DEPARTMENT OF COMMERCE

RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION

Washington, March 2, 1925—No. 95

CONTENTS

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.

35530°—25——1

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—
Midway Island, Hawaii [1]	KYN	556, 600	P	X	Commercial Pacific Cable Co.
New Brunswick, N. J. [2]	WIR	88.15	FX	N	R. C. A.
Do. [2]	WIZ	43.02	FX	N	Do.
Rocky Point, N. Y. [3]	WQN	74.08	FX	N	Do.
Do. [3]	WQO	25.03	FX	N	Do.

[1] Loc. (approximately) O 177° 22′ 00″, N 28° 12′ 00″; range, 50; system, spark coll.
[2] Loc. O 74° 29′ 15″, N 40° 30′ 10″; range, 4,000; system, R. C. A. v. t. telegraph.
[3] Loc. O 72° 56′ 30″, N 40° 55′ 45″; range, 4,000; system, R. C. A. v. t. telegraph.

Commercial ship stations, alphabetically by names of vessels

[Additions to the List of Radio Stations of the United States, edition of June 30, 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—
Ann Arbor No. 7. [1]	WDK	.....	PG	X	Ann Arbor Boat Co	Owner of vessel.
Burnwell	KIMS	8	PG	X	Alpha S. S. Corp	R. C. A.
Sayonara	KFVA	.....	.....	.....	A. J. Drexel	Do.
S. O. Co. No. 93	WTY	8	PG	X	Standard Oil Co. of Calif	Do.
S. O. Co. No. 95	WTZ	8	PG	X	do	
W. M. Tupper	WDW	.....	PG	X	Santa Ana S. S. Co	

[1] Range, 150; system, R. C. A., 1000; w. l., 600, 706; rate, Great Lakes service, 6 cents per word.

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	
KFVA	Sayonara	b	WIZ	New Brunswick, N. J	c
KIMS	Burnwell	b	WQN	Rocky Point, N. Y	c
KYN	Midway Island, Hawaii	c	WQO	do	c
WDK	Ann Arbor No. 7	b	WTY	S. O. Co. No. 93	b
WDW	W. M. Tupper	b	WTZ	S. O. Co. No. 95	b
WIR	New Brunswick, N. J	c			

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
Bellefontaine, Ohio	WHBD	Missoula, Mont	KUOM
Canton, Ohio	WHBC	New Lebanon, Ohio	WGBY
Chesaning, Mich	WHBI	Ogden, Utah	KFWA
Culver, Ind	WHBH	Orono, Me	WGBX
Ellsworth, Me	WHBK	Port Huron, Mich	WAFD
Escanaba, Mich	WRAK	Rock Island, Ill	WHBF
Fort Wayne, Ind	WHBJ	San Luis Obispo, Calif	KFBS
Harrisburg, Pa	WHBG	Sewickley, Pa	WHBZ
Hollywood, Calif	KFVF	Spring Valley, Ill	WGBW
Do	KFWB	Upland, Calif	KFWC
Marshfield, Wis	WGBR	Virginia, Minn	KFUZ

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 (kilocycles)
KFBE	San Luis Obispo, Calif.	Horn & Wilson	50	215.7	1,390
KFUZ	Virginia, Minn.	Young Mens Christian Association.	10	248	1,210
KFVF	Hollywood, Calif., 1516 Detroit Street.	Clarence B. Juneau	10	206.2	1,440
KFWA	Ogden, Utah, 2451 Kiesel Avenue.	Bruwing Brothers Co	500	214.2	1,400
KFWB	Hollywood, Calif., 5842 Sunset Boulevard.	Warner Brothers Pictures (Inc.).	500	252	1,190
KFWC	Upland, Calif., Stoddard Canyon.	L. E. Wall and C. S. Myers	10	211.1	1,420
KUOM	Missoula, Mont.	University of Montana	500	244	1,230
WAFD	Port Huron, Mich., 1432 Military Road.	Albert B. Parfet Co.	250	233	1,290
WAMD	Minneapolis, Minn., Marigold Gardens.	Hubbard & Co.	100	244	1,230
WGBB	Marshfield, Wis., 114 Central Avenue.	Marshfield Boradcasting Association.	10	229	1,310
WGBW	Spring Valley, Ill.	Valley Theater	20	212.6	1,410
WGBX	Orono, Me.	University of Me.	10	252	1,190
WGBY	New Lebanon, Ohio	Progress Sales Co.	30	218.3	1,370
WHBC	Canton, Ohio, 827 McKinley Avenue NW.	Rev. E. P. Graham	10	254	1,180
WHBD	Bellefontaine, Ohio	Charles W. Howard	20	222	1,350
WHBE	Sewickley, Pa., 440 Centennial Avenue.	G. L. Trudel Taxicab Co. and Sewickley Auto Electric Co.	50	205.4	1,460
WHBF	Rock Island, Ill., 217 Eighteenth Street.	Beardsley Specialty Co	100	223	1,350
WHBG	Harrisburg, Pa., 1810 North Fourth Street.	John S. Skane	20	231	1,300
WHBH	Culver, Ind.	Culver Military Academy	100	222	1,350
WHBI	Chesaming, Mich.	Chesaming Electric Co.	50	227	1,320
WHBJ	Fort Wayne, Ind., 2109 South Calhoun Street.	Lane Auto Co.	10	234	1,280
WHBK	Ellsworth, Me.	Franklin Street Garage	10	231	1,300
WKBE	Webster, Mass.	K. & B. Electric Co.	10	231	1,300
WRAK	Escanaba, Mich.	Economy Light Co.	100	256	1,170

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—
Destruction Island, Wash [1]	NOJ	800	RC	N	United States Navy.

[1] Loc. O 124 29' 02", N 47 40' 29"; system, United States Navy.

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—
Columbus, Ohio	8XAF	Ohio State University, Reserve Officers Training Corps.
East Lansing, Mich.	8XAJ	Michigan Agricultural College.
Glenville, N. Y.	2XM	General Electric Co., R. F. D. 8, Box 149.
Schenectady, N. Y.	2XAE	General Electric Co.
South Schenectady, N. Y.	2XAF	Do.
Do.	2XAG	Do.
Do.	2XAH	Do.

Special land stations grouped by districts

Call signal	District and station
	Second district:
2XM	Glenville, N. Y.
2XAE	Schenectady, N. Y.
2XAF	South Schenectady, N. Y.
	Do.

Call signal	District and station
2XAH	Second district—Continued. South Schenectady, N. Y.
	Eighth district:
8XAF	Columbus, Ohio.

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]

ABERDEEN, WASH.—W. l., *600*, 706, 1641; service, P.
ALITAK, ALASKA.—System, composite, 240; w. l., *600*, 700.
BECHAROF, ALASKA.—W. l., *600*, 700.
BELFAST, ME. (WIR).—Call signal changed to WCE.
BUTLER, PA.—W. l., 202.6.
CAMP 60, CALIF.—System, De Forest v. t. telegraph; w. l., 1,585, 1,635, 1,675.
CAMP 61, CALIF.—System, De Forest v. t. telegraph; w. l., 1,585, 1,635, 1,675.
CAMP 61–C, CALIF.—System, De Forest v. t. telegraph; w. l., 1,585, 1,635, 1,675.
CASCADA, CALIF.—System, De Forest v. t. telegraph; w. l., 1,585, 1,635, 1,675.
CHIGNIK, ALASKA (KHC).—W. l., *600*, 700, 1,610.
CLARKS POINT, ALASKA.—W. l., *600*, 700.
DETROIT, MICH. (KDPH).—Range, 300; service, P.
EAST HAMPTON, N. Y.—W. l., 600, 640.
IKATAN, ALASKA.—Range, 150; system, W. S. A. Co., 1,000; w. l., 600, 875, 900, 1,610; rates, ship service, 6 cents per word.
KARLUK, ALASKA.—System, R. C. A. coil; w. l., *600*, 700.
KATALLA, ALASKA.—W. l., *600*, 675, 1,650.
KENAI, ALASKA.—W. l., *600*, 900.
KING COVE, ALASKA.—Range, 300; w. l., *600*, 900, 1,610.
KOGGIUNG, ALASKA (KUBX).—System, R. C. A. coil; w. l., *600*, 700.
KVICHAK, ALASKA (KHB).—W. l., *600*, 700.
KVICHAK, ALASKA (moored vessel—KVQ).—W. l., *600*, 700.
LATOUCHE, ALASKA.—W. l., *800*, 706, 1,650.
LAZY BAY, ALASKA.—Loc. (approximately) 0 154° 15′ 00″, N 56° 54′ 00″; range, 300; system, composite, 480; w. l., *600*, 650, 1,200, 1,650, 1,800; hours, 8 a. m.–12 noon and 1–6 p. m.
LOS ANGELES, CALIF. (portable—KZI).—*Read* Hollywood, Calif. (portable).
MARYSVILLE, MICH.—Range, 400.
NAKNEK, ALASKA (KHT).—W. l., *600*, 700, 1,610.
NAKNEK, ALASKA (KMK).—Range, 200; w. l., *600*, 650, 1,800.
NELSON LAGOON, ALASKA.—W. l., *600*, 675.
NEW LONDON, CONN.—Range, 500; w. l., *600*, 920.
PILOT POINT, ALASKA.—W. l., *600*, 700.
PORT ALTHORP, ALASKA.—Range, 300; w. l., *600*, 675; service, P.
PORT MOLLER, ALASKA.—W. l., *600*, 675, 900, 1,610.
QUINCY, MASS.—W. l., *600*, 706, 975.
ROGERS, MICH.—W. l., *600*, 670, 750, 1,760, 1,790, 2,150.
RUBY (moored vessel).—System, Halcun coil, 120; w. l., *600*, 700.
SNAG POINT, ALASKA.—System, Kilbourne & Clark, 240; w. l., *600*, 700.
SQUAW HARBOR, ALASKA.—W. l., *600*, 675.
SUPERIOR, MICH.—System, composite v. t. telephone and telegraph.
TENAKEE, ALASKA.—W. l., *600*, 625; station operated and controlled by Alaska Consolidated Canneries.
TUCKERTON, N. J. (WGH).—W. l., 103.
UGASHIK, ALASKA.—W. l., *600*, 625.
UYAK, ALASKA (KHA).—W. l., *600*, 700, 1,610.
WYOMING, PA.—W. l., 202.6.
Strike out all particulars of the following-named stations: Houston, Tex.; Madison, Wis.; San Francisco, Calif. (KII).

COMMERCIAL SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS

[Alterations and corrections to be made to the List of Radio Stations of the United States, editions of June 30, 1924, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

ADMIRAL SEBREE.—Pacific S. S. Co. owner of vessel.
ALL AMERICA.—W. l., *600*, 706, 800; All America Cable Co. owner of vessel; station operated and controlled by I. W. T. Co.
ANDREA F. LUCKENBACH.—W. l., *600*, 706, 800; station operated and controlled by owner of vessel.

ARCTURUS.—Range, 200-500; system, I. W. T. Co. arc and K. & C., 1,000; w. l., 600, 706, 800, 1,800, 2,100, 2,400; hours, N. Union Sulphur Co. owner of vessel; station operated and controlled by I. W. T. Co.
BESSEMER CITY.—W. l., 450, *600*, 706, 800.
BETTERTON.—Associated Oil Co. owner of vessel.
CAMBRIDGE (KGR).—Range, 150; system, Lowenstein, 1,000; w. l., *600*, 706, 800; hours, X.
CAPULIN.—W. l. 450, *600*, 706, 800.
CARENCO.—W. l., 450, *600*, 706, 800.
CAROLINAS.—W. l., 450, *600*, 706, 800.
CATAHOULA.—W. l., *600*, 706, 800.
CHARLES H. CRAMP.—Station operated and controlled by R. C. A.
CITY OF SEATTLE.—Range, 150; system, R. C. A. v. t. telegraph; w. l., *600*, 706, 800; hours, N.
COMMERCIAL PATHFINDER.—W. l., *600*, 706, 800.
DANNEDAIKE.—Station operated and controlled by R. C. A. (U. S. L.).
DELISLE.—W. l., *600*, 800, 1,800, 2,100.
DIANA DOLLAR.—W. l., *600*, 706, 800.
DOMINO.—W. l., *600*, 706, 800.
DOROTHY.—Range, 200; system, Navy-Simon, 1,000; w. l., *600*, 706, 800; station operated and controlled by I. W. T. Co.
DULCINO.—W. l., *600*, 706, 800.
EDGAR BOWLING.—W. l., *600*, 706, 800.
EL ALMIRANTE.—W. l., *600*, 706, 800.
ETHAN ALLEN.—Range, 300; w. l., *600*, 706, 800, 1,800, 2,100, 2,400.
FRIEDA.—System, I. W. T. Co., 1,000; w. l., *600*, 706, 800; station operated and controlled by I. W. T. Co.
GEORGE G. HENRY.—W. l., *600*, 706, 800.
HATTERAS.—W. l., 450, *600*, 706, 800.
HENRY S. GROVE.—Station operated and controlled by R. C. A.
HUGUENOT.—Station operated and controlled by I. W. T. Co.
IRENE.—W. l., *600*, 706, 800.
JENNIE R. MORSE.—Name changed to Oakpark.
K. R. KINGSBURY.—System, R. C. A. v. t. telegraph; w. l., *600*, 660, 706, 750, 800, 1,800, 2,100, 2,400.
LANCASTER.—Station operated and controlled by R. C. A.
LIBERTY LAND.—System, Navy—R. C. A., 1,000; w. l., 450, *600*, 706, 800.
MAHUKONA.—W. l., 450, *600*, 800.
MONTEREY.—W. l., *600*, 706, 800.
MUNPLACE.—Station operated and controlled by I. W. T. Co.
O. T. WARING.—Range, 150-300; system, Lowenstein, 1,000 and I. W. T. Co. arc; w. l., 450, *600*, 706, 800, 2,100, 2,400.
PORTO RICO.—W. l., *600*, 706, 800.
PRESIDENT MCKINLEY.—Station operated and controlled by R. C. A.
QUANTICO.—W. l., 600, 706, 800.
RIFFLE (KFLF).—W. l., 450, *600*, 706, 800.
SAGADAHOC.—Station operated and controlled by R. C. A.
SANGAMON.—W. l., 450, *600*, 706, 800.
SANTA ELISA.—W. l., 450, *600*, 706, 800.
SEA GULL.—W. l., *600*, 706, 800.
STANDTUG No. 1.—Station operated and controlled by I. W. T. Co.
TAMPA (KVK).—W. l., *600*, 706, 800, 875.
TIGER (KIT).—W. l., 450, *600*, 706, 800.
WEST CARNIFAX.—W. l., 450, *600*, 706, 800.
WEST KASSON.—W. l., 450, *600*, 706, 800, 875.
WEST MAXIMUS.—W. l., 450, *600*, 706, 800.
WINONA.—W. l., *600*, 706, 800.
W. M. BURTON.—W. l., *600*, 706, 800.
WM. ROCKEFELLER.—W. l., *600*, 706, 800.
Strike out all particulars of the following-named vessels: A. A. Daugherty,

The following-named ship stations are operated and controlled by the I. W. T. Co.:

Abercos.
Ala.
American Banker.
American Farmer.
American Merchant.
American Press.
American Shipper.
American Trader.
Baldbutte.
Bibbco.
Cardonia.
Carplaka.
City of Alton.
City of Weatherford.
Cliffwood.
Cody.
Coldwater.
Cranford.
Dio.
Eastern Dawn.
Eastern Planet.
Eclipse.
Emergency Aid.
George Pierce.
Hoxie.
Independence.
Jalapa.
Jeff Davis.
Kamesit.
Labette.
Liberator.
Liberty.
Lorraine Cross.
Magmeric.
Minnequa.
Oakridge.
Oakspring.
Padnsay.
President Cleveland.
President Pierce.
President Lincoln.
President Taft.
President Wilson.
Sacandaga.
Saguache.
Salvation Lass.
Scholarie.
Shickshinny.
Stockton.
Tulsagas.
Victorious.
West Arrow.
West Cactus.
West Calera.
West Carmona.
West Carnifax.
West Cohas.
West Ekonk.
West Faralon.
West Harshaw.
West Himrod.
West Kasson.
West Kebar.
West O'Rowa.
West Prospect.
West Totant.
Western Ocea
William Penn.
Youngstown.

The following-named ship stations are operated and controlled by the R. C. A.:

Afoundria.
Aquarius.
Argosy.
Baldhill.
Blair.
Cariton.
Cathlamet.
City of Fairbury.
Clearwater.
Coahoma County.
Coldbrook.
Collingsworth.
Colorado Springs.
Crippie Creek.
Culberson.
Deer Lodge.
Deuel.
Dilworth.
District of Columbia.
Dryden.
Duquesne.
Eastern Glade.
Eastern Sea.
Eelbeck.
Ethan Allen.
Gaffney.
Hampton Roads.
Hatteras.
Homestead.
Hulver.
Invincible.
Lavada.
Meanticut.
Meton.
Mosella.
Mount Evans.
Natirar.
Ossa.
President Jackson.
President Jefferson.
President Madison.
Quaker City.
Quisteonck.
Republic (KSN).
Saco.
Salina.
Satartia.
Seattle Spirit.
Stanley.
Tripp.
Tuxpanoil.
Vincent.
Waukegan.
West Campgaw.
West Celeron.
West Chopaka.
West Corum.
West Harcuvar.
West Hesseltine.
West Ira.
West Keats.
West Lake.
West Notus.
Westpool.
West Tacook.
West Wauna.
Wildwood.

COMMERCIAL LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS

KUNN, *read* Oakpark; KZI, *read* Hollywood, Calif. (portable); WIR (Belfast, Me.), call signal changed to WCE; strike out all particulars following the call signals, KDEM, KDHX, KII, KPP, KPR, WFO, WHA.

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]

FRANCE FIELD, C. Z. (Cristobol).—Strike out all particulars.

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]

Strike out all particulars of the following-named stations: Andover, Mass. (1XA); Madison, Wis. (9XM); Pittsburgh, Pa. (8XY); Redlands, Calif.

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]

KDKA (East Pittsburgh, Pa.).—Power, variable.
KDYL (Salt Lake City, Utah).—Power, 500; w. l., 333.1, fh. kc. 900.
KDZB (Bakersfield, Calif.).—W. l., 209.7, fy. kc. 1,430.
KFAD (Phoenix, Ariz.).—Power, 500; w. l., 299.8, fy. kc. 1,000.
KFAE (Pullman, Wash.).—W. l., 348.6, fy. kc. 860.
KFAN (Moscow, Idaho).—W. l., 231, fy. kc., 1,300.
KFAW (Santa Ana, Calif.).—W. l., 214.2, fy. kc., 1,400.
KFBK (Sacramento, Calif.).—W. l., 248, fy. kc., 1,210.
KFI (Los Angeles, Calif.).—W. l., 468.5 fy. kc., 640.
KFIQ (Yakima, Wash.).—Power, 100.
KFKX (Hastings, Nebr.).—Power, 1,500.
KFLU (San Benito, Tex.).—Power, 10.
KFMQ (Fayetteville, Ark.).—W. l., 299.8, fy. kc., 1,000.
KFNG (Coldwater, Miss.).—Station operated and controlled by Wooten's Radio & Electric Co.
KFOA (Seattle, Wash.).—W. l., 454.3, fy. kc., 660.
KFPG (Los Angeles, Calif.).—Power, 100.
KFQW (North Bend, Wash.).—Station operated and controlled by C. F. Knierim
KFQZ (Hollywood, Calif.).—W. l., 226, fy. kc., 1,330.
KFRC (San Francisco, Calif.).—W. l., 270, fy. kc., 1,110.
KFRU (Bristow, Okla.).—W. l., 394.5, fy. kc., 760.
KFUO (St. Louis, Mo.).—Station operated and controlled by Concordia Seminary.
KGO (Oakland, Calif.).—W. l., 361.2, fy. kc., 830.
KGW (Portland, Oreg.).—W. l., 491.5, fy. kc., 610.
KHJ (Los Angeles, Calif.).—W. l., 405.2, fy. kc., 740.
KJR (Seattle, Wash.).—Power, 500.
KLX (Oakland, Calif.).—W. l., 508.2, fy. kc., 590.
KLZ (Denver, Colo.).—W. l., 266, fy. kc., 1,130.
KMJ (Fresno, Calif.).—W. l., 234, fy. kc., 1,280.
KPO (San Francisco, Calif.).—W. l., 428.3, fy. kc., 700.
KRE (Berkeley, Calif.).—W. l., 258, fy. kc., 1,160.
KSD (St. Louis, Mo.).—Power, 750.
WAAB (New Orleans, La.).—W. l., 273, fy. kc., 1,100.
WBBM (Chicago, Ill.).—Station operated and controlled by Atlas Investment Co.
WBS (Newark, N. J.).—Power, 100; w. l., 252, fy. kc., 1,190.
WCAO (Baltimore, Md.).—Station operated and controlled by Kranz-Smith, Sanders & Stayman.
WCAU (Philadelphia, Pa.).—Address Hotel Pennsylvania.
WCBA (Allentown, Pa.).—Station operated and controlled by Queen City Radio Station.
WCBQ (Nashville, Tenn.).—Power, 50.
WCBT (Worcester, Mass.).—Call signal changed to WCUW.
WCBY (Buck Hill Falls, Pa.).—Power, 20; w. l., 231, fy. kc., 1,300.
WDBQ (Salem, N. J.).—Power, 10.
WDM (Washington, D. C.).—W. l., 270, fy. kc., 1,110.
WFAV (Lincoln, Nebr.).—Power, 500.
WFBN (Bridgewater, Mass.).—Power, 10.
WGBA (Baltimore, Md.).—Power, 100.
WGI (Medford Hillside, Mass.).—Call signal changed to WARC.
WGY (Schenectady, N. Y.).—Fy. kc., 790.
WIL (St. Louis, Mo.).—Station operated and controlled by St. Louis Star and Benson Radio Co., power, 250.
WJAK (Greentown, Ind.).—Power, 20.
WKAV (Laconia, N. H., portable).—W. l., 209.7, fy. kc., 1,430.
WLW (Cincinnati, Ohio).—Changed to Harrison, Ohio.
WOAC (Lima, Ohio).—W. l., 261, fy. kc., 1,150.
WTAC (Johnstown, Pa.).—Power, 100.
WTAF (New Orleans, La.).—W. l., 273, fy. kc., 1,100.
WTAQ (Osseo, Wis.).—Power, 200.
Strike out all particulars of the following-named stations: KFDL, Denver, Colo.; KFQD, Anchorage, Alaska; KFQE, Colorado Springs, Colo.; WBBD, Reading, Pa.; WEBP, New Orleans, La.; WJAB, Lincoln, Nebr.; WOAV, Erie

MISCELLANEOUS

GALVESTON STATION TRANSMITS WEATHER FORECASTS

The radio station of the Radio Corporation of America at Galveston, Tex. (WGV), transmits weather forecasts and information as described in Radio Service Bulletin No. 89, September 2, 1924, except that the information will be sent first on 830 meters, I. C. W., followed by an immediate repeat on 2,425 meters, C. W., at 1,130 and 1,800 G. M. T.

HIGH-FREQUENCY EXPERIMENTS BY UNITED STATES NAVY

The call signal NRRL has been assigned for temporary use of the United States Navy in high-frequency experiments afloat in the Pacific Ocean. These experiments will employ wave lengths below 100 meters, and although the apparatus may be moved from ship to ship the call signal (NRRL) will be used throughout the experiments. Correspondence concerning signals of NRRL should be addressed to "Director, United States Naval Research Laboratory, Bellevue, D. C., U. S. A."

FOG SIGNAL ON "LE HAVRE" LIGHT VESSEL

An experimental wireless fog signal has been established on *Le Havre* (France), light vessel. The signals which are transmitted continuously during fog consist of a series of the letter H in the Morse code (. . . .), a series of dashes (—), another series of the letter H, and then a silent interval, every one and a half minutes, given as follows:

. . . . etc. / 15 seconds	— — — — etc. / 30 seconds
. . . . etc. / 15 seconds	Silent / 30 seconds

The approximate position of this vessel is lat. 49° 32′ N., long. 0° 10′ W.; wave length, 1,000 meters, I. C. W.

FOG SIGNAL ESTABLISHED AT CAP GRIS NEZ LIGHTHOUSE, FRANCE

Wireless fog signals (experimental) are transmitted by this station continuously during foggy weather, consisting of the emission of signals as follows:

— —. — —. — —. etc. / 15 seconds	— — — — — etc. / 30 seconds
— —. — —. — —. etc. / 15 seconds	Silent / 30 seconds

The position of this station is lat. 50° 52′ 10″ N., long. 1° 35′ 04″ E.; wave length 1,000 meters, I. C. W.

"BORKUM RIFF" LIGHT VESSEL FOG SIGNAL

The radio fog signal of this German light vessel which formerly was transmitted in about 4 minutes, beginning at 20 m., 36 m., and 52 m. of each hour, will be transmitted twice in quick succession so that the duration of the signal will be about 8 minutes, thus, from 20 m. to 28 m., 36 m. to 44 m., and 52 m. to 60 m. The approximate position of this station is lat. 53° 48′ N., long. 6° 04′ E. (North Sea); wave length, 1,000 meters, C. W.

ALTERATIONS IN LIZARD AND BERWICK (BRITISH) COMPASS STATIONS

On February 1, 1925, the wave length of the Lizard compass station (BVY) both for transmitting and receiving was changed to 800 meters in lieu of 450 meters.

In view of the opening of the Cullercoats station for compass bearings the [illegible] compass station (BVG) has been permanently closed.

RATES FOR FOREIGN STATIONS

Ecuador.—The rate of the coast stations, Esmeraldas, Guayaquil, and Puna Guayas is now 60 centimes per word, no minimum.

British West Indies.—Effective since December 1, 1924, the rate for the Barbados station is 40 centimes per word, in lieu of 60 centimes per word, making a reduction of 20 centimes per word.

Guadaloupe.—The interior rate of ordinary radiograms is 10 centimes per word, minimum, 50 centimes per radiogram. The messenger rate for the delivery of radiograms is 1 franc for the first kilometer and 50 centimes for each additional kilometer or fraction thereof.

METEOROLOGICAL BULLETINS BY GREEK STATION

The Athens Botanical radio station No. 1 is closed. The meteorological bulletins transmitted at 945 and 1,545 G. M. T. as well as the press bulletins at 1,500 G. M. T. will be transmitted provisionally by the Athens Station No. 1, at the same hours, but on the wave length of 1,200 meters.

DISTRIBUTION OF WEATHER FORECASTS, INFORMATION AND WARNINGS ON THE PACIFIC OCEAN AND COAST

The United States Department of Agriculture, Weather Bureau, forecast division, has published a circular known as Circular No. 10—Radio, January 1, 1925, giving the method of transmission of weather information, forecasts, warnings by naval radio for the benefit of marine and aviation interests on the Pacific Ocean and coast. Further information may be obtained from the above-named bureau.

BROADCASTING STATIONS OF THE UNITED STATES BY WAVE LENGTHS

Wave length	Frequency (kilocycles)	Power (watts)	Call signal	Location
		100	KDZB	Bakersfield, Calif.
205.4	1,460	30	WCRB	Providence, R. I. (portable).
		50	WHBE	Sewickley, Pa.
		50	WBBH	Port Huron, Mich.
206.8	1,450	20	WABW	Wooster, Ohio.
208.2	1,440	10	KFVF	Hollywood, Calif.
209.7	1,430	50	KFQR	Oklahoma, Okla.
		10	WGBH	Fall River, Mass. (portable).
		50	WKAV	Laconia, N. H.
211.1	1,420	10	KFWC	Upland, Calif.
		10	KFRP	Redlands, Calif.
212.6	1,410	20	WGBW	Spring Valley, Ill.
213	1,410	5	KFRQ	Portland, Oreg.
214.2	1,400	500	KFWA	Ogden, Utah.
		10	KFAW	Santa Ana, Calif.
		5-100	WBRP	Petoskey, Mich.
215.7	1,390	50	KFBE	San Luis Obispo, Calif.
		50	KFQW	North Bend, Wash.
217.3	1,380	50	WGBF	Evansville, Ind.
		10	WJD	Granville, Ohio.
		10	KFRX	Pullman, Wash.
218.8	1,370	20	WGBY	New Lebanon, Ohio.
220	1,360	50	WCBU	Arnold, Pa.
		500	WQAA	Parkesburg, Pa.
		100	KFRW	Olympia, Wash.
222	1,350	100	WHBH	Culver, Ind.
		100	WHBF	Rock Island, Ill.
		20	WHBD	Bellefontaine, Ohio.
		100	WBES	Takoma Park, Md.
		50	WDBF	Youngstown, Ohio.
		15	KFRZ	Hartington, Nebr.
		50	WBBW	Norfolk, Va.
		500	KZRQ	Manila, P. I.
224	1,340	100	KPUU	San Leandro, Calif.
		50	KFUR	Ogden, Utah.
		5	KFRN	Hanford, Calif.
224	1,340	10	WBBU	Monmouth, Ill.
		10	KFQP	Iowa City, Iowa.
		10	KFOD	Wallace, Idaho.
		15	WRAF	Laporte, Ind.
		15	KFBL	Everette, Wash.
226	1,330	250	KFQZ	Hollywood, Calif.
		100	WEBM	United States (portable).
		100	WGBG	Thrifton, Va.
		20	WBBA	Newark, Ohio.
		20	WFBE	Seymour, Ind.
		200	WBBM	Chicago, Ill.
		10	WFBN	Bridgewater, Mass.
		10	WEBY	Roslindale, Mass.
		10	WEBQ	Harrisburg, Ill.
		100	WEBL	United States (portable).
		20	WDBI	St. Petersburg, Fla.
		10	WCBW	Macon, Ga.
		20	KFOR	David City, Nebr.
		10	KFIU	Juneau, Alaska.
		10	KFGQ	Boone, Iowa.
		10	KFFR	Sparks, Nev.
		15	WKAN	Montgomery, Ala.
		50	WABU	Camden, N. J.
227	1,320	50	WHBI	Chesaming, Mich.
		100	WABA	Lake Forest, Ill.
		5	KFNV	Santa Rosa, Calif.
229	1,310	10	WGER	Marshfield, Wis.
		250	WSAJ	Grove City, Pa.
		50	KPPC	Pasadena, Calif.
		50	KFQG	Los Angeles, Calif.
		10	WSAN	Allentown, Pa.
		200	WCBC	Ann Arbor, Mich.
		100	WBBL	Richmond, Va.
		100	KFLV	Rockford, Ill.
		10	WSAU	Chesham, N. H.
		50	WDBJ	Roanoke, Va.
		10	WAIT	Taunton, Mass.

BROADCASTING STATIONS OF THE UNITED STATES BY WAVE LENGTHS—continued

Wave length	Frequency (kilocycles)	Power (watts)	Call signal	Location
229	1,310	50	WCBM	Baltimore, Md.
231	1,300	10	WKBE	Webster, Mass.
		20	WHBG	Harrisburg, Pa.
		20	WCBY	Buck Hill Falls, Pa.
		50	KFAN	Moscow, Idaho.
		5	KDLR	Devils Lake, N. Dak.
		10	WBRE	Wilkes-Barre, Pa.
		100	KFQC	Taft, Calif.
		50	WFBT	Pitman, N. J.
		50	KFQH	Burlingame, Calif.
		500	KFPR	Los Angeles, Calif.
		50	KFOT	Wichita, Kans.
		10	KFBR	Fort Dodge, Iowa.
		10	KFNZ	Burlingame, Calif.
		10	WLAX	Greencastle, Ind.
		5	KFDZ	Minneapolis, Minn.
		20	WNAB	Butler, Mo.
		50	WTAX	Streator, Ill.
		10	WHBK	Ellsworth, Me.
233	1,290	250	WAFD	Port Huron, Mich.
		10	KPEY	Kellogg, Idaho.
		10	WBRP	Broadlands, Ill.
		10	KFUW	Moberly, Mo.
		50	KFUS	Oakland, Calif.
		100	WHAG	Cincinnati, Ohio.
		150	WNJ	Newark, N. J.
		500	KFQX	Seattle, Wash.
		5	WDBZ	Kingston, N. Y.
		6	WDBX	New York, N. Y.
		15	WEBA	Highland Park, N. J.
234	1,280	20	WGBQ	Menominee, Wis.
		10	WHBJ	Fort Wayne, Ind.
		50	KMJ	Fresno, Calif.
		5	WGBM	Providence, R. I.
		50	WKAP	Cranston, R. I.
		10	WFBE	Cambridge, Ohio.
		5	KFUQ	San Francisco, Calif.
		50	KFUP	Denver, Colo.
		5	WFBD	Philadelphia, Pa.
		5	WEBZ	Savannah, Ga.
		50	WEAA	Flint, Mich.
		50	KFNJ	Warrensburg, Mo.
		10	KFOL	Marengo, Iowa.
		100	KFQU	Holy City, Calif.
		10	WDBQ	Salem, N. J.
		100	WQAC	Amarillo, Tex.
		150	KFON	Long Beach, Calif.
		100	WIK	McKeesport, Pa.
236	1,270	15	WGBT	Greenville, S. C.
		50	WFBJ	Collegeville, Minn.
		100	WFBI	Camden, N. J.
		500	KFOL	Los Angeles, Calif.
		10	WDBT	Hattiesburg, Miss.
		50	KFPV	San Francisco, Calif.
		50	WCBQ	Nashville, Tenn.
		100	KFQC	Whittier, Calif.
		10	KFLU	San Benito, Tex.
		10	WRAN	Waterloo, Iowa.
238	1,260	50	WBBZ	Indianapolis, Ind.
		250	WCUW	Worcester, Mass.
		100	KFPG	Los Angeles, Calif.
		5	KFCB	Phoenix, Ariz.
		10	WRAW	Reading, Pa.
240	1,250	50	WHBB	Stevens Point, Wis.
		10	WGBI	Scranton, Pa.
		200	KFAB	Lincoln, Nebr.
		50	KQW	San Jose, Calif.
		10	KFHL	Oskaloosa, Iowa.
		10	KFRL	Grand Forks, N. Dak.
		100	WFBB	Eureka, Ill.
		150	WCBI	Bemis, Tenn.
		20	WKAD	East Providence, R. I.
240	1,250	50	WDBO	Winter Park, Fla.
		10	KFNL	Paso Robles, Calif.
		100	WABI	Bangor, Me.
		10	KFLX	Galveston, Tex.
		50	WCAT	Rapid City, S. Dak.
240	1,250	10	WABH	Sandusky, Ohio.
		500	WOAX	Trenton, N. J.
242	1,240	50	KFUJ	Breckenridge, Minn.
		100	KFUM	Colorado Springs, Colo.
		20	WEBK	Grand Rapids, Mich.
		500	WWAE	Joliet, Ill.
		10	KFRF	Alexandria, La.
		10	WBBC	Superior, Wis.
		100	KFPX	Pine Bluff, Ark.
		50	KFPH	Salt Lake City, Utah.
		10	WTAU	Tecumseh, Nebr.
		10	KFPM	Greenville, Tex.
		10	WCBH	Oxford, Mich.
		50	WABY	Philadelphia, Pa.
		50	WTAP	Cambridge, Ill.
244	1,230	100	WAMD	Minneapolis, Minn.
		50	WEBR	Buffalo, N. Y.
		100	WGBB	Freeport, N. Y.
		50	WSAZ	Pomeroy, Ohio.
		250	WWAO	Houghton, Mich.
		500	WABN	La Crosse, Wis.
		10	WCBJ	Jennings, La.
		100	WRAM	Galesburg, Ill.
		100	WTAT	Boston, Mass. (portable).
		50	KDPT	San Diego, Calif.
		100	WBAN	Paterson, N. J.
		50	WDAY	Fargo, N. Dak.
		100	WNAX	Yankton, S. Dak.
		500	KUOM	Missoula, Mont.
246	1,220	150	KUO	San Francisco, Calif.
		5	KGY	Lacey, Wash.
		50	WQAE	Springfield, Vt.
		50	WCAZ	Carthage, Ill.
		50	KFRO	Fort Worth, Tex.
		100	WSOE	Milwaukee, Wis.
		10	WEBD	Anderson, Ind.
		5	KFQJ	Moberly, Mo.
		50	KFJY	Fort Dodge, Iowa.
248	1,210	100	KFBK	Sacramento, Calif.
		10	KFUZ	Virginia, Minn.
		100	WMAY	St. Louis, Mo.
		5	WGBK	Johnstown, Pa.
		100	WEW	St. Louis, Mo.
		100	KFIF	Portland, Oreg.
		100	WNAP	Springfield, Ohio.
		15	KFCC	Helena, Mont.
		50	KFNY	Helena, Mont.
248	1,210	10	KFSY	Helena, Mont.
		250	KFRB	Beeville, Tex.
		500	WBBG	Mattapoisett, Mass.
		50	WCBZ	Chicago Heights, Ill.
		50	KFEC	Portland, Oreg.
		100	KFOX	Omaha, Nebr.
		5	WBBV	Johnstown, Pa.
		50	KFLB	Menominee, Mich.
		10	WGAL	Lancaster, Pa.
		100	WRAL	St. Croix Falls, Wis.
		10	KFJB	Marshalltown, Iowa.
250	1,200	500	KDPM	Cleveland, Ohio.
		50	KFUG	Tacoma, Wash.
		500	WTAY	Oak Park, Ill.
		500	WSY	Auburn, Ala.
		500	KFGX	Orange, Tex.
		100	WCAX	Burlington, Vt.
		20	WHBA	Oil City, Pa.
		100	WIAD	Philadelphia, Pa.
		10	KMO	Tacoma, Wash.
		50	KGB	Tacoma, Wash.
		100	KFPV	Lamont, Iowa.
		100	WWAD	Philadelphia, Pa.
		100	KFDX	Shreveport, La.
		100	WQAN	Scranton, Pa.
		50	WFBC	Knoxville, Tenn.
		100	WNAT	Philadelphia, Pa.
		10	KFBJ	Conway, Ark.

BROADCASTING STATIONS OF THE UNITED STATES BY WAVE LENGTHS—continued

Wave length	Frequency (kilocycles)	Power (watts)	Call signal	Location
250	1,200	100	KFKQ	Conway, Ark.
		20	WCBO	Memphis, Tenn.
252	1,190	500	KFWB	Hollywood, Calif.
		100	WBS	Newark, N. J.
		10	WGBX	Orono, Me.
		10	KFUV	Springfield, Mo.
		5	WSRO	Hamilton, Ohio.
		100	WQAS	Lowell, Mass.
		100	WFBL	Syracuse, N. Y.
		50	KFOY	St. Paul, Minn.
		10	WTAL	Toledo, Ohio.
		50	WFBQ	Raleigh, N. C.
		50	KFCY	Lemars, Iowa.
		50	WBBS	New Orleans, La.
		50	KFGD	Chickasha, Okla.
		15	KFPL	Dublin, Tex.
		20	KFQT	Denison, Tex.
		10	WCBV	Tullahoma, Tenn.
		50	KFHA	Gunnison, Colo.
		10	KFJI	Astoria, Oreg.
254	1,180	500	WEAI	Ithaca, N. Y.
		250	WNAD	Norman, Okla.
		250	WABX	Mount Clemens, Mich.
			KFMB	Little Rock, Ark.
254	1,180	10	WHBC	Canton, Ohio.
		5	KFUY	Butte, Mont.
		50	KFDJ	Corvallis, Oreg.
		100	WIAS	Burlington, Iowa.
		5	WDBD	Martinsburg, W. Va.
		10	WFBZ	Galesburg, Ill.
		10	WCBA	Allentown, Pa.
		100	WFBR	Baltimore, Md.
		50	WGBA	Baltimore, Md.
		100	KFLR	Albuquerque, N. Mex.
		50	KFEL	Denver, Colo.
		100	KFQB	Fort Worth, Tex.
		100	KFOU	Richmond, Calif.
		10	KFNG	Coldwater, Miss.
		10	KFJZ	Fort Worth, Tex.
		100	WTAQ	Osseo, Wis.
		50	WJAK	Greentown, Ind.
		100	WSAR	Fall River, Mass.
		50	WAAN	Columbia, Mo.
		100	WMAH	Lincoln, Nebr.
256	1,170	20	KFLP	Cedar Rapids, Iowa.
		100	WDBR	Boston, Mass.
		100	WFBK	Hanover, N. H.
		100	KFIQ	Yakima, Wash.
		100	KFCF	Walla Walla, Wash.
		100	WRAA	Houston, Tex.
		50	WRHF	Washington, D. C.
		5	WEBT	Dayton, Ohio.
		20	WBAX	Wilkes-Barre, Pa.
		100	WSAD	Providence, R. I.
		50	WBDC	Grand Rapids, Mich.
		100	WRAK	Escanaba, Mich.
		10	WGBN	La Salle, Ill.
268	1,120	500	WDBY	Chicago, Ill.
		50	WNAL	Omaha, Nebr.
		5	KFLA	Butte, Mont.
		50	KFJX	Cedar Falls, Iowa.
		100	WFBY	Fort Benjamin Harrison, Ind.
		10	KFUL	Galveston, Tex.
		25	WAAD	Cincinnati, Ohio.
		50	KFDH	Tucson, Ariz.
		50	KHE	Berkeley, Calif.
		10	WPAU	Moorhead, Minn.
		50	KOCH	Omaha, Nebr.
		50	WDBC	Lancaster, Pa.
261	1,150	100	WARC	Medford, Mass.
		50	WABQ	Haverford, Pa.
261	1,150	500	WPSC	State College, Pa.
		500	KFPT	Salt Lake City, Utah.
		250	WEAM	North Plainfield, N. J.
		225	KFJF	Oklahoma, Okla.
		200	WRR	Dallas, Tex.
		100	KFUT	Salt Lake City, Utah.
		100	WABM	Saginaw, Mich.
		100	WTAR	Norfolk, Va.
		15	WTAZ	Lambertville, N. J.
		100	KFAJ	Boulder, Colo.
		50	KFQA	St. Louis, Mo.
		10	KFMR	Sioux City, Iowa.
		50	WDBP	Superior, Wis.
		100	WMAZ	Macon, Ga.
		5	KFOO	Salt Lake City, Utah.
		100	WMU	Washington, D. C.
263	1,140	250	WAAM	Newark, N. J.
		250	WSAP	New York, N. Y.
		250	WCAD	Canton, N. Y.
		250	WCAR	San Antonio, Tex.
		100	KFMT	Minneapolis, Minn.
		50	WABR	Toledo, Ohio.
		150	WGAQ	Shreveport, La.
		100	WEAP	Mobile, Ala.
		10	WCAV	Little Rock, Ark.
		5	KFJR	Portland, Oreg.
		50	KFRM	Fort Sill, Okla.
		50	WEBX	Nashville, Tenn.
		5	WCBE	New Orleans, La.
		100	WRAV	Yellow Springs, Ohio.
		100	KFHR	Seattle, Wash.
		100	KNT	Kukak Bay, Alaska.
		50	WABZ	New Orleans, La.
		100	WDAG	Amarillo, Tex.
266	1,130	250	KLZ	Denver, Colo.
		500	WSAG	St. Petersburg, Fla.
		500	WBCN	Chicago, Ill.
		500	WMAK	Lockport, N. Y.
		500	KFNF	Shenandoah, Iowa.
		250	WCAY	Milwaukee, Wis.
		50	KFIO	Spokane, Wash.
		50	WCBL	Houlton, Me.
		100	KFPY	Spokane, Wash.
		50	WWI	Dearborn, Mich.
		50	KFRY	State College, N. Mex.
		200	WCAH	Columbus, Ohio.
		10	WGBC	Memphis, Tenn.
		100	WHAV	Wilmington, Del.
		10	WTAB	Fall River, Mass.
		10	WABB	Harrisburg, Pa.
		50	KFMW	Houghton, Mich.
		50	KFFP	Moberly, Mo.
268	1,120	500	WEBW	Beloit, Wis.
		100	WTAC	Johnstown, Pa.
		250	KLDS	Independence, Mo.
		250	WFBM	Indianapolis, Ind.
		250	WCM	Austin, Tex.
		100	WCTS	Worcester, Mass.
		10	WPAZ	Charlestown, W. Va.
		100	KPGC	Baton Rouge, La.
		50	WEAH	Wichita, Kans.
		100	WQAM	Miami, Fla.
		100	WJAZ	Chicago, Ill. (portable).
		10	KFRH	Grafton, N. Dak.
		20	WSAX	Chicago, Ill.
		100	KFQM	Austin, Tex.
		20	WDBW	Columbia, Tenn.
		100	KFEQ	Oak, Nebr.
		20	KFPW	Carterville, Mo.
		10	WCBG	Pascagoula, Miss. (portable).
		10	WBBY	Charleston, S. C.

BROADCASTING STATIONS OF THE UNITED STATES BY WAVE LENGTHS—continued

Wave length	Frequency (kilocycles)	Power (watts)	Call signal	Location
268	1,120	25	KFLE	Denver, Colo.
		50	WCAG	New Orleans, La.
		100	WPAJ	New Haven, Conn.
		50	WDAH	El Paso, Tex.
270	1,110	500	WOI	Ames, Iowa.
		500	WGST	Atlanta, Ga.
		250	WTAW	College Station, Tex.
		250	WJAG	Norfolk, Nebr.
		200	WRK	Hamilton, Ohio.
		50	KFRC	San Francisco, Calif.
		100	WEAN	Providence, R. I.
		100	KYQ	Honolulu, Hawaii.
		100	KDZE	Seattle, Wash.
		50	KFBU	Laramie, Wyo.
		100	KZKZ	Manila, P. I.
273	1,100	100	WAAB	New Orleans, La.
		250	WIL	St. Louis, Mo.
		100	WHK	Cleveland, Ohio.
		100	WCK	St. Louis, Mo.
		100	WJAN	Peoria, Ill.
		100	KFDY	Brookings, S. Dak.
		100	KFQY	Belden, Nebr.
		50	WTG	Manhattan, Kans.
		50	KFKA	Greeley, Colo.
		10	WFAM	St. Cloud, Minn.
		100	KFLZ	Atlantic, Iowa.
		100	KFIZ	Fond du Lac, Wis.
		10	WSL	Utica, N. Y.
		100	KHQ	Seattle, Wash.
		10	WTAF	New Orleans, La.
		500	WRW	Tarrytown, N. Y.
		500	KFGH	Stanford University, Calif.
		5	KJQ	Stockton, Calif.
		500	WBBR	Rossville, N. Y.
		500	WEBJ	New York, N. Y.
		500	WFBH	New York, N. Y.
		500	WRM	Urbana, Ill.
		500	WBAA	West Lafayette, Ind.
		500	KFKB	Milford, Kans.
		250	WDAE	Tampa, Fla.
275	1,090	50	WCAO	Baltimore, Md.
		500	WCBE	Elgin, Ill. (near).
		10	KFDD	Boise, Idaho.
		20	WLAP	Louisville, Ky.
		100	WABL	Storrs, Conn.
		5	WWL	New Orleans, La.
		100	WAAC	New Orleans, La.
		250	WBT	Charlotte, N. C.
		15	WOCL	Jamestown, N. Y.
		5	WDBS	Dayton, Ohio.
		500	KFKU	Lawrence, Kans.
		50	WPAK	Agricultural College, N. Dak.
		500	WJAS	Pittsburgh, Pa.
		150	KFAU	Boise, Idaho.
		500	KQV	Pittsburgh, Pa.
		100	WMAC	Cazenovia, N. Y.
		50	KFBB	Havre, Mont.
		100	WSAB	Cape Girardeau, Mo.
		500	WHAD	Milwaukee, Wis.
		250	WGAZ	South Bend, Ind.
		100	WBAO	Decatur, Ill.
		100	WEAU	Sioux City, Iowa.
		100	WHAR	Atlantic City, N. J.
		250	WFAV	Lincoln, Nebr.
		50	KFFY	Alexandria, La.
		100	WKY	Oklahoma, Okla.
		500	WCAJ	University Place, Nebr.
		10	WGBO	San Juan, P. R.
278	1,080	100	WHDI	Minneapolis, Minn.
		100	KFJM	Grand Forks, N. Dak.
		100	WDBE	Atlanta, Ga.
		50	WMAN	Columbus, Ohio.

Wave length	Frequency (kilocycles)	Power (watts)	Call signal	Location
278	1,080	500	WORD	Batavia, Ill.
		100	WABO	Rochester, N. Y.
		100	WFBG	Altoona, Pa.
		100	WHAM	Rochester, N. Y.
		500	KOP	Detroit, Mich.
		100	WEAJ	Vermillion, S. Dak.
		5	KFBC	San Diego, Calif.
		10-100	WDZ	Tuscola, Ill.
		200	WAAF	Chicago, Ill.
		500	WCAU	Philadelphia, Pa.
		500	KFSG	Los Angeles, Calif.
		500	WRBC	Valparaiso, Ind.
		250	WIAK	Omaha, Nebr.
		50	WKAA	Cedar Rapids, Iowa.
		500	WOQ	Kansas City, Kans.
		5	WLB	Minneapolis, Minn.
		500	KFAF	Denver, Colo.
		500	WLBL	Stevens Point, Wis.
280	1,070	100	KDYM	San Diego, Calif.
283	1,060	5	KFQN	Portland, Oreg.
		50	KFKV	Butte, Mont.
360	833	100	WMAF	Dartmouth, Mass.
		500		
		100	WQAO	New York, N. Y.
		10	WOAF	Tyler, Tex.
		100	WSAV	Houston, Tex.
		500	WEAY	Houston, Tex.
		10	KFCP	Ogden, Utah.
		100	KFHJ	Santa Barbara, Calif.
		500	KGU	Honolulu, Hawaii.
		250	KLS	Oakland, Calif.
		500	KTW	Seattle, Wash.
		50	KWG	Stockton, Calif.
		250	KWH	Los Angeles, Calif.
		100	KZM	Oakland, Calif.

CLASS "B" STATIONS

280.2	1,070	500	WNAC	Boston, Mass.
282.8	1,060	500	WOAN	Lawrenceburg, Tenn.
285.5	1,050	500	WKMC	Berrien Springs, Mich.
		500	WKAR	East Lansing, Mich.
		500	WREO	Lansing, Mich.
288.3	1,040	1,500	KFKX	Hastings, Nebr.
293.9	1,020	500	WBAV	Columbus, Ohio.
		500	WEAO	Columbus, Ohio.
		500	KJS	Los Angeles, Calif.
299.8	1,000	500	KFMQ	Fayetteville, Ark.
		500	WPG	Atlantic City, N. J.
		500	KFAD	Phoenix, Ariz.
302.8	990	1,000	WTAS	Elgin, Ill. (near).
		500	WJJD	Mooseheart, Ill.
305.9	980	500	WJAR	Providence, R. I.
309.1	970	(1)	KDKA	East Pittsburgh, Pa.
315.6	950	1,000	WGBS	New York, N. Y.
		500	WAHG	Richmond Hill, N. Y.
		500	KFDM	Beaumont, Tex.
319	940	750	WGR	Buffalo, N. Y.
322.4	930	1,000	KOA	Denver, Colo.
325.9	920	500	WSAI	Cincinnati, Ohio.
		750	WMH	Cincinnati, Ohio.
333.1	900	1,500	WBZ	Springfield, Mass.
		500	KDYL	Salt Lake City, Utah.
336.9	890	500	WSAC	Clemson College, S. C.
		500	WCAL	Northfield, Minn.
		500	KNX	Los Angeles, Calif.
		750	KFMX	Northfield, Minn.
340.7	880	500	WKAQ	San Juan, P. R.
		500	KSAC	Manhattan, Kans.
344.6	870	500	WCBD	Zion, Ill.
		500	WLS	Chicago, Ill.
348.6	860	500	WTIC	Hartford, Conn.
		500	KOB	State College, N. Mex.
		500	KFAE	Pullman, Wash.

BROADCASTING STATIONS OF THE UNITED STATES BY WAVE LENGTHS—continued

Wave length	Frequency (kilocycles)	Power (watts)	Call signal	Location
CLASS "B" STATION—continued				
252.7	860	500	WWJ	Detroit, Mich.
361.2	830	500	WHN	New York, N. Y.
		2,000	KGO	Oakland, Calif.
365.6	820	500	WDAF	Kansas City, Mo.
		500	WHB	Do.
370.2	810	1,000	WEBH	Chicago, Ill.
		1,000	WGN	Do.
374.8	800	500	KTHS	Hot Springs, Ark.
379.5	790	1,500	WGY	Schenectady, N. Y.
		500	WHAZ	Troy, N. Y.
384.4	780	500	WMBF	Miami Beach, Fla.
		500	KJR	Seattle, Wash.
389.4	770	1,000	WEAR	Cleveland, Ohio
		1,500	WTAM	Do.
394.5	760	500	WOAI	San Antonio, Tex.
		500	WFI	Philadelphia, Pa.
		500	WLIT	Do.
		500	KFRU	Bristow, Okla.
399.8	750	500	WHAS	Louisville, Ky.
405.2	740	500	KHJ	Los Angeles, Calif.
		1,000	WJY	New York, N. Y.
		500	WOR	Newark, N. J.
416.4	720	500	WCCO	Minneapolis, Minn.
422.3	710	750	WMH	Cincinnati, Ohio.
		1,500	WLW	Harrison, Ohio.
428.3	700	750	WSB	Atlanta, Ga.
		500	KPO	San Francisco, Calif.
440.9	680	500	WOS	Jefferson City, Mo.
		500	WDWF	Cranston, R. I.
CLASS "B" STATIONS—continued				
447.5	670	500	WQJ	Chicago, Ill.
		500	WMAQ	Do.
454.5	660	1,000	WJZ	New York, N. Y.
		500	KFOA	Seattle, Wash.
461.3	650	500	WCAE	Pittsburgh, Pa.
468.5	640	500	WCAP	Washington, D. C.
		500	WRC	Do.
		1,500	KFI	Los Angeles, Calif.
475.9	630	500	WFAA	Dallas, Tex.
		1,000	WBAP	Fort Worth, Tex.
		500	WEEI	Boston, Mass.
483.6	620	1,500	WOC	Davenport, Iowa.
		500	WSUI	Iowa City, Iowa.
491.5	610	2,000	WEAF	New York, N. Y.
		500	KGW	Portland, Oreg.
499.7	600	500	WMC	Memphis, Tenn.
508.2	590	500	WCO	Philadelphia, Pa.
508.2	590	500	WIP	Do.
		500	KLX	Oakland, Calif.
516.9	580	500	WCX	Detroit, Mich.
526	570	500	WHO	Des Moines, Iowa.
		1,000	WNYC	New York, N. Y.
		1,000	WOAW	Omaha, Nebr.
535.4	560	500	WHA	Madison, Wis.
		1,500	KYW	Chicago, Ill.
545.1	550	500	KFUO	St. Louis, Mo.
		750	KSD	Do.

DISTRIBUTION OF WEATHER INFORMATION, FORECASTS, AND WARNINGS FOR THE BENEFIT OF SHIPPING IN THE CARIBBEAN SEA AND WESTERN GULF OF MEXICO

Broadcasts of forecasts, storm warnings, and special weather bulletins from the United Fruit Co. station (US) at Swan Island for the benefit of shipping in the Caribbean Sea will be discontinued, effective on and after February 1, 1925. Weather Bureau circular dated September 15, 1922, descriptive of this service, and that portion of circular dated August 1, 1924, relating thereto (Distribution of Weather Forecasts, Information, and Warnings by Radio in the Gulf of Mexico, Caribbean Sea, and Adjacent Waters of the North Atlantic Ocean) are hereby revoked.

The Swan Island broadcast service will be transferred to the United Fruit Co. radio station at Almirante, Panama (UB), beginning with February 1, 1925, However, the display of signals (red pennant by day and red light by night) at Swan Island to indicate that important weather information is in the possession of the radio operator, which can be obtained by boat call ashore or by radio, will be continued.

The details regarding the service at Almirante, Panama, and at Swan Island are as follows:

Almirante, Panama: Station UB—United Fruit Co.; radiotelegraph—high power CW tube transmitter; wave length—3,750 meters (80 kc.); and schedule time—12.30 p. m. (2130), and 11.45 p. m. (2345), seventy-fifth meridian time.

The 12.30 p. m. (1230) bulletin is in two parts The first part is broadcast, only during the hurricane season, June to November, inclusive, and consists of weather observations taken at approximately 8. a. m. (0800), seventy-fifth meridian time, at the following places, which are indicated by key letters: Swan Island, SI; Belize, Honduras, BZ; Tela, Honduras, TEL; Bluefields, Nicaragua, BFD; Willemstadt, Curacao, W; San Juan, P. R., SJ; Port au Prince, Haiti, PP; Cienfuegos, Cuba, CFG; La Fe, Cuba, LFE; Kingston, Jamaica, KN; and

The key letters are followed by a group of five figures, showing barometric pressure, wind direction, and wind force. The first three figures express barometer readings, *in inches*, reduced to sea level. The fourth figure is wind direction: 1=north, 2=northeast, 3=east, 4=southeast, 5=south, 6=southwest, 7=west, 8=northwest, 0=calm. The fifth and last figure shows wind force in the Beaufort scale, except when winds of force greater than 9 occur, words instead of figures will be used. If any portion of a report can not be furnished, such portion will be replaced by an equivalent number of letters "x." Example: SI 98643. Translated: Swan Island, barometer 29.86 inches, wind direction southeast, wind force 3.

The second part of the bulletin consists of wind and weather forecasts for the western Gulf of Mexico (west of longitude 90°), the eastern Gulf of Mexico (east of longitude 90°), the Caribbean Sea (west of longitude 73°), and for the Windward Passage. Whenever the conditions warrant, the forecasts are preceded by advices and warnings regarding any storm or hurricane that may be in progress, and of "northers" during the winter months. *The second part of the bulletin is broadcast daily throughout the year.*

The 11.45 p. m. (2345) bulletin, based on observations taken at 8 p. m. (2000), seventy-fifth meridian time, is broadcast *daily throughout the year*, and consists only of forecasts, advices, and warnings of the same character and for the same areas as are contained in the second part of the 12.30 p. m. (1230) bulletin.

When a hurricane is in progress the Weather Bureau will issue advices regarding its location, direction, progress, and intensity at frequent intervals, and these advices will be repeated every two hours and on the even hour.

Swan Island, West Indies: Station US.—United Fruit Co.; radiotelegraph, spark, 2,240 meters (134 kc.).

Information displays are made from the radio towers at Swan Island for the special benefit of ships in that region that are not equipped with wireless. The signals will consist of a large red pennant by day and a red lantern by night. These signals indicate that important weather information regarding a hurricane or a "norther" is in the possession of the radio operator and can be obtained by boat calls ashore. However, ships equipped with wireless are permitted to call Swan Island (US) for the information. The United Fruit Co. also permits ships that fail to obtain the regular weather broadcasts from Almirante to call the Swan Island station at any time for the latest weather forecasts.

The daily bulletins are radioed to Almirante and Swan Island from the Tropical Radio Telegraph station (WNU) at New Orleans, La., on CW transmission, 3,331 meters (90 kc.), at 11.30 a. m. (1130) and 11.30 p. m. (2330), seventy-fifth meridian time, and any ship or station is at liberty to pick up these messages and repeat them to other ships, should it desire to do so.—*United States Department of Agriculture, Weather Bureau, Circular No. 11—Radio, January 15, 1925.*

BORDEAUX-LA FAYETTE, FRANCE, TIME SIGNALS

Position.—Lat. 44° 42′ N., long. 0° 48′ W. (*approx.*).
Call signal.—LY.
Wave length.—23,400 metres (C. W.).
Details.—Wireless time signals in accordance with the international system of radio time signals will be transmitted daily by La Fayette radio station (Croix d'Hins). The signals will be automatically transmitted by the standard clock of the Paris observatory, the procedure being as follows:

International W/T time signals

Time—G. M. T.	Signal	Meaning
h. m. s. h. m. s.		
7 54 00 to 7 55 00	— • — • — LY — • — • — LY etc.	
7 55 00 to 7 56 00	Observatoire de Paris.	
7 56 00 to 7 56 50	— — — every 10 sec., the third series being a single dash prolonged for 10 sec.	Preparative.
7 57 00 to 7 57 50	— • • — — • • — etc.	
7 57 55 to 7 58 00	55 56 57 58 59 00	
7 58 00 to 7 58 10	00 02 10 •	
7 58 10 to 7 58 20	10 12 20 •	
7 58 20 to 7 58 30	20 22 30 •	
7 58 30 to 7 58 40	30 32 40 •	
7 58 40 to 7 58 50	40 42 50 •	
7 58 50 to 7 59 00	50 52 57 58 59 00	
7 59 00 to 7 59 10	00 02 05 07 10 •	
7 59 10 to 7 59 20	10 12 15 17 20 •	
7 59 20 to 7 59 30	20 22 25 27 30 •	
7 59 30 to 7 59 40	30 32 35 37 40 •	
7 59 40 to 7 59 50	40 42 45 47 50 •	
7 59 50 to 8 00 00	55 56 57 58 59 00	Time signal.

NOTE.—The end of the last dash (—) is the time signal.

"Scientific" or "Vernier" time-signals (signaux rythmés) will be transmitted daily at 8h. 10m. 00s. G. M. T., by La Fayette radio station.

The signals consist of a transmission of 300 dots (representing the beats of the standard clock at the Paris observatory) except that Nos. 60 and 61, 120 and 121, 180 and 181, and 240 and 241 are omitted, being replaced by a dash of nearly one second's duration, or the equivalent of two beats or dots. The interval between successive dots represents one beat of the clock adjusted to beat 50 times in 49 seconds (Greenwich Sidereal Time). Each series is sent by the following method:

G. M. T.
h. m. s.

8 01 00 Repetition of — - — - — each followed by the call signal (LY).

Break sign (— - - - —).

"Temps sidéral."

Two groups of eight figures: the first group giving the Sidereal Time (extrapolation) of the first, and the second group that of the 300th, rythmic signals of the previous day. Each group is generally repeated three times.

8 07 00 A series of trial or regulation dots etc. . . . . (controlled by the Standard clock) for nearly one minute.

8 08 00 Repetitions of — - — - — followed by the call signal (LY).

8 10 00 to 8 15 00

Series of 300 equidistant signals given by the Standard clock:

Beats Nos. 1, 2, 3, etc., to 59.

Dash (—) of one second's duration, nearly, equal to the interval of two consecutive beats, its commencement coinciding with the beginning of No. 60 and the finish with the end of No. 61.

Beats Nos. 62, 63, 64, etc., to 119.

Dash (—) of one second's duration, nearly, as before, its commencement coinciding with the beginning of No. 120 and the finish with the end of No. 121.

Beats Nos. 122, 123, etc., to 179, and so on until No. 300 (Nos. 180 and 181, and 240 and 241 being given as a dash).

The interval between each dot (or beat) = $\frac{4}{4}\frac{9}{3}$ sec. Sidereal Time which is equal to $\frac{4}{4}$ sec. Mean Time nearly).—*Notice No. 144 of 1925 Admiralty Notice to Mariners, London.*)

STANDARD FREQUENCY STATIONS

As a result of measurements by the Bureau of Standards upon the transmitted waves of a limited number of radio transmitting stations, data are given in each month's Radio Service Bulletin on such of these stations as have been found to maintain a sufficiently constant frequency to be useful as frequency standards. There may be many other stations maintaining their frequency just as constant as these, but these are the only ones which reached the degree of constancy shown among the stations upon whose frequencies measurements were made in the bureau's laboratory. There is, of course, no guaranty that the stations named below will maintain the constancy shown. The transmitted frequencies from these stations can be utilized for standardizing wavemeters and other apparatus by the procedure given in Bureau of Standards Letter Circular No. 92, "Radio signals of standard frequencies and their utilization." A copy of that letter circular can be obtained by a person having actual use for it upon application to the Bureau of Standards, Washington, D. C.

Station	Owner	Location	Assigned frequency (kilocycles)	Period covered by measurements (mos.)	Number of times measured	Deviations from assigned frequencies noted in measurements	
						Average	Greatest since Jan. 20, 1925
						Per ct.	*Per ct.*
WQL	Radio Corporation of America.	Coram Hill, L. I., N. Y.	17.13	2	20	0.1	0.2
NSS	United States Navy	Annapolis, Md.	17.50	18	135	.2	.4
WGG	Radio Corporation of America.	Tuckerton, No. 1, N. J.	18.86	18	143	.2	.3
WSO	do	Marion, Mass.	25.80	18	106	.3	.5
WRAF	American Telegraph & Telegraph Co.	New York, N. Y.	610	2	28	.0	.0
WCAP	Chesapeake & Potomac Telephone Co.	Washington, D. C.	640	17	79	.1	.0
WRC	Radio Corporation of America.	do	640	14	56	.1	.2
WSB	Atlanta Journal	Atlanta, Ga.	700	17	66	.2	.1
WGY	General Electric Co.	Schenectady, N. Y.	790	20	110	.1	.0
WBZ	Westinghouse Electric & Manufacturing Co.	Springfield, Mass.	[1]900	10	27	.1	.2
KDKA	do	East Pittsburgh, Pa.	[1]970	17	140	.1	.2

[1] New frequency assigned Jan. 15, 1924 (formerly 890 kilocycles).

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.

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