

## RADIO SERVICE BULLETIN

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Washington, August 31, 1926—No. 113

## CONTENTS

	Page		Page
Abbreviations.....	1	Miscellaneous—Continued.	
New stations.....	2	Change in Lille Fierder (Norway) radio-	
Alterations and corrections.....	4	beacon.....	8
Miscellaneous:		Changes in transmission of weather reports,	
Additions to list of vessels equipped with		etc., by foreign stations.....	9
radiocompass.....	6	Times of watch on British vessels changed in	
List of naval radio stations transmitting		zones D, C, and E.....	10
time, weather, and hydrographic bulletins.	6	Radiobeacon established at Casquets light	
Radiobeacon established on Umatilla Light-		station, Channel Islands, France.....	10
ship, Washington.....	8	Constant frequency stations.....	10
Characteristic of Point Arguello (Calif.),		Standard frequency stations.....	11
radiobeacon changed.....	8	References to current radio literature.....	12

## 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.  
       FX = Point-to-point (fixed service).  
       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. R. T. Co. = Intercity Radio Telegraph Co.  
 I. W. T. Co. = Independent Wireless Telegraph Co.  
 K. & C. = Kilbourne & Clark Manufacturing Co.  
 R. C. A. = Radio Corporation of America.  
 U. R. Corp. = Universal Radio Corp.  
 W. S. A. Co. = Wireless Specialty Apparatus Co.  
 C. w. = Continuous wave.  
 I. c. w. = Interrupted continuous wave.  
 Kc. = Kilocycles.  
 Fy. = Frequency.  
 A. c. = Alternating current.  
 V. t. = Vacuum tube.  
 U. S. L. = After operating company denotes that the change applies only to the List of Radio Stations of the United States.

## 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, 1926, and to the International List of Radiotelegraph Stations published by the Berns Bureau]

Station	Call signal	Wave lengths	Service	Hours	Station controlled by—
Bandini, Calif. <sup>1</sup>	KMFV	49.5	FX	X	Western Air Express (Inc.).
Las Vegas, Nev. <sup>2</sup>	KVR	49.5	FX	X	Do.
Panhandle City, Tex. <sup>3</sup>	KEH	45.43	FX	X	Marland Pipe Line Co.
Ponca City, Okla. <sup>4</sup>	KFE	45.43	FX	X	Do.
Salt Lake City, Utah <sup>5</sup>	KRP	49.5	FX	X	Western Air Express (Inc.).

<sup>1</sup> Loc. (approximately) O 115° 12' 00", N 34° 00' 00"; range, 300; system, composite v. t. telegraph.

<sup>2</sup> Loc. (approximately) O 115° 11' 00", N 36° 10' 00"; range, 300; system, composite v. t. telegraph.

<sup>3</sup> Loc. (approximately) O 101° 26' 00", N 35° 37' 49"; range, 300; system, De Forest v. t. telegraph.

<sup>4</sup> Range, 300; system, De Forest v. t. telegraph.

<sup>5</sup> Loc. (approximately) O 111° 52' 00", N 40° 45' 00"; range, 300; system, composite v. t. telegraph.

## Commercial ship stations, alphabetically by names of vessels

[Additions to the List of Radio Stations of the United States, edition of June 30, 1926 and to the International List of Radiotelegraph Stations published by the Berns Bureau]

Name of vessel	Call signal	Rates	Service	Hours	Owner of vessel	Station controlled by—
Antonio <sup>1</sup>	KZBZ	8	PG	X	Vicente Madrigal	Owner of vessel
Cocahueta <sup>2</sup>	KZBY	8	PG	X	do.	Do.
Don José <sup>3</sup>	KZBW	8	PG	X	do.	Do.
Esperanza <sup>4</sup>	KZBE	8	PG	X	Visayan Stevedore-Transportation Co.	Do.
Fairfax	KGCE	8	PG	N	Merchants & Miners Transportation Co.	Do.
Islas Filipinas <sup>5</sup>	KZBX	8	PG	X	Compania Maritima	Do.
Leyte <sup>6</sup>	KZAN	8	PG	X	do.	Do.
Luzon <sup>7</sup>	KZAL	8	PG	X	Fernandez Hermanos	Do.
Maurice Tracy	KGBV		PG	X	M. & J. Tracy (Inc.)	
Oceania Vance	KGCC				Halfhat Packing Corporation	
Royona	KGCD				John B. Ford	
Salvager <sup>8</sup>	KZBD	8	PG	X	Atlantic, Gulf & Pacific Co.	Do.
Sumar	KGCF					
Vidor	KGCK				Victor Kmanuk	
Wm. A. Lydon (RC)	KGCC		PG	X	Great Lakes Dredge & Dock Co.	

<sup>1</sup> Range, 100; system, Marconi, 120; w. l., 300, 600.

<sup>2</sup> Range, 200; system, composite, 1000; w. l., 450, 600, 800.

<sup>3</sup> Range, 300; system, composite, 1000; w. l., 300, 600, 800.

<sup>4</sup> Range, 200; system, W. S. A. Co., 1000; w. l., 300, 600, 950.

<sup>5</sup> Range, 200; system, Marconi, 120; w. l., 600.

<sup>6</sup> Range, 300; system, International Radio Telegraph Co., 1000; w. l., 200, 450, 600, 800.

<sup>7</sup> Range, 300; system, K. & C., 1000; w. l., 100, 600.

<sup>8</sup> System, U. S. Navy, 1000; w. l., 300, 600.

## 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
KEH	Panhandle City, Tex.....c	KRP	Salt Lake City, Utah.....c
KFE	Ponca City, Okla.....c	KVR	Las Vegas, Nev.....c
KGBV	Maurice Tracy.....b	KZAL	Luzon.....b
KGCC	Wm. A. Lydon.....b	KZAN	Leyte.....b
KGCD	Royona.....b	KZBD	Salvager.....b
KGCE	Fairfax.....b	KZBK	Esperanza.....b
KGCF	Sumar.....b	KZBW	Don José.....b
KGCC	Oceania Vance.....b	KZBX	Islas Filipinas.....b
KGCK	Vidor.....b	KZBY	Cocahueta.....b
KMFV	Bandini, Calif.....c	KZBZ	Antonio.....b

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

[Additions to the List of Radio Stations of the United States, edition of June 30, 1925]

State and city	Call signal	State and city	Call signal
Alabama:		New York:	
Birmingham.....	WBBC	Brooklyn.....	WBBC
Gadsden.....	WJBY	Do.....	WBBS
Arkansas: Newark.....	KGCG	Woodside.....	WWRU
Florida: St. Petersburg.....	WKBX	Oklahoma: Oklahoma.....	KGCB
Illinois:		Pennsylvania: Jeannette.....	WGM
Chicago.....	WBFC	Rhode Island:	
Do.....	WBEI	Pawtucket.....	WFCL
Indiana: Indianapolis.....	WKBF	Providence (portable).....	WCBS
Iowa: Decorah.....	KGCA	Providence.....	WRAH
Louisiana: Shreveport.....	KSBA	Texas:	
Massachusetts: Osterville.....	WJBX	Houston.....	KTUE
Missouri: St. Joseph.....	KG BX	San Antonio.....	KGCI
Nebraska:		Washington: Seattle.....	KGCL
Shelby.....	KG BY	Wisconsin:	
Wayne.....	KGCH	Kenosha.....	WKDR
York.....	KG BZ	La Crosse.....	WKBH
New Jersey: Jersey City.....	WKBD		

## Broadcasting stations, alphabetically, by call signals

Call signal	Location of station (address)	Owner of station
KG BX	St. Joseph, Mo., 1221 Fred Avenue.....	Julius B. Abercrombie.
KG BY	Shelby, Nebr.....	Albert C. Dunning.
KG BZ	York, Nebr., 303 West Fifth Street.....	Federal Live Stock Remedy Co.
KG CA	Decorah, Iowa.....	Charles W. Greenley.
KG CB	Oklahoma, Okla., 105 West Thirteenth Street.....	Wallace Radio Institute.
KG CG	Newark, Ark.....	Moorn Motor Co.
KG CH	Wayne, Nebr.....	Wayne Hospital (S. A. Lutgun).
KG CI	San Antonio, Tex., 100 West Commerce Street.....	International Radio Co.
KG CL	Seattle, Wash., 659 Washington Boulevard.....	Louis Warner.
KS BA	Shreveport, La.....	Shreveport Broadcasters Association.
KT UE	Houston, Tex., 614 Fauna Street.....	Uhalt Electric (W. J. Uhalt).
WB BC	Brooklyn, N. Y., 2123 Troy Avenue.....	Peter J. Testan.
WB BS	Brooklyn, N. Y., 1002 Broadway.....	Universal Radio Manufacturing Co.
WC BS	Providence, R. I. (portable), 6 North Main Street.....	Harold L. Dewing and Charles H. Meister.
WF CL	Pawtucket, R. I., 163 Exchange Street.....	Frank Crook (Inc.).
WG M	Jeannette, Pa., 301 Cowan Avenue.....	Verna and Elton Spencer.
WJ BY	Chicago, Ill., 4143 Broadway.....	Hotel Flanagan.
WJ BX	Osterville, Mass., Benoit Golf Club.....	Henderson & Ross.
WJ BY	Gadsden, Ala., 517 Broad Street.....	Electric Construction Co. (T. G. Erwin).
WK BC	Birmingham, Ala., 1423 North Twelfth Avenue.....	H. L. Anstey.
WK BD	Jersey City, N. J., 210 Jackson Avenue.....	Frank V. Bremer.
WK BF	Indianapolis, Ind., 233 Iowa Street.....	Noble B. Watson.
WK BH	La Crosse, Wis., 221 Main Street.....	Callaway Music Co.
WK BI	Chicago, Ill., 1917 Warner Avenue.....	Fred L. Eichenwolf.
WK BJ	St. Petersburg, Fla., Fifth Avenue and Tenth Street, South.....	Gospel Tabernacle (Inc.).
WK DR	Kenosha, Wis., (636 North Michigan Avenue, Chicago, Ill.).....	Edward A. Data.
WRA H	Providence, R. I., 101 Alabama Avenue.....	Stanley N. Raul.
WWR U	Woodside, N. Y., 4130 Fifty-eighth Street.....	Woodside Radio Laboratories.

## Government ship stations, alphabetically, by names of stations

[Additions to the List of Radio Stations of the United States, edition of June 30, 1925, and to the International List of Radiotelegraph Stations published by the Bureau]

Station	Call signal	Wave length	Service	Hours	Station controlled by—
John F. Klein <sup>1</sup> .....	WYCV	600, 700, 850.....	O	X	U. S. Army.

<sup>1</sup> Range, 200; system, 1000.

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

[b, ship station; c, land station]

Call signal	Name of station	Call signal	Name of station
WYOV	John F. Klein.....b		

## Special land stations, alphabetically, by names of stations

[Additions to the List of Radio Stations of the United States, edition of June 30, 1925]

Station	Call signal	Station controlled by—
Arizona (portable).....	6XAM	Glenn M. Peterson and Thomas Thorkildsen, 517 Law Building, Los Angeles, Calif.
Oakland, Calif.....	6XR	Federal Telegraph Co., Hobart Building, San Francisco, Calif.
Palo Alto, Calif.....	6XAY	Corwin C. Chapman, 1111 Fulton Street.
Providence, R. I.....	1XAA	Stanley N. Reed, 191 Alabama Avenue.
San Diego, Calif. (portable)...	6XAZ	Nelson Radio, 526 E Street.
San Francisco, Calif.....	6XT	Federal Telegraph Co., Hobart Building.
Seattle, Wash. (portable).....	TXU	Northwest Radio Service Co., 614 Terminal Sales Building.
Whippany, N. J.....	2XN	Bell Telephone Laboratories, 498 West Third Street, New York, N. Y.

## Special land stations, grouped by districts

Call signal	District and station	Call signal	District and station
1XAA 2XN	First district: Providence, R. I. Second district: Whippany, N. J.	6XR 6XT TXU	Sixth district—Continued. Oakland, Calif. San Francisco, Calif.
6XAM 6XAY 6XAZ	Sixth district: Arizona (portable). Palo Alto, Calif. San Diego, Calif. (portable).		Seventh district: Seattle, Wash. (portable).

## 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, 1925, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

APARU, P. I.—W. I., add 850.

SAN VICENTE, P. I.—W. I., variable 550 to 1100, 800.

Strike out all particulars of the following-named station: St. Louis, Mo.

## 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, 1925, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

AMBRIDGE.—Range, 300; system, Navy-Marconi, 1000; w. l., add 800.

ARCTURUS (KURD).—System, K. &amp; C., 1000; w. l., 600, 706, 800.

ARIFONAN.—W. l., 600, 706, 800.

BIRD CITY.—W. l., strike out 450.

BRUSH.—Station controlled by I. W. T. Co. (U. S. L.).

CALCITE.—W. l., 715, 875.

CHARLIE WATSON.—W. l., add 800.

CHETOPA.—Owner of vessel, Charles Nelson Co.

COCKAPONSET.—Station controlled by R. C. A.

COSTA RICA.—System, Haleun, 250; w. l., 600, 706, 800; hours, X.

CRANFORD.—Station controlled by I. W. T. Co. (U. S. L.).

- DEVEL.—Station controlled by R. C. A. (U. S. L.).  
 DIANA DOLLAR.—Station controlled by R. C. A. (U. S. L.).  
 DOROTHY BRADFORD.—Range, 200; system, composite, 1000; w. l., add 800.  
 EL PASO.—W. l., 600, 700.  
 EMPIRE ARROW.—System, R. C. A. v. t. telegraph; w. l., 600, 706, 750, 800, 900.  
 EURANA (KFDW).—Name changed to Gulfbreeze.  
 FLUOR SPAR.—W. l., 600, 706, 800.  
 HANOVER.—Station controlled by I. W. T. Co. (U. S. L.).  
 JOHN C. KIRKPATRICK.—W. l., add 800.  
 KETCHIKAN.—W. l., 600, 706.  
 LAKE HELEN.—Name changed to York.  
 MADISON.—System, composite spark, 1000 and I. W. T. Co. arc; w. l., 600, 706, 800, 2100, 2400.  
 MARJ III.—Owner of vessel, J. H. Oberfelder.  
 MAUL.—W. l., add 1800, 2100, 2400.  
 OAKSPRING.—Station controlled by R. C. A. (U. S. L.).  
 PRESIDENT ARTHUR.—Owner of vessel, Los Angeles S. S. Co.  
 PRESIDENT JEFFERSON.—Owner of vessel, Admiral Oriental Line.  
 REPUBLIC (KUBJ).—System, R. C. A. v. t. telegraph; w. l., add 750 and 900.  
 SAFINERO.—Station controlled by R. C. A. (U. S. L.).  
 SCHENECTADY.—Station controlled by R. C. A. (U. S. L.).  
 STELLAHIS.—System, R. C. A., 1000; w. l., 715, 800, 876.  
 SUNDANCE.—Station controlled by I. W. T. Co. (U. S. L.).  
 TRANSPORTATION.—Station controlled by R. C. A.  
 VIZCAYA.—W. l., 300, 600, 952.  
 WEST MODUS.—Station controlled by I. W. T. Co. (U. S. L.).  
 WEST NILUS.—Owner of vessel, Pacific Argentine Brazil Line.  
 WEST QUECHEE.—W. l., 600, 706, 800; station controlled by R. C. A. (U. S. L.).  
 W. H. TILFORD.—System, R. C. A. v. t. telegraph; w. l., 600, 706, 750, 800, 900.  
 WILDWOOD.—Station controlled by I. W. T. Co. (U. S. L.).  
 WILLIAM H. DOHENY.—System, R. C. A. v. t. telegraph; w. l., 600, 706, 750, 800.  
 Strike out all particulars of the following-named vessels: Col. E. L. Drake, Norlina, William P. Nottingham.

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

KFDW, read Gulfbreeze; KZOI, read York; strike out all particulars following the call signals, KGAG, KJE, WPE, WTS.

## 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, 1926, and list in Radio Service Bulletin No. 106, January 20, 1929)

- KFEL (Denver, Colo.).—Owner of station, Eugene P. O'Fallon (Inc.), Argonaut Hotel.  
 KFRW (Olympia, Wash.).—Owner of station, Western Broadcasting Corporation.  
 KFVE (St. Louis, Mo.).—Owner of station, Benson Broadcasting Corporation, 1111 Olive Street.  
 KMTR (Los Angeles, Calif.).—Owner of station, Echophone Manufacturing Co.  
 KOIN (Portland, Oreg.).—Changed to Sylvan, Oreg.; owner of station, KOIN (Inc.).  
 KOWW (Walla Walla, Wash.).—Owner of station, Frank A. Moore.  
 KTCL (Seattle, Wash.).—Call signal changed to KOMO; owner of station, American Radio Telephone Co. (Birt F. Fisher).  
 KWKH (Kennonwood, La.).—Changed to Shreveport, La.; owner of station, W. K. Henderson Iron Works & Supply Co.  
 WGES (Chicago, Ill.).—Owner of station, Oak Leaves Broadcasting Corporation (Coyne Electrical School).  
 WJAK (Kokomo, Ind.).—Owner of station, Kokomo Tribune (J. A. Kautz).  
 WKBA (Chicago, Ill.).—Owner of station, Arrow Battery Co. (Joseph Silverstein).  
 WPAP (Palisades, N. J.).—Read Cliffside, N. J.  
 WQAO (New York, N. Y.).—Changed to Cliffside, N. J.  
 Strike out all particulars of the following-named stations: KFWA (Ogden, Utah); WRW (Tarrytown, N. Y.); WTAP (Cambridge, Ill.).

## 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, 1928, and to the International List of Radiotelegraph Stations, published by the Bureau]

FORT LEAVENWORTH, KANS.—W. I., add 1490.

SEWARD, ALASKA.—Strike out all particulars.

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

Strike out all particulars following the call signal NPV.

## 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, 1928]

WATERBURY, CONN. (1XAJ).—Strike out all particulars.

## MISCELLANEOUS

## ADDITIONS TO LIST OF VESSELS EQUIPPED WITH RADIOCOMPASS

The following-named vessels have been equipped with a radiocompass: *F. J. Luckenbach*, *Frederic Ewing*, *Hibiscus* (Bureau of Lighthouses), *Lagonda*, *Republic* (KUBJ).

List of naval radio stations transmitting time, weather, and hydrographic bulletins

Name of station	Call signal	Wave-length	Type of emission	Time (75th meridian)	Nature of service
Annapolis, Md. (Washington, D. C.)	NBS	17, 156	Arc.....	1155 1700 2155	Time. Ice report. Time.
Arlington, Va. (Washington, D. C.)	NAA	2, 677	V. t. a. c. w.	1030 1155 2155	Weather, hydrographic. Time, storm warnings. Time, weather, hydrographic.
		4, 400	Arc.....	2230 1050 1155	Marine weather. Weather, hydrographic. Time, storm warnings.
				2155 2230	Time, weather, hydrographic. Marine weather.
Bahama, Canal Zone	NBA	0, 528	do.....	0000 1255	Hydrographic. Hydrographic, time.
				2255	Time.
Boston, Mass.	NAD	2, 030	V. t. a. c. w.	1100 1155	Weather, hydrographic. Time, if Arlington falls, except Sundays and holidays.
				1700	Weather, hydrographic.
Brownsville, Tex.	NAX	2, 371	Spark.....	0000 1200 1800	Weather. Do. Do.
		4, 927	V. t. c. w.	0000 1250 1800	Do. Do. Do.
					Hurricane warnings as issued and repeated every two hours until 0000.
Cavite, P. I.	NPO	5, 280	Arc c. w.	0855 2155	Time, weather, hydrographic. Do.
		2, 667	V. t.....	0855 2155	Do. Do.
Charleston, S. C.	NAO	2, 776	V. t. c. w.	1030 1155	Weather, hydrographic. Time, if Arlington falls, except Sundays and holidays.
				1800	Weather, hydrographic. Hurricane warnings as issued and repeated every 2 hours for 24 hours.
Colon, Canal Zone	NAX	2, 371	Spark.....	0455 1255 2255	Hydrographic, press. Time, hydrographic. Time.
Detour Point, Mich.	NZU	800	do.....		Hydrographic (first 10 minutes of each hour).
Dutch Harbor, Alaska	NPR	2, 373	V. t. a. w.	0000 1230	Weather (local). Do.
Eureka, Calif.	NPW	2, 883	do.....	1208 1455 1700 2000	Weather, hydrographic. Time. Weather, hydrographic. Do.

List of naval radio stations transmitting time, weather, and hydrographic bulletins—  
Continued

Name of station	Call signal	Wave length	Type of emission	Time (24h meridian)	Nature of service
Great Lakes, Ill.	NAJ	2,271	V. t. a. w.	1045 1100 1155 1715 2320	Weather. Hydrographic. Time. Hydrographic. Weather.
Guantanamo Bay, Cuba.	NAW	4,543 2,541	Arc Spark	2100	Weather (June 1 to Nov. 1). Hurricane warnings as issued and repeated every four hours.
Honolulu, Hawaii (Pearl Harbor).	NPM	2,828	V. t.	1855	Time.
		3,552	do.	0130 1330 1730	Weather, hydrographic. Do. Do.
Jupiter, Fla.	NAQ	11,490 2,271	Arc Spark	1855 1430 1500	Time. Weather. Do.
					Hurricane warnings as issued and repeated every two hours until 0000.
Key West, Fla.	NAR	2,539	V. t. c. w.	1155 1200 2200	Time. Weather. Do.
New Orleans, La.	NAT	5,657 2,752	Arc do.	2200 1000	Do. Do.
				1100	Weather, hydrographic.
New York, N. Y.	NAH	2,776	do.	1155 1700 1030	Time. Weather, hydrographic. Do.
				1155	Time, if Arlington falls, except Sundays and holidays.
Norfolk, Va.	NAM	2,853	Spark	1700 0630 1045 1155	Weather, hydrographic. Weather. Weather, hydrographic. Time, if Arlington falls, except Sundays and holidays.
				1600	Weather.
		2,853	V. t.	2000	Do.
				2000	Weather, hurricane warnings as issued and repeated every two hours.
North Head, Wash.	NPE	2,677	do.	0830 1730 1455	Weather. Do. Time.
				1510	Weather, hydrographic.
				2030	Weather.
Pensacola, Fla.	NAB	2,677	V. t. c. w.	2330 1145 1300	Weather, hydrographic. Weather. Do.
					Hurricane warnings as issued and repeated every two hours until 0000.
Philadelphia, Pa.	NAI	2,828	do.	1045 1700	Weather, hydrographic. Do.
Port au Prince, Haiti.	NSC	2,271	Spark		Hurricane warnings as issued and repeated every four hours.
Puget Sound, Wash.	NPO	2,541	V. t. c. w.	0600 1200 1600 2000	Weather. Weather, hydrographic Do. Weather.
				2200	Hydrographic.
				2300	Weather.
San Diego, Calif.	NPL	9,708 2,839	Arc V. t. c. w.	1155 1130 1155	Time. Weather. Time.
				1700	Weather.
				2350	Do.
San Francisco, Calif.	NPG	4,836	Arc	0055 1455	Time. Do.
		7,005	do.	1200	Weather, hydrographic.
				2230	Do.
		2,776	V. t. c. w.	0055	Time.
				0100	Time.
				0300	Weather, hydrographic.
				0700	Bonita Channel weather.
				1100	Do.
				1455	Time.
				1500	Bonita Channel weather.
				1900	Do.
				2230	Weather, hydrographic.
				2300	Bonita Channel weather.



List of naval radio stations transmitting time, weather, and hydrographic bulletins—  
Continued

Name of station	Call signal	Wave length	Type of emission	Time (75th meridian)	Nature of service
San Juan, P. R.	NAU	4,836	Arc.	1100 1945 2500	Weather. Do. Do.
Savannah, Ga.	NEV	2,271	Spark.	1100 1500 2100	Do. Do. Do. Hurricane warnings as issued and repeated every two hours until 0000.
St. Augustine, Fla.	NAP	2,342	do.	1130	Weather.
St. Croix, Virgin Islands	NNI	430	do.		Hurricane warnings as issued and repeated every four hours.
St. Thamar, Virgin Islands	NBB	2,271	do.		Do.
Tatoosh, Wash.	NPD	800	do.	0800 1200 1600 2000 2150	Weather. Do. Do. Do. Do.
Tutuila, Samoa	NPU	4,543	Arc.	0230 1430 1830 2230	Hydrographic. Do. Do. Do.

## RADIOBEACON ESTABLISHED ON UMATILLA LIGHTSHIP, WASH.

This beacon, established June 17, last, is operated only upon request by radio from vessels. Characteristic: Sounds every 150 seconds, single dashes for 60 seconds, silent 90 seconds, transmitted on 1,000 meters, thus:

----- etc.          Silent.  
  90 seconds.

The radio operator stands watch on 800 meters for the first 15 minutes of each hour from 8 a. m. to 8.15 p. m., one hundred and twentieth meridian time. Call signal WWBP. Notice in Radio Service Bulletin No. 111, June 30, 1926, should be disregarded.

## CHARACTERISTIC OF POINT ARGUELLO (CALIF.) RADIOBEACON CHANGED

In future this beacon will sound every 180 seconds; groups of 3 dashes for 60 seconds, silent, 120 seconds, thus:

----- etc.          Silent.  
  120 seconds

The beacon will, as heretofore, sound its characteristic continuously during thick or foggy weather but will also sound if for the first 15 minutes of every hour in clear weather.

## CHANGE IN LILLE FAERDER (NORWAY) RADIOBEACON

The radiobeacon signals transmitted from this station, located on the south coast of Norway, in approximately latitude 59° 02' N., longitude 10° 32' E., are now as follows:

VVVVV etc.          TRW TRW TRW          Silent.          TRW TRW TRW  
15 seconds.          2 seconds.

VVVVV etc.          TRW TRW TRW          Silent.          TRW TRW TRW  
30 seconds.          2 seconds.

VVVVV etc.          Silent.  
15 seconds.          1 minute.



CHANGES IN TRANSMISSION OF WEATHER REPORTS, ETC., BY FOREIGN STATIONS

*France (Paris, Eiffel Tower).*—The weather bulletin at 0400, G. M. T., is now transmitted from this station on a wave length of 2,650 meters, c. w. The weather bulletin previously transmitted at 1008, G. M. T., is now broadcast at 0940, G. M. T., on a wave length of 7,300 meters, c. w. The 0940 bulletin is also transmitted from *Lesy-les-Moulineaux*, call signal YZ, on 33 meters, c. w. The weather bulletins previously transmitted at 1135 and 2220, G. M. T., are now broadcast at 1200 and 2230, G. M. T., on a wave length of 2,650 meters, c. w. The transmissions previously made on 115 meters, c. w., are now broadcast on a wave length of 75 meters, c. w., at 0420, 0840, 0940, 1800, and 2230, G. M. T. These messages are intended for intercontinental diffusion of meteorological information. It has been demonstrated that they can be satisfactorily received in North America and South Africa (Capetown). Weather bulletins are transmitted at 1040, 1705, and 2235, G. M. T., on a wave length of 2,650 meters, c. w. A bulletin and forecast is transmitted by radiophone on 2,650 meters at 0640, 1115, 1900, and 2220, G. M. T.

*Sweden.*—When *Karlsborg* is unable to transmit weather reports, etc., mentioned in *Radio Service Bulletin No. 112, July 31, 1926*, they are sent from *Varberg*, call signal SAQ, on 18,520 meters, c. w.

*Great Britain.*—From August 1, last, navigational warnings have been transmitted to incoming ships from *Scaforth*, call signal GLV, only with regard to dangers lying within the area bounded by N. W. Mark, *Formby Pt.*—N. W. Light Vessel—*Hilbre Island*.

*Portugal (Monsanto).*—Time signals are now broadcast from this station three times daily. The signals on 600 meters are useful for vessels with crystal receivers and small aeriels, who find it difficult on account of "land effect" to receive the Eiffel Tower time signals in daylight off the coast of Portugal. The time signals are sent out from *Lisbon Observatory (38° 42' 30.5" N., 9° 11' 10.2" W.)*.

*CQ time signal from Lisbon Observatory (in Portuguese)*

G. M. T.		Signal
(a) Wave length, 600 meters		
9 23	00-9 25 30	----- (MST) repeated 12 times.
9 29	02-9 29 37	-----
9 29	46-9 29 46	... ..
9 29	50-9 29 57	-----
9 30	00	* (Time signal.)
(b) Wave length, 4,000 meters		
9 35	00-9 35 30	----- (MST) repeated 12 times.
9 39	32-9 39 37	-----
9 39	40-9 39 46	... ..
9 39	50-9 39 57	-----
9 40	00	* (Time signal.)
(c) Wave length 3,000 meters		
9 50	00-9 50 40	----- (MST) repeated 15 times.
10 00	00-10 04 50	A series of continuous dots at every second, omitting the sixtieth.
10 05	00	* Time signal.
10 06	00-10 10 50	A series of continuous dots at every second, omitting the sixtieth.
10 11	00	* Time signal.
10 12	00-10 15 50	A series of continuous dots at every second, omitting the sixtieth.
10 17	00	* Time signal.

The time signal on 3,000 meters wave is not given without previous warning. The duration of a dot = one-seventh second, and that of a dash = three-seventh second.

## Times of watch on British vessels changed in Zones B, C, and E

Zones	Western limit	Eastern limit	Times of watch for one operator from— (G. M. T.)	Times of watch for two operators from— (G. M. T.)
B. Indian Ocean (eastern Arctic Sea).	Eastern limit of Zone A.	Meridian of 80° E.....	h. m. 4-6 8-10 12-14 16-18	h. m. 0-2 4-10 12-14 16-18 20-24
C. China Sea (western Pacific Ocean).	Eastern limit of Zone D.	Meridian of 160° E.....	0-2 4-6 8-10 12-14	0-6 8-10 12-14 16-22
E. Eastern Pacific Ocean.....	Eastern limit of Zone D.	Meridian of 70° W., south of the coast of America. West coast of America.	0-2 4-6 16-18 20-22	0-2 4-6 8-14 16-22

## RADIOBEACON ESTABLISHED AT CASQUETS LIGHT STATION, CHANNEL ISLANDS, FRANCE

A radiobeacon established experimentally at this light station will be operated continuously or at such times as experiments may require. The signal will be transmitted on a wave length of 1,000 meters for a period of 60 seconds, followed by 4 minutes silence. Each transmission will comprise two series of 30 seconds each, consisting of the letter "B" (— . . .) of the Morse code repeated for 25 seconds at a speed of about 15 words per minute, each group being followed by a dash of 5 seconds, thus: — . . ., — . . ., — . . ., etc., for 25 seconds, ——— 5 seconds; — . . ., — . . ., etc., for 25 seconds, ——— 5 seconds, silent 4 minutes. Location approximately 49° 43' N., 2° 23' W.

## CONSTANT FREQUENCY STATIONS

The list of "constant frequency stations" given below supplements the list of "standard frequency stations." The transmitted waves from the stations in either list should be of value to the public as frequency standards because of their constancy and close adherence to assigned values. The Bureau of Standards makes regular measurements of the transmitted frequencies of the standard frequency stations only. The "constant frequency stations" in the following supplementary list do not carry the same assurance of reliability as if the transmitted waves were regularly measured by the Bureau of Standards, but it is probable that if measurement data were available many of them would show the same constancy as the standard frequency stations.

Stations included in the following list employ a special device for controlling or checking their frequencies and fulfill two additional conditions: (1) The frequency calibration of the device is in agreement with the frequency standards of the Bureau of Standards; (2) the station has given evidence of following carefully a special procedure in the use of the device. The special devices for frequency regulation include automatic piezocontrol, piezooscillators, piezoresonators, and frequency indicators. A frequency indicator is a special type of frequency meter (wave meter) so constructed as to give readings at only a single point or over a very narrow range of frequencies (not over 10 per cent). The usual frequency meter designed for measurements of frequencies over a wide range is not adequate for this purpose.

The use of the piezooscillator for checking a station's frequency and the use of a frequency indicator are described, respectively, in Bureau of Standards Letter Circulars 186 and 180, which publications give, in addition, specifications for the construction of these devices. They are entitled, respectively, "Specifications for portable piezooscillator, Bureau of Standards Type N," and "Specifications for frequency indicator, Bureau of Standards Type B, for use in radio-transmitting stations." Either letter circular may be obtained by persons having actual use for it upon application to the Bureau of Standards. The list of stations given below is not to be considered as complete; it is expected that more stations will be added in future lists.

Station	Owner	Location	Assigned wave length (meters)	Frequency (kilocycles)	Apparatus for frequency regulation
KFRU	Stephens College.....	Columbia, Mo.....	499.7	600	Frequency indicator.
WOC	Palmer School of Chiropractic.	Davenport, Iowa...	483.6	620	Piezoscillator.
WTIC	Travelers' Insurance Co..	Hartford, Conn...	476.9	630	Do.
WMAQ	Chicago Daily News.....	Chicago, Ill.....	447.5	670	Frequency indicator, Type B.
WLW	Crosley Radio Corporation.	Harrison, Ohio....	422.3	710	Frequency indicator and piezoscillator.
WCCO	Washburn-Crosby Co.....	Minneapolis - St. Paul, Minn.	416.4	720	Piezoscillator.
WTAM	Wilhard Storage Battery Co.	Cleveland, Ohio...	399.4	730	Do.
WEAR	New Arlington Hotel Co..	Hot Springs, Ark..	374.8	800	Frequency indicator, Type B.
KTIS					Piezoscillator.
WJJD	Loyal Order of Moose.....	Moosheart, Ill.....	370.2	810	Do.
EGO	General Electric Co.....	Oakland, Calif.....	361.2	820	Do.
WJAD	Frank P. Jackson.....	Waco, Tex.....	352.7	850	Frequency indicator, Type B.
WJ	Detroit News.....	Detroit, Mich.....	352.7	850	Do.
WLS	Sears, Roebuck & Co.....	Crete, Ill.....	344.6	870	Piezoscillator.
KFAB	Nebraska Buick Auto. Co.	Lincoln, Nebr.....	340.7	880	Do.
WKAQ	Radio Corporation of Puerto Rico.	San Juan, P. R....	340.7	880	Frequency indicator, Type B.
KOA	General Electric Co.....	Denver, Colo.....	322.4	930	Piezoscillator.
WEAO	Ohio State University.....	Columbus, Ohio....	293.9	1,020	Frequency indicator, Type B.
KWCR	Hurzy F. Pmar.....	Cedar Rapids, Iowa.	278	1,080	Piezoscillator.
WFBG	Win. F. Gable Co.....	Altoona, Pa.....	271.6	1,080	Frequency indicator.
KPKA	Colorado State Teachers' College.	Greeley, Colo.....	272.6	1,100	Piezoscillator.
WOI	Iowa State College.....	Ames, Iowa.....	270.1	1,110	Piezocircuit (checked with Type B frequency indicator).
KFH	Hotel Lassen (Highby-Gray Hotel Co.).	Wichita, Kans.....	267.7	1,120	Frequency indicator, Type B.
WENR	All American Radio Corporation.	Chicago, Ill.....	265.3	1,130	Piezoscillator.
WCAD	St. Lawrence University..	Canton, N. Y.....	263	1,140	Frequency indicator, Type B.
WAAM	I. R. Nelson.....	Newark, N. J.....	262	1,140	Piezoscillator.
WCKO	World Star Knitting Co.	Day City, Mich.....	260.7	1,150	Frequency indicator.
WOWO	Main Auto Supply Co.....	Fort Wayne, Ind...	227.1	1,230	Piezoscillator.
WBBM	Atlas Investment Co.....	Chicago, Ill.....	225.4	1,330	Do.
WEHQ	Joseph R. Tate.....	Harrisburg, Ill...	225.4	1,330	Do.
KFVS	Hirsch Battery & Radio Co.	Cape Girardeau, Mo.	222.7	1,340	Frequency indicator, Type B.
WOK	Neutrowound Radio Manufacturing Co.	Homewood, Ill....	217.3	1,380	Piezoscillator.
WPDQ	Hiram L. Turner.....	Buffalo, N. Y.....	203.4	1,450	Frequency indicator, Type B.

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.

As shown by the list of "constant frequency stations," there may be many other stations maintaining their frequency just as constant as these, but these are the only ones among those observed at the bureau. There is, of course, no actual guaranty that the stations named below will maintain the constancy shown, but the data indicate the high degree of confidence that can be placed in them. The transmitted frequencies from these stations can be utilized for standardizing frequency meters and other apparatus by the procedure given in Bureau of Standards Letter Circular No. 171, which may 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 June 25, 1926
NBS	United States Navy.....	Annapolis, Md.....	17.50	3	15	Per cent	Per cent
WGI	Radio Corporation of America.	Barnegat, N. J.....	17.95	18	86	0.2	0.4
WGG	Do.....	Tuckerton, No. 1, N. J.	18.66	36	260	.1	.3
WII	Do.....	New Brunswick, N. J.	21.50	16	121	.1	.2
WRT	Do.....	do.....	22.60	15	40	.1	.3
WVA	United States Army.....	Annapolis, Md.....	100	17	154	.2	.1
NAA	United States Navy.....	Arlington, Va.....	112	10	60	.2	.4
WEAF	American Telephone & Telegraph Co.	New York, N. Y.....	610	20	135	.0	.0
WRC	Radio Corporation of America.	Washington, D. C....	640	22	146	.1	.2
WJZ	Do.....	Bound Brook, N. J....	650	3	22	.1	.2
NAA	United States Navy.....	Arlington, Va.....	650	3	13	.0	.0
WGY	General Electric Co.....	Schenectady, N. Y....	790	28	178	.1	.0
WBZ	Westinghouse Electric & Manufacturing Co.	Springfield, Mass.....	100	26	80	.1	.2
KDKA	Do.....	East Pittsburgh, Pa....	970	3	22	.1	.2
KDKA	Do.....	do.....	4,711	3	13	.1	.2

<sup>1</sup> High frequency telephone transmitting set.

<sup>2</sup> Not an assigned frequency; 4,711 kilocycles determined by special test; deviations noted are from this frequency.

#### REFERENCES TO CURRENT RADIO 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 professional radio engineers which have recently appeared in periodicals, books, etc. 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, Bureau of Standards Circular No. 138, a copy of which may be obtained for 10 cents from the Superintendent of Documents, Government Printing Office, Washington, D. C. The various articles listed below are not obtainable from the Bureau of Standards. The various periodicals can be consulted at large public libraries.

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