME OF TRANSMISSION OF WEATHER REPORTS BY NEW ORLEANS (NAT) NAVAL STATION

Weather and hydrographic reports will be transmitted from this station in future at 1000 G. M. T. instead of 1100 G. M. T.

##### 300 AND 600 METERS DISCONTINUED ON GREAT LAKES

Beginning July 15, this year, 300, 600, and 706 meters will no longer be used by ship and land stations on the Great Lakes. In place of these wave lengths, 715 and 875 meter wave lengths will be used.

##### OPERATOR'S LICENSE SUSPENDED

Commercial first-class, first grade, license No. 11186, issued at New York, N. Y., December 29, 1924, 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 with the radio operator of another station.

##### WIRELESS DISTRESS MESSAGES

When a wireless distress message is sent out near the coasts of the United Kingdom, the nature of the distress and the kind of assistance required should also be sent out immediately afterward.

##### CAPE RAY (NEWFOUNDLAND) RADIO BEACON CHANGED

On May 1, this year, the radio beacon at Cape Ray was changed to transmit on a wave length of 1,000 meters a series of groups of 3 dashes for 2 minutes followed by a silent interval of 3 minutes. The operation will be continuous in thick and foggy weather. This station is located in approximately  $0\ 59^{\circ}\ 18'\ 20''$ ,  $N\ 47^{\circ}\ 37'\ 02''$ .—*Notice to Mariners No. 19 (1925)*.

##### EXPERIMENTAL RADIO FOG SIGNAL ESTABLISHED AT SCILLY ISLES, ENGLAND

A radio fog signal has been established experimentally at Round Island Light Station, Scilly Isles, England (southwest coast), and will be operated only at such times as the experiments may require. The signal emitted consists of the letters GKD of the Morse Code (— · · — · · — · ·) transmitted seven times in succession. The time occupied in transmission is approximately 52 seconds, followed by a silent interval of about 188 seconds. The wave length is 1,000 meters. Masters of ship stations hearing this intermittent signal are requested to forward reports of its effectiveness to the Secretary, Trinity House, London, England, E. C. 3. This station is located in approximately  $49^{\circ}\ 59'\ N$ ,  $6^{\circ}\ 19'\ W$ .—*Notice to Mariners No. 20 (1925)*.

##### FOG SIGNAL ESTABLISHED ON LAKE HURON LIGHTSHIP

About June 1, this year, a radio fog signal will be established on this lightship located at the south end of Lake Huron. The signal will transmit groups of 3 dashes repeated for 60 seconds, followed by a silent interval of 60 seconds. The signal will be sent out on 1,000 meters and will be operated continuously during thick or foggy weather and in clear weather daily from 9 to 9.30 a. m. and from 3 to 3.30 p. m. Vessels are requested to report to the Commissioner of Lighthouses, Washington, D. C., or to the Superintendent of Lighthouses,

## RADIO SERVICE BULLETIN

18

## HANSTHOLM (DENMARK) LIGHT STATION FOG SIGNAL

A radio fog signal will be established at this light station, located in the North Sea, during this year. Every minute, on a wave length of 1,000 meters, the Morse letters HM-HM-HG, followed by 20 dots, will be transmitted. The time interval between the dots will be 1.3 seconds.—*Notice to Mariners No. 21 (1925)*.

## GENERAL CALL SIGNAL ASSIGNED TO BRITISH NAVAL COAST STATIONS

Call signal BXA has been assigned as a general call designating any British naval coast station.

## ANCONA (ITALY) STATION OPEN TO GENERAL PUBLIC SERVICE CORRESPONDENCE

This station, call signal IQW, has a range of 120 miles; system, Marconi; wave lengths, 300 and 600 meters; hours of operation, 0-6, 7-9.30, 10.30-13.30, 14-17, 17.30-24.(G. M. T.); rate, 60 centimes per word, no minimum.

## RADIO CIRCUIT BETWEEN TUTUILA, SAMOA, AND PAPEETE

Beginning at midnight June 15, this year, a direct radio circuit will be opened between the United States naval radio station at Tutuila, Samoa, and the French radio station at Papeete.

## PICTURE APPARATUS MAY BE USED BY AMATEURS

Until further notice amateurs may use apparatus for picture transmission connected to their regular transmitting set under their existing licenses and on any of the wave lengths authorized for amateur use.

*Broadcasting stations alphabetically by States and cities*

[Complete to May 31, 1925]

State and city	Call signal	State and city	Call signal	State and city	Call signal
Alabama:		California—Contd.		District of Columbia—	
Auburn.....	WSY	Paso Robles.....	KFNL	Continued.	
Birmingham.....	WBRC	Sacramento.....	KFBK	Washington.....	WRC
Alaska: Juneau.....	KFIU	Do.....	KFVK	Do.....	WRHF
Arizona:		San Diego.....	KFBC	Florida:	
Phoenix.....	KFAD	San Francisco.....	KFRC	Miami.....	WQAM
Do.....	KFCB	Do.....	KJBS	Miami Beach.....	WMBF
Tucson.....	KFDH	Do.....	KPO	St. Petersburg.....	WBBN
Arkansas:		Do.....	KPPV	Do.....	WBBC
Arkadelphia.....	KFWD	Do.....	KUO	Do.....	WSAG
Ozenden.....	KFVC	San Jose.....	KFVJ	Tampa.....	WDAE
Conway.....	KFKQ	Do.....	KSO	Winter Park.....	WDBO
Fayetteville.....	KFMQ	San Leandro.....	KFOU	Georgia:	
Hot Springs.....	KTHS	San Pedro.....	KFVD	Atlanta.....	WDBE
Little Rock.....	KFMB	Santa Ana.....	KFAW	Do.....	WGST
California:		Santa Rosa.....	KFNV	Do.....	WSB
Bakersfield.....	KDZB	Stanford University.....	KFGH	Columbus.....	WBV
Berkeley.....	KRS	Stockton.....	KWO	Macon.....	WMAZ
Burlingame.....	KFQH	Taft.....	KPQC	Savannah.....	WBBZ
Chico.....	KFWH	Upland.....	KFWC	Hawaii: Honolulu.....	KGU
Fresno.....	KMJ	Whittier.....	KFOC	Idaho:	
Gridley.....	KFI	Colorado:		Boise.....	KFAU
Hollywood.....	KFQZ	Boulder.....	KFAJ	Do.....	KFDD
Do.....	KFVF	Colorado Springs.....	KFUM	Kellogg.....	KFEY
Do.....	KFWB	Denver.....	KFAF	Moscow.....	KFAN
Holy City.....	KFQU	Do.....	KFEL	Illinois:	
Long Beach.....	KFON	Do.....	KFUP	Batavia.....	WORD
Los Angeles.....	KFI	Do.....	KFVR	Broadlands.....	WSRF
Do.....	KFPG	Do.....	KLZ	Cambridge.....	WTAP
Do.....	KFPR	Do.....	KOA	Carthage.....	WCAZ
Do.....	KPSG	Greeley.....	KFKA	Chicago.....	KYW
Do.....	KHJ	Gunnison.....	KFHA	Do.....	WAAP
Do.....	KHJ	Connecticut:		Do.....	WBBM
Do.....	KNR	Hartford.....	WTIC	Do.....	WBCN
Do.....	KNX	Mansfield.....	WCAC	Do.....	WDBY
Oakland.....	KFUS	New Haven.....	WDRC	Do.....	WRBH
Do.....	KGO	Delaware: Wilmington.....	WIAV	Do.....	WENR
Do.....	KLS	District of Columbia:		Do.....	WFKB
Do.....	KLX	Washington.....	WCAP	Do.....	WGN

## Broadcasting stations alphabetically by States and cities—Continued

[Complete to May 31, 1925]

State and city	Call signal	State and city	Call signal	State and city	Call signal
<b>Illinois—Continued.</b>		<b>Kansas—Continued.</b>		<b>Minnesota—Contd.</b>	
Chicago.....	WLS	Manhattan.....	WTG	Minneapolis.....	KFDZ
Do.....	WMAQ	Midford.....	KFKB	Do.....	KFMT
Do.....	WMBB	Wichita.....	KFOT	Do.....	WAMD
Do.....	WQJ	Do.....	WEAH	Do.....	WHDI
Do.....	WSAX	<b>Kentucky:</b>		Do.....	WLB
Decatur.....	WBAO	Louisville.....	WHAS	Northfield.....	KFMX
Deerfield.....	WHT	Do.....	WLAP	Do.....	WCAL
Downers Grove.....	WHDT	<b>Louisiana:</b>		St. Cloud.....	WFAM
Elgin (near).....	WCEE	Alexandria.....	KFFY	St. Paul.....	KFOY
Do.....	WTAS	Baton Rouge.....	KFGC	St. Paul-Minneapolis.....	WCCO
Eureka.....	WFBH	Jennings.....	WCBJ	Virginia.....	KFUZ
Galesburg.....	WRAB	New Orleans.....	WAAB	Welcome.....	KFVN
Do.....	WRBM	Do.....	WAAC	<b>Mississippi:</b>	
Harrisburg.....	WEBQ	Do.....	WABZ	Coldwater.....	KFNG
Homewood.....	WOK	Do.....	WBBS	Oxford (near).....	WCBH
Joliet.....	WIBD	Do.....	WCAG	Pascagoula.....	WCBG
Do.....	WJBI	Do.....	WCBE	<b>Missouri:</b>	
Lake Forest.....	WABA	Do.....	WOWL	Butler.....	WNAR
La Salle.....	WJRC	Do.....	WSMB	Cape Girardeau.....	KFVS
Monmouth.....	WBBU	Do.....	W WL	Do.....	WSAB
Mooseheart.....	WJJD	Shreveport.....	KFDX	Cartersville.....	KFPW
Oak Park.....	WGES	Do.....	KWKH	Independence.....	KLDS
Plainfield.....	WWAE	<b>Maine:</b>		Jefferson City.....	WOS
Rockford.....	KPLV	Bangor.....	WABI	Kansas City.....	KWKO
Rock Island.....	WILF	Risworth.....	WBBK	Do.....	WDAF
Spring Valley.....	WGBW	Orono.....	WGBX	Do.....	WHB
Streator.....	WTAX	<b>Maryland:</b>		Do.....	WOQ
Tuscola.....	WDZ	Baltimore.....	WCAO	Kirkville.....	KFKZ
Urbana.....	WRM	Do.....	WCBM	Moberly.....	KFFP
Zion.....	WCBD	Do.....	WFBR	Do.....	KFOJ
<b>Indiana:</b>		Do.....	WGBA	St. Louis.....	KFQA
Anderson.....	WEBD	Takoma Park.....	WBES	Do.....	KFUO
Do.....	WHBU	<b>Massachusetts:</b>		Do.....	KFVE
Culver.....	WHBH	Boston.....	WDBR	Do.....	KFWF
Evansville.....	WGBF	Do.....	WREI	Do.....	KSD
Fort Benjamin Harrison.....	WFBY	Do.....	WNAB	Do.....	WCK
Fort Wayne.....	WHBJ	Do.....	WNAC	Do.....	WEW
Greencastle.....	WLAX	Bridgewater.....	WFBN	Do.....	WIL
Greentown.....	WJAK	Dartmouth.....	WMAF	Do.....	WMAY
Indianapolis.....	WBBZ	Fall River.....	WSAR	Do.....	KFUV
Do.....	WFBM	Do.....	WTAB	Springfield.....	KFNJ
Laporte.....	WRAF	Lowell.....	WTAS	Warrensburg.....	
Logansport.....	WHBL	Mattapoisett.....	WBBQ	<b>Montana:</b>	
Seymour.....	WHBE	Medford Hillside.....	WARC	Butte.....	KFUJ
South Bend.....	WGAZ	New Bedford.....	WIBH	Havre.....	KFBB
Valparaiso.....	WBBC	Springfield.....	WBZ	Helena.....	KFCY
West Lafayette.....	WBAA	Trouton.....	WAIT	Do.....	KPNC
<b>Iowa:</b>		Webster.....	WKBE	Do.....	KFSY
Ames.....	WOI	Worcester.....	WCTS	Missoula.....	KUOM
Atlantic.....	KFLZ	Do.....	WCUW	<b>Nebraska:</b>	
Boone.....	KFGQ	<b>Michigan:</b>		Belden.....	KFQY
Burlington.....	WJAS	Ann Arbor.....	WCBC	David City.....	KFOR
Cedar Falls.....	KFJX	Bay City.....	WSKC	Hartington.....	KFRZ
Cedar Rapids.....	KFLP	Berrien Springs.....	WEMC	Hastings.....	KPKX
Do.....	WIAM	Chesaning.....	WHBI	Lincoln.....	KFAB
Do.....	WKAA	Dearborn.....	WWI	Do.....	WFAV
Davenport.....	WOC	Detroit.....	KOP	Norfolk.....	WJAO
Des Moines.....	WHO	Do.....	WCX	Oak.....	KFBQ
Fort Dodge.....	KFER	Do.....	WWJ	Omaha.....	KPCZ
Do.....	KFJY	East Lansing.....	WKAR	Do.....	KPOK
Iowa City.....	KFQP	Escanaba.....	WRAC	Do.....	KOCH
Do.....	WSUI	Flint.....	WEAA	Do.....	WAAW
Lamoni.....	KFCY	Do.....	WTHS	Do.....	WIAK
Le Mars.....	KFOY	Grand Rapids.....	WBDC	Do.....	WOWA
Marion.....	KFOL	Do.....	WEBK	Tecumseh.....	WTAU
Marshalltown.....	KFJB	Houghton.....	KFMW	University Place.....	WCAJ
Oskaloosa.....	KFHL	Do.....	WVAO	<b>New Hampshire:</b>	
Sixoua City.....	KFMR	Lansing.....	WREO	Chatham.....	WSAU
Do.....	WEAU	Menominee.....	KFLB	Hanover.....	WFBK
Shenandoah.....	KFNF	Mount Clemens (near).....	WABX	<b>New Jersey:</b>	
<b>Kansas:</b>		Owosso.....	WSMH	Atlantic City.....	WHAR
Independence.....	KFVG	Petoskey.....	WBRP	Do.....	WPG
Junction City.....	KFJC	Port Huron.....	WAFD	Camden.....	WABU
Lawrence.....	KFKU	<b>Minnesota:</b>		Do.....	WFBI
				Gloucester City.....	WRAX



## RADIO SERVICE BULLETIN

15

## Broadcasting stations alphabetically by States and cities—Continued

[Complete to May 31, 1925]

State and city	Call signal	State and city	Call signal	State and city	Call signal
<b>New Jersey—Contd.</b>		<b>Ohio—Continued.</b>		<b>Rhode Island:</b>	
Newark.....	WAAM	Hamilton.....	WRK	Cranston.....	WDWF
Do.....	WGCP	Do.....	WSHO	Do.....	WKAP
Do.....	WNI	Harrison.....	WLW	East Providence.....	WKAD
Do.....	WOR	Lima.....	WOAC	Pawtucket.....	WBBO
North Plainfield.....	WEAM	Mason.....	WBAI	Providence.....	WEAN
Paterson.....	WODA	Mechanicsburg.....	WBBS	Do.....	WGBM
Salem.....	WDBQ	New Lebanon.....	WGHY	Do.....	WJAR
Trenton.....	WOAX	Pomeroy.....	WSAZ	Do.....	WSAD
<b>New Mexico:</b>		Springfield.....	WCSO	<b>South Carolina:</b>	
Albuquerque.....	KFLR	Toledo.....	WABR	Charleston.....	WBBY
State College.....	KFRY	Do.....	WISK	Clemson College.....	WSAC
Do.....	KOB	Do.....	WTAL	Greenville.....	WGBT
<b>New York:</b>		Wocater.....	WABW	<b>South Dakota:</b>	
Brooklyn.....	WHAP	Yellow Springs.....	WRAV	Brookings.....	KFDY
Buffalo.....	WEBR	<b>Oklahoma:</b>		Rapid City.....	WCAT
Do.....	WGR	Bristow.....	KFRU	Vermillion.....	WEAJ
Canton.....	WCAD	Chickasha.....	KFGD	Yankton.....	WNAX
Cazenovia.....	WMAC	Fort Hill.....	KFRM	<b>Tennessee:</b>	
Flushing.....	WIBI	Norman.....	WNAD	Bemis.....	WCBI
Freeport.....	WGHB	Oklahoma.....	KJFF	Chattanooga.....	WDOD
Ithaca.....	WEAI	Do.....	KFQR	Columbia.....	WDBW
Jamestown.....	WGCL	Do.....	WKY	Knoxville.....	WFBC
Kingston.....	WDBZ	Tulsa.....	WLAL	Do.....	WNAV
Lockport.....	WMAK	<b>Oregon:</b>		Lawrenceburg.....	WOAN
New York.....	WDBX	Astoria.....	KFJI	Memphis.....	WGBC
Do.....	WEAF	Corvallis.....	KFDJ	Do.....	WHBQ
Do.....	WEBJ	Portland.....	KFRG	Do.....	WMC
Do.....	WFBH	Do.....	KFIP	Nashville.....	WCBQ
Do.....	WGBS	Do.....	KFJR	<b>Texas:</b>	
Do.....	WHN	Do.....	KFRQ	Amarillo.....	WDAG
Do.....	WJY	<b>Pennsylvania:</b>		Do.....	WQAC
Do.....	WJZ	Allentown.....	WCBA	Austin.....	WCM
Do.....	WMCA	Do.....	WSAN	Bessumont.....	KFDM
Do.....	WNYC	Do.....	WFBG	Boeville.....	KFRB
Do.....	WQAO	Do.....	WCBU	College Station.....	WTAW
Do.....	WSDA	Do.....	WCBU	Dallas.....	WFAA
Richmond Hill.....	WAGH	Do.....	KDEA	Do.....	WRR
Do.....	WBOQ	Do.....	WIBG	Denison.....	KPQT
Rochester.....	WABO	Do.....	WIBG	Dublin.....	KPFL
Do.....	WHAM	Do.....	WSAJ	El Paso.....	WDAH
Do.....	WHEC	Do.....	WABE	Fort Worth.....	KFJZ
Roseville.....	WBBR	Do.....	WBAK	Do.....	KFQB
Schenectady.....	WGY	Do.....	WBBG	Do.....	WBAP
Syracuse.....	WFBL	Do.....	WABQ	Galveston.....	KFLX
Tarrytown.....	WRW	Do.....	WBBV	Do.....	KFUL
Troy.....	WHAZ	Do.....	WGBK	Greenville.....	KFFM
<b>North Carolina:</b>		Do.....	WHBP	Houston.....	KFVI
Charlotte.....	WBT	Do.....	WTAC	Do.....	KPRC
Raleigh.....	WFBQ	Do.....	WDBC	Do.....	WEAY
<b>North Dakota:</b>		Do.....	WGAL	Do.....	WHAA
Agricultural College.....	WPAK	Do.....	WHAA	San Antonio.....	WCAR
Devails Lake.....	KDLR	Do.....	WABY	Do.....	WCAI
Fargo.....	WDAY	Do.....	WCAU	San Benito.....	KFLU
Grafton.....	KFRH	Do.....	WPBD	Waco.....	WJAD
Grand Forks.....	KFRM	Do.....	WFI	<b>Utah:</b>	
Do.....	KFRL	Do.....	WHBW	Ogden.....	KFUR
<b>Ohio:</b>		Do.....	WIAD	Do.....	KFWA
Akron.....	WADC	Do.....	WIP	Salt Lake City.....	KDYA
Bellefontaine.....	WBBD	Do.....	WLIT	Do.....	KFOO
Cambridge.....	WEBE	Do.....	WNAT	Do.....	KFUT
Canton.....	WBBC	Do.....	WOO	Do.....	KSL
Cincinnati.....	WAAD	Do.....	WWAD	<b>Vermont:</b>	
Do.....	WHAG	Do.....	KQV	Burlington.....	WCAX
Do.....	WBRR	Do.....	WCAE	Springfield.....	WQAE
Do.....	WKEC	Do.....	WJAS	<b>Virginia:</b>	
Cleveland.....	KDFM	Do.....	WQAA	Norfolk.....	WBBW
Do.....	WDBK	Do.....	WHBX	Do.....	WTAR
Do.....	WEAR	Do.....	WRAW	Richmond.....	WBBL
Do.....	WHE	Do.....	WGHI	Roanoke.....	WBRJ
Do.....	WTAM	Do.....	WGAN	Thrlfton.....	WBGQ
Columbus.....	WBAV	Do.....	WPSC	<b>Washington:</b>	
Do.....	WCAH	Do.....	WBAX	Everett.....	KFBL
Do.....	WEAO	Do.....	WBR	Lacey.....	KGY
Do.....	WMAN	<b>Philippines:</b>		North Bend.....	KFQW
Dayton.....	WRBT	Manila.....	KZKZ	Olympia.....	KFRW
Do.....	WSMK			Pullman.....	KFAE



## Broadcasting stations alphabetically by States and cities—Continued

[Complete to May 31, 1925]

State and city	Call signal	State and city	Call signal	State and city	Call signal
Washington—Con.		Wisconsin:		Wisconsin—Con.	
Seattle.....	KHQ	Ashland.....	WJBD	Superior.....	WERC
Do.....	KJR	Beloit.....	WEBW	West De Pere.....	WHBY
Do.....	KTCL	Fondulac.....	KFIZ	Wheatland.....	WIBF
Do.....	KTW	La Crosse.....	WABN	Wyoming: Laramie.....	KFBU
Spokane.....	KFIO	Madison.....	WHA	Portable stations:	
Do.....	KFPY	Do.....	WIBA	Boston, Mass.....	WTAT
Tacoma.....	KFBG	Marshfield.....	WGBR	Chicago, Ill.....	WHBM
Do.....	KOB	Menomonie.....	WGBQ	Do.....	WIBJ
Do.....	KMO	Milwaukee.....	WCAY	Do.....	WIBL
Vancouver.....	KFVL	Do.....	WHAD	Fall River, Mass.....	WGBH
Walla Walla.....	KFCV	Do.....	WEOE	Laconia, N. H.....	WKAH
Yakima.....	KFIQ	Osseo.....	WTAQ	Providence, R. I.....	WCBR
West Virginia:		Stevens Point.....	WHBB	United States.....	WEBL
Charles Town.....	WPAZ	Do.....	WLBB	Do.....	WEBM
Martinsburg.....	WIBE	Superior.....	WDBP		

## Changes in Tennessee amateur stations

[Effective June 1, 1925]

Fifth district calls canceled	New calls assigned	Name and address
5FV	4FU	John H. De Witt, jr., 1812 Fifteenth Avenue, Nashville, Tenn.
	4EP	Edward Lee Crump, 2707 Worth Street, Cleveland, Tenn.
5AGO	4EF	Fred Dulaney, 1208 Windsor Avenue, Bristol, Tenn.
5AVJ	4FA	Herbert R. Grimshaw, Cleveland, Tenn.
4AFF	4FE	Martin T. Walters, 802 Carey Place, Chattanooga, Tenn.
5AUX	4FI	Polk Perdue, Public Square, Gallatin, Tenn.
5CP	4CK	James Malone McKnight, 335 Kenilworth Street, Memphis, Tenn.
	4EE	Henry Howard Spitzer, 1422 Pine Street, Chattanooga, Tenn.
	4DS	James Kenneth Brown, 309 College Street, Greeneville, Tenn.
5DA	4DA	William C. Hutcheson, Wind Rock, Tenn.
5KA	4KB	Irvine and Wilson Ramey, 200 Strathmore Circle, Memphis, Tenn.
5DQ	4DR	T. J. M. Daly, 197 Parkview, Memphis, Tenn.
5FC	4FC	Frank Reeves Clegg, 1580 Union Avenue, Memphis, Tenn.
5AGX	4FP	William Oscar McCord, jr., 32 East Fourth Street, Chattanooga, Tenn.
5AQY	4QY	Herbert Keller, jr., 1931 Nelson Avenue, Memphis, Tenn.
5DN	4DI	London Covington, 1059 Indiana Street, Memphis, Tenn.
5ACK	4GF	Ray Hamilton Sullinger, 105 Chilhowee, Maryville, Tenn.
5WO	4GL	Stuart Emerson Adeock, 2008 Washington Avenue, Knoxville, Tenn.
5ER	4EO	Folger H. Bigelow, 371 Willett Street, Memphis, Tenn.
4EK	4FL	David G. Botto, 873 North Manassas Street, Memphis, Tenn.
5JK	4JL	Thos. J. Adams, 308 Stonewall Street, Memphis, Tenn.
4CN	4KM	Lloyd K. Rush, 4 Second Street, Bemis, Tenn.
5AGH	4BC	William Adkinson Orman, 704 Woodlawn Street, Columbia, Tenn.
5ARG	4DK	Isaac M. Hull, 432 North Montgomery Street, Memphis, Tenn.
5AUR	4CU	Crockett Ellis, 976 Oakview Street, Memphis, Tenn.
5AKW	4FY	John C. Buchanan, 2110 Coker Avenue, Knoxville, Tenn.
5NX	4NP	Thomas B. Robinson, 220 Forbes Street, Clarksville, Tenn.
5AUC	4AJ	Walter Baxter Williams, 401 Twelfth Street, Columbia, Tenn.
5ANV	4FR	Nathan James Dearing, 880 Pierce Street, Memphis, Tenn.
5AGZ	4FW	James A. Gassaway, 607 Willett Street, Memphis, Tenn.
5HL	4TB	William D. Van Dyke, 542 McCallie Street, Chattanooga, Tenn.
5AEQ	4IV	William C. Montgomery, jr., 2190 Herbert Street, Memphis, Tenn.
5AVN	4HM	George O. Sutton, 719 Thirteenth Street, Knoxville, Tenn.
5ADF	4JP	Lake H. Montgomery, jr., 1707 Ashwood Avenue, Nashville, Tenn.
5AWD	4EV	C. R. Martin, 864 Roland Street, Memphis, Tenn.
5ABN	4HE	George A. Reynolds, 622 South Margin Street, Franklin, Tenn.
5AOT	4YX	Powell May, 134 Overton Place, Knoxville, Tenn.
5BW	4BU	Robt. S. de Graffenried, 1310 McMillan Street, Memphis, Tenn.
5ASH	4HH	O. K. & H. B. Houck, 1234 Sledge Street, Memphis, Tenn.
5AMP	4AM	Joe Slaughter and G. R. Hulsn, 1207 West Twenty-sixth Street, Cleveland, Tenn.
5AQF	4GJ	Richard H. Turpin, 1919 Felix Street, Memphis, Tenn.
5PV	4PZ	Rolvin W. Pratt, 535 Edith Street, Memphis, Tenn.
5DL	4HG	Thos. G. Harton, 326 Twentieth Avenue, Nashville, Tenn.
5LU	4LU	William Beall Taylor, Box 28, Tennessee Avenue, Signal Mountain, Tenn.
5AIK	4JB	Ferris Wood Sullinger, 930 Main Street, Maryville, Tenn.
5UV	4UV	John Edward Ross, 1620 East Fifth Avenue, Knoxville, Tenn.

## COMPARISON OF METHODS OF MEASURING RADIO FIELD INTENSITIES

During recent months there has been an increasing interest in the measurement of radio field intensities. As the number of radio stations increased the determination of the actual intensity of the waves they produce becomes important. The wave from any station must be sufficiently intense to overcome the atmospheric and other disturbances which can not be eliminated, and yet must not be so intense as to interfere unduly with other transmissions. A study of apparatus suitable for the measurement of these intensities has been begun by the Bureau of Standards. Such measurements are complicated and difficult. Starting with the apparatus used for low frequencies (long waves), it is expected to compare the various types of apparatus used for the measurements of field intensities throughout the range of frequencies used in radio. Such intercomparisons will make it possible to analyze and compare data obtained by different observers using different methods.

A comparison of the three methods in use for very low frequencies (15 to 100 kilocycles) was arranged and carried on at the Bureau of Standards in April and May. Independent types of apparatus have been developed and used for a number of years in work at the Bureau of Standards and in the field measurement work of the Bell telephone laboratories and the Radio Corporation of America. Representatives of these three organizations cooperated in simultaneous measurements made on several transmitting stations both in the United States and in Europe. The results of this comparison show satisfactory agreement between the three different methods. Under conditions of weak signals and bad interference from atmospheric disturbances there may be considerable differences in the results due to the method of introducing the comparison signal. However, corrections can be made for the differences and reasonable agreement obtained even under adverse conditions. The work thus established shows that the three different methods give results which are comparable.

## AN IMPROVED TYPE OF WAVE-METER RESONANCE INDICATOR

In order to reduce interference between various radio transmitting stations it is important that each station be kept close to its assigned wave length or frequency. The proper adjustment is usually obtained by measuring the frequency of the transmitting circuit with a wave meter. If the station is found to be operating at a frequency other than its assigned value it is adjusted until the wave meter indicates that the required frequency is obtained. The wave meter must be calibrated from a reliable frequency standard, and it must also be provided with a resonance indicator to show when it is tuned to the frequency of the transmitting station. This indicator has a needle or pointer which gives a maximum deflection when a proper adjustment of the wave meter has been obtained. The instrument commonly used for this purpose does not always give satisfactory results, because it is sometimes difficult to tell when the needle indicates a maximum deflection. A paper just issued by the Bureau of Standards describes a resonance indicator, utilizing a crystal detector in combination with a milliammeter, which gives more pronounced and uniform deflections of the needle on the indicating instrument. This permits a more accurate frequency adjustment of a transmitting station. This device may be attached to most wave meters and costs no more than the device generally employed.

The resonance indicator is described in Bureau of Standards Scientific Papers No. 502, An Improved Type of Wave Meter Resonance Indicator, a copy of which may be obtained for 5 cents from the Superintendent of Documents, Government Printing Office, Washington, D. C.

## SUNSET FADING TESTS

In special tests from March 24 to April 2 the Bureau of Standards, with the cooperation of about 20 laboratories in various cities, made records of the variation in intensity of signal received from station WGY, General Electric Co., Schenectady, N. Y., during the sunset period. In order to study further the effects of sunset, a second series of observations were started May 19 on station KDKA, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. Records were made by an augmented group of laboratories on six days distributed during the period of May 19 to May 29. The observing periods were approximately three hours long, centering at the time of sunset at the receiving station. The records of these observations as well as those of the tests on WGY are being studied, and a report on the characteristic effects which these observations established will be issued at a later date.

Subsequent observations will be conducted on fading field intensity.

tests will be determined to a considerable extent by the cumulative results of the completed tests. Laboratories 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 from the equipment of the average college or commercial radio laboratory. Measurements of field intensity and direction require the construction or assembly of somewhat specialized apparatus.

**A STUDY OF THE SEASONAL VARIATION OF RADIO-FREQUENCY PHASE DIFFERENCE OF LAMINATED PHENOLIC INSULATING MATERIALS**

In measurements of radio-frequency properties of laminated phenolic insulating materials (bakelite, etc.), the results of which are published in a former Bureau of Standards Technologic Paper No. 216, Properties of Electrical Insulating Materials of the Laminated, Phenol-Methylene Type, some samples were found to exhibit changes in these properties with time. This led to the work described in a paper just issued, Bureau of Standards Technologic Paper No. 284, A Study of the Seasonal Variation of Radio-Frequency Phase Difference of Laminated Phenolic Insulating Materials, by J. L. Preston and E. L. Hall, obtainable for 5 cents from the Superintendent of Documents, Government Printing Office, Washington, D. C., and is a study made in 1920-21 on some representative samples to learn whether the variations of phase difference follow any definite trend with season. It was found that the phase difference or power factor varied with the season of year, reaching a maximum in late summer. In most cases the phase difference or power factor returned to its original value after undergoing a year's cyclic changes. The variations with season were, in general, no greater than variations with frequency or variations from sample to sample.

**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 among those observed. There is, of course, no actual guaranty that the stations named below will maintain the constancy shown, but this indicates the high degree of confidence that can be placed in them. The transmitted frequencies from these stations can be utilized for standardizing frequency meters (wave meters) and other apparatus by the procedure given in Bureau of Standards Letter Circular No. 92, Radio Signals of Standard Frequency and their Utilization. A copy of that letter circular can be obtained by a person having actual use for it upon application to the Bureau of Standards, Department of Commerce, 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 Apr. 20, 1925
						Per cent	Per cent
WQL	Radio Corporation of America.	Coram Hill, Long Island, N. Y.	17.13	5	36	0.1	0.3
NSS	United States Navy	Annapolis, Md.	17.50	21	165	.2	.1
WCI	Radio Corporation of America.	Barnegat, N. J.	17.95	3	17	.2	.2
WGG	.....do.....	Tuckerton No. 1, N. J.	18.95	21	168	.1	.2
WII	.....do.....	New Brunswick, N. J.	21.80	*1	7	.1	.1
WRT	.....do.....	.....do.....	22.60	*1	6	.1	.3
WVA	United States Army	Annapolis, Md.	100	2	34	.2	.4
WEAF	American Telegraph & Telephone Co.	New York, N. Y.	610	5	52	.0	.0
WCAP	Chesapeake & Potomac Telephone Co.	Washington, D. C.	640	20	94	.1	.2
WRC	Radio Corporation of America.	.....do.....	640	17	74	.1	.2
WSB	Atlanta Journal	Atlanta, Ga.	700	20	84	.1	.3
WOY	General Electric Co.	Schenectady, N. Y.	700	23	126	.1	.1
WBZ	Westinghouse Electric & Manufacturing Co.	Springfield, Mass.	900	13	39	.1	.2
KDKA	.....do.....	East Pittsburgh, Pa.	970	20	163	.1	.1

## RADIO SERVICE BULLETIN

19

## REFERENCES TO CURRENT RADIO PERIODICAL LITERATURE

This is a monthly list of references prepared by the Radio Laboratory of the Bureau of Standards, and is intended to cover the more important papers of interest to the professional radio engineer which have recently appeared in technical periodicals. The number at the left of each reference classifies the reference by subject, in accordance with the scheme presented in "A Decimal Classification of Radio Subjects—An Extension of the Dewey System," Circular No. 138, a copy of which may be obtained for 10 cents from the Superintendent of Documents, Government Printing Office, Washington, D. C. Further information about these lists, availabilities of previous lists, and of the several periodicals is contained in the extended statement preceding the early lists and published in the Radio Service Bulletin prior to April, 1923, and also in May and September, 1923.

## R000.—Radio communication

- R007.9 The Paris Conference (International Conference of Radio Amateurs). *Wireless World and Radio Review*, 16, pp. 365-366 and pp. 379-380, April 29, 1925.  
 R020 Gäntner, H. Technical vocabulary in five languages (radio terms), published by Franckh'sche Verlagshandlung, Stuttgart, Germany. Noted in *Wireless World and Radio Review*, 16, p. 419, May 6, 1925.

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