

**U. S. DEPARTMENT OF COMMERCE  
RADIO DIVISION**

# RADIO SERVICE BULLETIN

ISSUED MONTHLY

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**ABBREVIATIONS AND SYMBOLS**

The necessary corrections to the list of Commercial and Government Radio Stations of the United States and to the International Lists of Radio 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. W=west longitude. N=north latitude. S=south latitude. E=east longitude.
- Call = Call signal (letters) assigned.
- Type = Type of wave classified as follows: A1=continuous wave (tube), A, arc=continuous wave A2=interrupted continuous wave, A3=phone, B=spark.
- Fy. = Frequency in kilocycles; normal frequency in italics; wave length in meters in parentheses.
- Service = Nature of service maintained: PG=general public (ship to shore), PR=limited public (limited to public correspondence between fixed stations), P=private (limited commercial and special), O=Government business exclusively.
- Class = FX=fixed station (point-to-point service), RG=radio-compass station, FA=aeronautical station, AB=aviation beacon, RF=circular radiobeacon, B=ship station, FC=coast station.
- Hours = Hours of operation: N=continuous service, X=no regular hour, Y=sunrise to sunset.
- Accounts = Message accounts settled by.
- I. R. T. Co. = Intercity Radio Telegraph Co.
- I. W. T. Co. = Independent Wireless Telegraph Co.
- M. R. T. Co. = Mackay Radio & Telegraph Co.
- R. C. A. = Radio Corporation of America.
- R. M. C. A. = Radiomarine Corporation of America.
- T. R. T. Co. = Tropical Radio Telegraph Co.
- C. w. = Continuous wave.
- I. c. w. = Interrupted continuous wave.
- A. c. = Alternating current.
- V. t. = Vacuum tube.
- M. a. = Meters-amperes.
- U. S. L. = Applies only to the list of Commercial and Government Radio Stations of the United States.
- Δ = Equipped with a radio compass (direction finder).

## NEW STATIONS

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

[Additions to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1929, and to the International List of Fixed and Land Stations, published by the Berne bureau]

Station	Class	Call signal	Frequency in Kilo-cycles, meters in parentheses	Service	Hours	Owner
Bacuit, P. I. Radio <sup>1</sup>	FC	KBC	266.7 (1,125), 363.6 (826), 500 (600).	PG		Philippine Insular Government.
Coron, P. I. Radio <sup>2</sup>	FC	KAK	500 (600), 750 (400)	PG		Do.
El Paso, Tex.	FA, FX	KGUA	278 (1,080), 3,484 (86.1), 5,600 (53.57).	P	X	T. A. T. Flying Service (Inc.).
Fort Worth, Tex.	FA, FX	KGUC	do	P	X	Do.
Houston, Tex.	FA, FX	KGUB	do	P	X	Do.
San Antonio, Tex.	FA, FX	KGUD	do	P	X	Do.
Tacoma, Wash. (Municipal Airport). <sup>3</sup>	FA, FX	KGKW	278 (1,080), 3,142 (95.48), 5,600 (53).	P	X	Boeing Air Transport (Inc.).

<sup>1</sup> Loc. 119° 23' 25" E., 11° 40' 52" N.; type, A2; height of the aerial and intensity of current at base, 77 feet, 2.25 amperes; hours, 8 to 12 a. m., 2 to 5.30 p. m., daily; 9 to 11 a. m., 2 to 3.30 p. m., Sundays and holidays; ship schedule, 50 to 60 minutes of each hour; rates, 6 cents per word.

<sup>2</sup> Loc. 120° 12' 18" E., 12° 00' 00" N.; type, A1, A2; height of aerial and intensity of current at base, 65 feet, 2.25 amperes; hours, 8 to 12 a. m., 2 to 5.30 p. m., daily; 9 to 11 a. m., 2 to 3.30 p. m., Sundays and holidays; ship schedule, 0 to 10 minutes of each hour; rates, 6 cents per word.

<sup>3</sup> Loc. 122° 26' 15" W., 47° 07' 43" N.; type, A3.

## Commercial ship stations, alphabetically, by name of vessels

[Additions to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1929, and to the International List of Ship Stations, published by the Berne bureau]

Name of vessel	Call signal	Rates, all services (cents)	Service	Hours	Owner	Message accounts settled by—
Amherst	WQDE	8	PG	X	General Sea Foods Corporation	R. M. C. A.
Bainbridge	WODU		PG	X	Farmers & Merchants National Bank & Trust Co.	
City of New York	WQDC	8	PG		American-South African Line	Do.
City of Saginaw 81 <sup>1</sup>	WDCH		PG	X	Pere Marquette Railway Co.	Owner.
Cornell	WQDF	8	PG	X	General Sea Foods Corporation	R. M. C. A.
Dartmouth	WQDG	8	PG	X	do	Do.
Ebb	WQDA	8	PG	X	Bay State Fishing Co.	Do.
Englewood	WGAA	8	PG	X	Jersey-American S. S. Corporation	M. R. T. Co.
Excelsior	KUPT	8	PG	X	Export S. S. Corporation	R. M. C. A.
Flow	WQDB	8	PG	X	Bay State Fishing Co.	Do.
General <sup>2</sup>	WQDD		PG	X	W. W. Durocher	R. C. A.
Georgene	WODY				J. W. Worker	
Hagan	KQCC	8	PG	X	Hagan S. S. Co.	R. M. C. A.
K-22813 <sup>3</sup>	WODT		P	X	Carl J. Forstmann	Owner.
Kinau <sup>4</sup>	KZBN	4	PG	X	Philippine Steam Navigation Co.	Do.
Mariposa <sup>5</sup>	WODV		PG	X	Buckeye S. S. Co.	I. R. T. Co.
Maritana <sup>6</sup>	WODW		PG	X	do	Do.
Neshira	WQDI				Alfred Hubbard	Owner.
Oceania Vance	KGOJ	8	PG	X	Halfhill Packing Corporation	
Wallowa <sup>7</sup>	WQDH				Foss Co. (Inc.)	
Yankee	WODE	8	PG	X	Ocean Trawling Co.	R. M. C. A.

<sup>1</sup> Rates, Great Lakes service, 4 cents per word.

<sup>2</sup> Rates, Great Lakes service, 6 cents per word.

<sup>3</sup> Type, A2; fy., 375 (800), 410 (730), 425 (705); rates, Great Lakes service, 4 cents per word.

<sup>4</sup> Type, B; fy., 425 (705), 500 (600).

<sup>5</sup> Fy., 438 (885), 500 (600).

<sup>6</sup> Type, B; fy., 375 (800), 410 (730), 425 (705); rates, Great Lakes service, 4 cents per word.

<sup>7</sup> Fy., 375 (800), 425 (705), 500 (600).

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

Call signal	Name of station	Call signal	Name of station
KAK	Coron, P. I. .... fc	WODU	Bainbridge ..... b
KBC	Bacuit, P. I. .... fc	WODV	Mariposa ..... b
KG CJ	Oceania Vance ..... b	WODW	Maritana ..... b
KGKW	Tacoma, Wash. .... fa, fx	WODY	Georgena ..... b
KGUA	El Paso, Tex. .... fa, fx	WODZ	Yankee ..... b
KGUB	Houston, Tex. .... fa, fx	WQDA	Ebb ..... b
KGUC	Fort Worth, Tex. .... fa, fx	WQDB	Flow ..... b
KGUD	San Antonio, Tex. .... fa, fx	WQDC	City of New York ..... b
KOQC	Hagan ..... b	WQDD	General ..... b
KUPT	Excelsior ..... b	WQDE	Amberst ..... b
KZBN	Kinau ..... b	WQDF	Cornell ..... b
WDCH	City of Saginaw 31 ..... b	WQDG	Dartmouth ..... b
WGAA	Englewood ..... b	WQDH	Wallowa ..... b
WODT	K-22813 ..... b	WQDI	Neshira ..... b

*Commercial aircraft stations, alphabetically, by names of craft*

[Additions to the List of Radio Stations of the United States, edition of June 30, 1929, and to the International List of Aircraft Stations published by the Berne bureau]

Station	Call signal	Frequency in kilocycles, meters in parentheses	Service	Hours	Owner
Havana	KHER				New York, Rio & Buenos Aires Line (Inc.)
NC-132H	KHGC				Curtiss-Wright Flying Service (Inc.)
NC-133H	KHGD				Do.
NC-304N	KHFS		P	X	Pan American Airways.
Sunbeam	KHEQ		P	X	Freeman Lang, 220 1/2 North Larchmont Boulevard, Los Angeles, Calif.

*Commercial aircraft stations, alphabetically, by call signals*

Call signal	Name of station	Call signal	Name of station
KHEQ	Sunbeam	KHGC	NC-132H.
KHER	Havana	KHGD	NC-133H.
KHFS	NC-304N		

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

[Additions to the List of Radio Stations of the United States, edition of June 30, 1929]

State and city	Call signal	Frequency in kilocycles, meters in parentheses	Power (watts)
Alabama:			
Montgomery	WSFA	1,410 (212.8)	500
Springhill	WODX	1,410 (212.8)	500
Talladega	WFDW	1,420 (211.3)	100
Alaska: Anchorage	KFQD	1,230 (243.9)	100
Arkansas: Paragould	KGKZ	1,200 (250)	100
Nebraska: Scottsbluff	KGKY	1,500 (200)	100
Philippine Islands: Cebu	KZRC	1,300 (230.8)	500 <sup>(1)</sup>
South Carolina: Columbia	WGTV	1,010 (297)	1,000

<sup>1</sup> Height of aerial and intensity of current at base, 120 feet, 6 amperes.

<sup>2</sup> Night.

<sup>3</sup> Day.

## Broadcasting stations, alphabetically, by call signals

Call signal	Location of transmitter (mail address)	Owner	Frequency in kilocycles, meters in parentheses	Power (watts)
KFQD	Anchorage, Alaska	Anchorage Radio Club	1,230 (243.9)	100
KGKY	Scottsbluff, Nebr.	Hilliard Co. (Inc.)	1,500 (200)	100
KGKZ	Paragould, Ark.	W. J. Beards Temple of Music	1,200 (250)	100
KZRC	Cebu, P. I.	Radio Corporation of the Philippines.	1,300 (230.8)	(1)
WFDW	Talladega, Ala.	Raymond G. Hammett	1,420 (211.3)	100
WGTB	Columbia, S. C.	George T. Barnes (Inc.)	1,010 (297)	500
WODX	Springhill, Ala. (studio, Mobile).	Mobile Broadcasting Corp. (Scott Holt, trustee).	1,410 (212.8)	500
WSFA	Montgomery, Ala.	Montgomery Broadcasting Co.	1,410 (212.8)	500

<sup>1</sup> Height of aerial and intensity of current at base, 120 feet, 6 amperes.

<sup>2</sup> Night.

<sup>3</sup> Day.

## Government land stations, alphabetically, by name of station

[Addition to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1929, and to the International List of Fixed and Land Stations published by the Berne bureau]

Station	Class	Call signal	Frequency in kilocycles, meters in parentheses	Service	Hours	Owner
Fort George Wright, Wash. <sup>1</sup>	FX	WUE	4,030 (74.44), 8,060 (37.22)	O	X	U. S. Army.

<sup>1</sup> Location (approximately) 117° 25' 00" W., 47° 42' 00" N.; type, A1.

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

[Addition to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1929, and to the International List of Fixed and Land Stations published by the Berne bureau]

Station	Call signal	Frequency in kilocycles, meters in parentheses	Service	Hours	Owner
Coast Guard Unit—general call for any or all.	NCU				U. S. Coast Guard.
Cook	NENN		O		Do.

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

Call signal	Name of station	Call signal	Name of station
NCU	Coast Guard Unit—general call for any or all.	NENN	Cook
		WUE	Fort George Wright, Wash.

*Experimental stations, alphabetically, by names of stations*

[Additions to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1929]

Station	Call signal	Frequency in kilocycles, meters in parentheses	Power (watts)	Owner
Michigan: Houghton.	W9XAW	1,604 (187.03), 2,398 (125.1), 3,256 (92.5), 4,795 (62.57), 6,425 (46.7), 8,650 (34.68), 12,850 (23.35), 17,300 (17.341).	250	Michigan College of Mining and Technology.
New Jersey: Linden.	W2XCY	23,060 (13.01) and above.	1,000	Southern Radio Corporation, 26 Broadway, New York, N. Y.
New York: Garden City-----	W2XBW	1,604 (187.03), 3,256 (92.5), 6,425 (46.7), 7,430 (40.38), 7,437.5 (40.34), 7,445 (40.29), 9,410 (31.88), 10,930 (27.45), 12,850 (23.35), 14,860 (20.19), 14,875 (20.17), 14,890 (20.15), 18,826 (15.94), 22,660 (13.239).	500	Robert Dollar Co.
Mount Vernon----- <i>Portable</i>	W2XBF	1,604 (187.03), 2,398 (125.1), 3,256 (92.5), 4,795 (62.57).	250	Ward Leonard Electric Co., 31 South Street.
Hawaii: Kawaihae...	K6XB	1,604 (187.03), 2,398 (125.1), 3,256 (92.5), 4,795 (62.57), 6,425 (46.7), 8,650 (34.68), 12,850 (23.35), 17,300 (17.341), 30,000 (10) to 300,000 (1).	500	R. C. A. Communications (Inc.).
New Jersey: Livingston.	W2XAN	860 (350)	500	Atlantic Broadcasting Corporation, 485 Madison Avenue, New York, N. Y.
Oregon: Cedar Mills.  <i>Aircraft</i>	W7XA	620 (485)	500	Oregonian Publishing Co., 325 Alder Street, Portland, Oreg.
NC-147H-----	W10XAA	1,608 (186.57), 2,302 (130.32), 4,108 (73.02), 5,510 (54.44), 6,155 (48.74).	500	Bell Telephone Laboratories (Inc.).

*Relay broadcasting stations, alphabetically, by names of stations*

Additions to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1929]

Station	Call signal	Frequency in kilocycles, meters in parentheses	Power (watts)	Owner
Illinois: Addison-----	W9XAQ	6,040 (49.67)	1,000	Chicago Daily News.

*Visual broadcasting stations, alphabetically, by names of stations*

[Additions to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1929]

Station	Call signal	Frequency in kilocycles, meters in parentheses	Power (watts)	Owner
Illinois: Addison-----	W9XAP	2,750 (109.1) to 2,850 (105.3)	5,000	Chicago Daily News.

*Experimental, relay broadcasting, and visual broadcasting stations grouped by districts, alphabetically, by call signals*

Call signal	District and station	Call signal	District and station
W2XAN W2XBF W2XBW W2XCY K6XB	Second district: Livingston, N. J. Mount Vernon, N. Y. Garden City, N. Y. Linden, N. J. Sixth district: Kawaihae, Hawaii (portable).	W7XA  W9XAP W9XAQ W9XAW W10XAA	Seventh district: Cedar Mills, Oreg. (portable). Ninth district: Addison, Ill. Do. Houghton, Mich. Aircraft: NC-147H.

#### RADIOBEACON STATIONS

[Additions to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1929, and to the International List of Stations Performing Special Services published by the Berne bureau]

*Southwest Pass East Jetty, La.*—Loc., 89° 25' 38'' W., 29° 54' 23'' N. Transmits every 180 seconds, groups of 4 dashes for 60 seconds, silent 120 seconds, thus:

----- etc.  
60 seconds

Silent  
120 seconds

Fy., 295 (1,017. m.); hours, continuously during thick or foggy weather and daily in clear weather from 12.30 to 1, 3.30 to 4, 6.30 to 7, and 9.30 to 10 a. m. and p. m., nintieth meridian time.

*Grays Reef Lightship, Mich.*—Loc., 85° 10' 34'' W., 45° 46' 51'' N. Transmits every 180 seconds, groups of 1 dash, 2 dots and 1 dash for 60 seconds, silent 120 seconds; thus:

-. . - - . . - etc.  
60 seconds

Silent  
120 seconds

Fy., 314 (955 m.); hours, continuously during thick or foggy weather and daily in clear weather from 11.45 to 12 a. m., 1 to 1.30 and 7 to 7.30 a. m. and p. m., central standard time.

#### ALTERATIONS AND CORRECTIONS

##### COMMERCIAL LAND STATIONS

[Alterations and corrections to be made to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1929, and to the International List of Fixed and Land Stations, published by the Berne bureau]

**AVALON (CATALINA ISLAND), CALIF.**—Class, fa, fx; service, P.

**BAKERSFIELD, CALIF.**—*Read* Bakersfield, Calif. (Kern County Airport); loc., (approximately), 119° 02' 00'' W., 35° 25' 30'' N.; type, A1 and A3; fy., 278 (1,080), 3,142 (95.48), 5,660 (53).

**CEIBA, P. R., RADIO.**—Hours, 8 a. m. to 12 p. m. daily; 9 to 11 a. m. and 6.30 to 12 p. m. Sundays and holidays.

**FRESNO, CALIF.**—*Read* Fresno, Calif. (Chandler Field); loc. (approximately), 119° 48' 30'' W., 36° 44' 00'' N.; type, A1 and A3; fy., 278 (1,080), 3,142 (95.48), 5,660 (53).

**ISHPEMING, MICH.**—Loc. (approximately), 87° 37' 30'' W., 46° 30' 00'' N.

**KINGMAN, ARIZ. (KSX).**—*Read* Kingman, Ariz. (T. A. T. Airport); fy., add 278 (1,080); hours, X.

**LANSING, ILL.**—Fy., add 278 (1,080); hours, X.

**LITTLE NECK, N. Y. (WJN).**—Fy., add 7,820 (38.36), 15,640 (19.182); hours, X.

**LOS ANGELES, CALIF.**—Loc., changed to Burbank, Calif.; (approximately), 118° 21' 24'' W., 34° 11' 56'' N.; type, A3; fy., 278 (1,080), 3,142 (95.48), 5,660 (53); hours, N.

**MEDFORD, OREG.**—*Read* Medford, Oreg. (Aviation Field); loc. (approximately), 122° 50' 32'' W., 42° 20' 26'' N.; type, A1 and A3; fy., 278 (1,080), 3,142 (95.48), 5,660 (53).

- NEW ORLEANS, LA., RADIO.—Fy., add 73 (4,110), 90 (3,333).  
 OAKLAND, CALIF. (KFO).—Read Oakland, Calif. (Oakland Airport); loc. (approximately), 122° 12' 00'' W., 37° 44' 00'' N.; type, A1 and A3; fy., 278 (1,080), 3,142 (95.48), 5,660 (53); hours, X.  
 PHOENIX, ARIZ. (KGKC).—Loc. (approximately), 112° 00' 00'' W., 33° 30' 00'' N.  
 SACRAMENTO, CALIF.—Read Sacramento, Calif. (Mather Field); loc. (approximately), 121° 19' 00'' W., 38° 34' 00'' N.; fy., 278 (1,080), 3,142 (95.48), 5,660 (53).  
 SAN FRANCISCO, CALIF. (KOP).—Fy., add 7,340 (40.87); hours, X.  
 SAN FRANCISCO, CALIF. (KUP).—Hours, X.  
 SAN JUAN, P. R. (WMDU).—Read San Juan, P. R. (Pan American Airport); fy., add 2,662 (112.7), 5,690 (52.72), strike out 5,445 (55.09).  
 SAYVILLE, N. Y. RADIO (WSL).—Fy., add 109 (2,750), 120 (2,500), 143 (2,100).  
 WINSLOW, ARIZ.—Fy., add 278 (1,080), hours, X.  
 Strike out all particulars of the following-named stations: Burley, Idaho; Flagstaff, Ariz. (KLU); Flagstaff, Ariz. (KLV); Portable-California (KLC).

COMMERCIAL SHIP STATIONS, ALPHABETICALLY, BY NAMES OF VESSELS

[Alterations and corrections to be made to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1929, and to the International List of Ship Stations, published by the Berne bureau]

- ADMIRAL BENSON.—Accounts, owner.  
 AGWIMARS.—Name changed to Beaconstar; owner, Beacon Oil Co.  
 ALLEGHANY.—Fy., strike out 410 (730), 454 (660).  
 ALPENA.—Fy., add 143 (2,100), 154 (1,985), 157 (1,910).  
 AMERICAN FARMER.—Fy., strike out 410 (730), 454 (660).  
 AVALON.—Type, A3 and B; fy., add 375 (800), 425 (705), 500 (600); service, PG; rates, 8 cents per word.  
 BELLFLOWER.—Hours, add N.  
 BERKSHIRE (KFIE).—Fy., add 410 (730), 454 (660).  
 BRISTOL.—Owner, Pocahontas S. S. Co.  
 CABRILLO.—Type, A3 and B; fy., add 2,740 (109.5); rates, 8 cents per word.  
 CARL D. BRADLEY.—Type, A2; fy., add 375 (800).  
 CHATHAM.—Fy., strike out 137 (2,190), 141 (2,130), add 157 (1,910).  
 CHIPPEWA.—Fy., strike out 410 (730), add 500 (600); rates, 8 cents per word; accounts, I. R. T. Co.  
 CITY OF PANAMA.—Type, A1 and A2; fy., 375 (800), 400 (750), 410 (730), 425 (705), 454 (660), 468 (640), 500 (600); hours, N; accounts, R. M. C. A.  
 CITY OF SAN FRANCISCO.—Accounts, R. M. C. A.  
 COMMERCIAL SPIRIT.—Type, A1 and A2; fy., add 143 (2,100), 151 (1,985), 157 (1,910).  
 CONNEAUT.—Fy., add 143 (2,100), 151 (1,985), 157 (1,910).  
 CROWN CITY.—Type, add A, arc; fy., add 143 (2,100), 151 (1,985), 153 (1,960), 157 (1,910), 160 (1,875); accounts, R. M. C. A.  
 DELIGHT.—Owner, Great Southern Lumber Co.  
 DILLWYN.—Type, A1 and A2; fy., add 400 (750), 468 (640).  
 D. J. MORAN.—Fy., add 400 (750), 468 (640).  
 DORA WEEMS.—Type, B; fy., 375 (800), 425 (705), 500 (600); accounts, owner.  
 DOROTHY CAHILL.—Type, B; fy., 375 (800), 425 (705), 500 (600).  
 EASTERN PLANET.—Accounts, R. M. C. A. (U. S. L.).  
 ELKHORN.—Accounts, R. M. C. A. (U. S. L.).  
 EMILIA.—Fy., 375 (800), 425 (705), 500 (600); accounts, R. M. C. A.  
 FAIRFAX.—Fy., strike out 137 (2,190), 141 (2,130), add 157 (1,910).  
 FAYETTE BROWN.—Type, A2.  
 FLORENCE LUCKENBACH.—Fy., add 454 (660).  
 GEMMA.—Owner, Trawler Gemma (Inc.).  
 GOODWILL.—Fy., strike out 394 (760), 410 (730), add 400 (750), 468 (640).  
 HARRIETT.—Service, PG; hours, X; rates, Great Lakes service, 4 cents per word; accounts, R. C. A.  
 HOWARD.—Fy., strike out 410 (730), 454 (660).  
 HUGUENOT.—Owner, American-Hawaiian S. S. Co.  
 HURON (WBCC).—Fy., add 151 (1,985), 157 (1,910), 375 (800).  
 ISLANDA.—Fy., add 143 (2,100), 151 (1,985), 159 (1,885), 160 (1,875).  
 ISIDORO PONS.—Hours, X.  
 JANELEW.—Type, A, arc, A2 and B; fy., 143 (2,100), 151 (1,985), 153 (1,960), 157 (1,910), 160 (1,875), 375 (800), 400 (750), 425 (705), 500 (600); accounts, R. M. C. A.  
 JEAN.—Accounts, R. M. C. A.

- JOHN W. BOARDMAN.—Fy., strike out 189 (1,587), add 143 (2,100), 151 (1,985), 157 (1,910), 375 (800), 410 (730).
- JOHN W. WEEKS.—Fy., 274 (1,095).
- JUNIATA (WMCW).—Fy., strike out 410 (730), 454 (660).
- LAKE GORIN.—Type, A1; fy., strike out 500 (600); add 143 (2,100), 157 (1,910).
- LAKE TREBA.—Accounts, R. M. C. A.
- LAVADA.—Type, A, arc, A1 and A2; fy., 143 (2,100), 151 (1,985), 153 (1,960), 157 (1,910), 160 (1,875), 375 (800), 425 (705), 500 (600); accounts, owner.
- LEVIATHAN.—Fy., add 8,830 (33.98), 8,750 (33.9).
- LORAIN.—Accounts, R. M. C. A.
- MACARIA.—Hours, X.
- MIZPAH.—Accounts, R. M. C. A.
- MONTANA.—Type, A1 and A2; fy., add 400 (750), 468 (640).
- MYRTLE.—Name changed to San Marcos.
- NANCY WEEMS.—Type, B; fy., 375 (800), 425 (705), 500 (600); accounts, owner.
- NARBO.—Accounts, R. M. C. A. (U. S. L.).
- NORFOLK.—Owner, Pocahontas S. S. Co.
- ORIOLE.—Name changed to San Bernardino.
- ORIENT.—Name changed to San Diego.
- ORION.—Type, A1 and A2; fy., 143 (2,100), 151 (1,985), 157 (1,910), 375 (800), 400 (750), 425 (705), 468 (640), 500 (600); service, P; hours, X.
- OSPREY.—Type, A1 and A2.
- PENNSYLVANIA (WMDS).—Type, A1 and A2; fy., 143 (2,100), 151 (1,985), 157 (1,910), 159 (1,885), 160 (1,875), 375 (800), 400 (750), 425 (705), 468 (640), 500 (600), 5,525 (54.3), 5,555 (54), 8,290 (36.19), 8,450 (35.50), 11,050 (27.15), 11,230 (26.71), 13,240 (22.66).
- PHANTOM III.—Type, A1; fy., 5,525 (54.3), 5,555 (54); service, P; hours, X; accounts, owner.
- PRESIDENT CLEVELAND.—Owner, Dollar S. S. Lines.
- PRESIDENT LINCOLN.—Owner, Dollar S. S. Lines.
- PRESIDENT POLK.—Owner, Dollar S. S. Lines.
- SAMUEL MITCHELL.—Fy., strike out 189 (1,587), add 143 (2,100), 151 (1,985), 157 (1,910), 375 (800), 410 (730).
- SAN BERNARDINO.—Accounts, owner.
- SAN DIEGO (KOLC).—Accounts, owner.
- SAN GABRIEL.—Fy., strike out 410 (730), 454 (660).
- SAN JULIAN.—Fy., strike out 410 (730), 454 (660); accounts, owner.
- SAN MARCOS.—Accounts, owner.
- SAVARONA.—Name changed to Alder; owner, Carle C. Conway.
- S. T. CRAPO.—Type, A1 and A2; fy., strike out 189 (1,585), add 143 (2,100), 151 (1,985), 155 (1,935).
- SURF (WPBL).—Type, A1 and A2; accounts, R. M. C. A.
- TAMPA (WLCM).—Fy., add 454 (660); accounts, R. M. C. A.
- TIDEWATER.—Fy., strike out 143 (2,100), 151 (1,985), 153 (1,960), 155 (1,935), 157 (1,910), 159 (1,885), 160 (1,875).
- TORRENT.—Type, A1 and A3; fy., 1,596 (187.97).
- VABA.—Owner, Spencer Kellogg & Sons (Inc.).
- WEST CADDOA.—Type, add A1 and A2; fy., strike out 131 (2,290), 133 (2,255), 135 (2,220), 137 (2,190), 141 (2,130), 145 (2,070), 149 (2,015), add 159 (1,885); accounts, R. M. C. A.
- WEST CORUM.—Owner, Mississippi Shipping Co.
- WEST JAFFREY.—Accounts, R. M. C. A.
- WEST KATAN.—Name changed to San Simeon.
- WEST NERIS.—Owner, Mississippi Shipping Co.
- WESTPORT.—Accounts, R. M. C. A. (U. S. L.).
- WHITE CAP.—Type, add A1.
- WILLBACO.—Name changed to San Julian.
- WILLBORO.—Type, A2; fy., add 454 (660), accounts, owner.
- WYANDOTTE.—Fy., add 143 (2,100), 151 (1,985), 157 (1,910).
- YALZA.—Type, A arc and B; fy., 143 (2,100), 151 (1,985), 153 (1,960), 157 (1,910), 160 (1,875), 375 (800), 425 (705), 500 (600).
- YAPALAGA.—Accounts, R. M. C. A. (U. S. L.).
- YUSINGCO.—Hours, X.
- Strike out all particulars of the following-named vessels: Arbutus, Astoria, Big Bill, Bohol, Borongan, Brandon, Cansumset, Conehatta, El Paso, Ethyl, Harold J. Taggart, Hampton Roads (KQJT), Jessie Fay, Lake Capens, L. D. Potter, Leopold Adler, Leroy, Margaret F. Sterling, Mariposa, M. F. Sterling, Osprey III, Phantom, Skylark III, Yoreda.



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

KDMC, read Beaconstar; KEU, read Burbank, Calif.; KEM, read Sacramento, Calif. (Mather Field); KFO, read Oakland, Calif. (Oakland Airport); KGE, read Medford, Oreg. (Aviation Field); KGT, read Fresno, Calif. (Chandler Field); KOBK, read San Simeon; KOLC, read San Diego; KOTG, read San Marcos; KQX, read Bakersfield, Calif. (Kern County Airport); KSX, read Kingman, Ariz. (T. A. T. Airport); KUKJ, read San Bernardino; WCDD, read San Julian; WMDU, read San Juan, P. R. (Pan American Airport); WPBY, read Alder; strike out all particulars following the call signals: KDCJ, KDWV, KFGK, KFPE, KFSJ, KFSK, KFTH, KFYL, KFZR, KGFZ, KIQD, KLC, KLU, KLUA, KLV, KNV, KOJT, KUNB, KUQQ, KZCF, KZPD, WBDX, WHDV, WJDV, WMBT, WPBV, WTBR, WTBZ.

## COMMERCIAL AIRCRAFT STATIONS, ALPHABETICALLY, BY NAMES OF CRAFT

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1929, and to the International List of Aircraft Stations, published by the Berne bureau]

CITY OF GLENDALE.—Fy., add 3106 (96.59).  
 LIBERTY.—Fy., add 414 (725), 457 (655), 3106 (96.59).  
 NC-231E, NC-395E, NC-396E, NC-454E, NC-1612, NC-3314, NC-5192.—Fy., 333 (900), 375 (800), 414 (725), 457 (655), 500 (600), 2662 (112.7), 3070 (97.71), 3106 (96.59), 5690 (52.72).  
 NC-5933.—Fy., add 414 (725), 3106 (96.59).  
 NC-7770.—Fy., add 414 (725), 457 (655), 3106 (96.59).  
 NC-8000, NC-8020.—Fy., 333 (900), 375 (800), 414 (725), 457 (655), 500 (600), 2662 (112.7), 3070 (97.71), 3106 (96.59), 5690 (52.72).  
 NC-8043.—Fy., 3106 (96.59).  
 NC-8044, NC-9107, NC-9137, NC-9151.—Fy., 333 (900), 375 (800), 414 (725), 457 (655), 500 (600), 2662 (112.7), 3070 (97.71), 3106 (96.59), 5690 (52.72).  
 NC-9606, NC-9607.—Fy., add 1624 (185), 3106 (96.59).  
 NC-9637.—Fy., 333 (900), 375 (800), 414 (725), 457 (655), 500 (600), 2662 (112.7), 3070 (97.71), 3106 (96.59), 5690 (52.72).  
 NC-9643, NC-9644, NC-9645, NC-9647, NC-9648, NC-9650, NC-9651, NC-9652, NC-9653, NC-9654, NC-9655, NC-9656, NC-9657, NC-9658, NC-9659, NC-9660.—Fy., add 1624 (185), 3106 (96.59).  
 NC-9664, NC-9685, NC-9701, NC-9703, NC-9775, NC-9776.—Fy., 333 (900), 375 (800), 414 (725), 457 (655), 500 (600), 2662 (112.7), 3070 (97.71), 3106 (96.59), 5690 (52.72).  
 Standard of California.—Fy., 3106 (96.59).  
 X-118E.—Fy., 333 (900), 375 (800), 414 (725), 457 (655), 500 (600), 3106 (96.59); hours, X.  
 Strike out all particulars of the following-named stations: C-275, C-278, C-282, C-289, NC-9649, Southern Star, Untin Bowler.

## COMMERCIAL AIRCRAFT STATIONS, ALPHABETICALLY, BY CALL SIGNALS

Strike out all particulars following the call signals KHBF, KHBI, KHBL, KHBS, KHD1, KHEA, KHEJ.

## BROADCASTING STATIONS, BY CALL SIGNALS

[Alterations and corrections to be made to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1929, and the International List of Broadcasting Stations published by the Berne bureau]

KECA (Los Angeles, Calif.).—Fy., 1,430 (209.8).  
 KEJK (Beverly Hills, Calif.).—Fy., 710 (423); power, 500.  
 KFAD (Phoenix, Ariz.).—Call changed to KREP; owner, KAR Broadcasting Co.  
 KFEL (Denver, Colo.).—Fy., 920 (326).  
 KFKB (Milford, Kans.).—Owner, The KFKB Broadcasting Association (Inc.).  
 KFUL (Galveston, Tex.).—Power, 500.  
 KFVD (Culver City, Calif.).—Fy., 1,000 (300).  
 KFWM (Oakland, Calif.).—Loc., changed to Richmond, Calif.; power, 500 night, 1,000 day.  
 KFXX (Denver, Colo.).—Fy., 920 (326).  
 KFXM (Ontario, Calif.).—Loc., changed to San Bernardino, Calif.; fy., 1,210 (247.9).

- KGB (San Diego, Calif.)—Fy., 1,330 (225.6).  
 KGER (Long Beach, Calif.)—Fy., 1,360 (220.6); power, 250.  
 KGFJ (Los Angeles, Calif.)—Fy., 1,200 (250).  
 KGHX (Richmond, Tex.)—Owner, Houston Broadcasting Co.  
 KGIR (Butte, Mont.)—Owner, KGIR (Inc.).  
 KMBC (Independence, Mo.)—Power, 1,000.  
 KPLA (Los Angeles, Calif.)—Call changed to KECA.  
 KPPC (Pasadena, Calif.)—Fy., 1,210 (247.9).  
 KPRC (Houston, Tex.)—Loc., changed to Sugarland, Tex.; power, 1,000 night, 2,500 day.  
 KPNS (Pasadena, Calif.)—Fy., 1,360 (220.6).  
 KTAT (Fort Worth, Tex.)—Call changed to KSAT.  
 KTBS (Shreveport, La.)—Power, 1,000.  
 KXL (Portland, Oreg.)—Fy., 1,420 (211.3); power, 100.  
 KXRO (Aberdeen, Wash.)—Fy., 1,310 (229).  
 WADC (Akron, Ohio)—Loc., changed to Village of Tallmadge, Ohio.  
 WCFL (Chicago, Ill.)—Fy., 1,280 (234.4); power, 1,000 night, 1,500 day.  
 WCOA (Pensacola, Fla.)—Fy., 1,340 (223.9).  
 WCOG (Columbus, Miss.)—Loc., changed to Meridian, Miss.; power, 500 night, 1,000 day.  
 WDAE (Tampa, Fla.)—Fy., 1,240 (241.9).  
 WDAY (West Fargo, N. Dak.)—Fy., 940 (319).  
 WDBO (Orlando, Fla.)—Fy., 1,120 (267.9); power, 500 night, 1,000 day.  
 WEBC (Superior, Wis.)—Fy., 1,290 (232.6).  
 WEHS (Evanston, Ill.)—Fy., 1,500 (200).  
 WFAA (Dallas, Tex.)—Power, 10,000.  
 WFLA-WSUN (Clearwater, Fla.)—Fy., 620 (484).  
 WGCM (Gulfport, Miss.)—Owner, Great Southern Land Co. (Inc.).  
 WHB (Kansas City, Mo.)—Fy., 710 (423).  
 WHFC (Cicero, Ill.)—Fy., 1,500 (200).  
 WIBW (Topeka, Kans.)—Fy., 580 (517); power, 500 night, 1,000 day.  
 WIOD-WMBF (Miami Beach, Fla.)—Fy., 1,300 (230.8); power, 500 night, 1,000 day—1,000 night experimentally.  
 WJAX (Jacksonville, Fla.)—Fy., 900 (333).  
 WKBI (Chicago, Ill.)—Fy., 1,500 (200).  
 WMBR (Tampa, Fla.)—Fy., 1,370 (219); power, 100.  
 WNAT (Philadelphia, Pa.)—Call changed to WHAT.  
 WNOX (Knoxville, Tenn.)—Loc., changed to Holston Hills, Tenn.; power, 1,000 night, 2,000 day.  
 WOBT (Union City, Tenn.)—Power, 100 night, 250 day.  
 WODX (Springhill, Ala.)—Fy., 1,410 (212.8); power, 500.  
 WOQ (Kansas City, Mo.)—Fy., 1,300 (230.8).  
 WQAM (Miami, Fla.)—Fy., 560 (536).  
 WRHM (Fridley, Minn.)—Owner, Minnesota Broadcasting Corp.  
 WRUF (Gainesville, Fla.)—Fy., 830 (361).  
 WSFA (Montgomery, Ala.)—Fy., 1,410 (212.8); power, 500.  
 WSPD (Toledo, Ohio)—Power, 500 night, 1,000 day.  
 WSUI (Iowa City, Iowa)—Fy., 600 (500).  
 WTBO (Cumberland, Md.)—Owner, Associated Broadcasting Corp.  
 WTOG (Savannah, Ga.)—Owner, Savannah Broadcasting Co.; power, 500; fy., 1,260 (238).  
 Strike out all particulars of the following-named stations: WABY (Philadelphia, Pa.); WHPP (Englewood Cliffs, N. J.); WINR (Bay Shore, N. Y.).

## GOVERNMENT LAND STATIONS, ALPHABETICALLY, BY NAMES OF STATIONS

[Alteration and correction to be made to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1929, and to the International List of Fixed and Land Stations, published by the Berne bureau]

- BELLEFONTE, PA.—Fy., add 302 (995).  
 BRYAN, OHIO.—Fy., add 294 (1,020).  
 CHEYENNE, WYO.—Fy., add 321 (935).  
 CLEVELAND, OHIO.—Fy., add 344 (870).  
 ELKO, NEV.—Fy., add 315 (950).  
 FORT HOWARD, MD. (BALTIMORE).—Fy., 172 (1,745).

FRESNO, CALIF.—Fy., add 350 (855).  
 GLENDALE, CALIF. (LOS ANGELES).—Fy., add 327 (915).  
 HADLEY FIELD, N. J.—Fy., add 290 (1,035).  
 IOWA CITY, IOWA.—Fy., add 327 (915).  
 KANSAS CITY, MO.—Fy., add 321 (935).  
 LA CROSSE, WIS.—Fy., add 338 (890).  
 MAYWOOD, ILL.—Fy., add 350 (855).  
 MEDFORD, OREG.—Fy., add 344 (870).  
 NORTH PLATTE, NEBR.—Fy., add 344 (870).  
 OAKLAND, CALIF.—Fy., add 321 (935).  
 OMAHA, NEBR.—Fy., add 315 (950).  
 PORTLAND, OREG.—Fy., add 327 (915).  
 RENO, NEV.—Fy., add 344 (870).  
 ROCK SPRINGS, WYO.—Fy., add 350 (855).  
 ST. LOUIS, MO.—Fy., add 338 (890).  
 SALT LAKE CITY, UTAH.—Fy., add 327 (915).  
 SEATTLE, WASH.—Fy., add 338 (890).  
 WICHITA, KANS.—Fy., add 344 (870).

GOVERNMENT SHIP STATIONS, ALPHABETICALLY, BY NAMES OF STATIONS

[Alterations and corrections to be made to the List of Commerical and Government Radio Stations of the United States, edition of June 30, 1929, and to the International List of Ship Stations, published by the Berne bureau]

Strike out all particulars of the following-named vessels: Albany, Charleston, Frederick, Huron, New Orleans, Salem.

GOVERNMENT LAND AND SHIP STATIONS, ALPHABETICALLY, BY CALL SIGNALS

Strike out all particulars following the call signals: NABT, NAKV, NEGV, NENP, NIDV, NIJD.

EXPERIMENTAL 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, 1929]

IDAHO: Boise (W7XT).—Strike out all particulars.  
 ILLINOIS: Chicago (W9XAD).—Strike out all particulars.  
 INDIANA: Hammond (W9XS).—Strike out all particulars.  
 MASSACHUSETTS: Dartmouth (W1XV).—Fy., add 23060 (13.01) and above.  
 NEW JERSEY:  
 Deal (W2XJ).—Fy., 1,604 (187.03), 2,398 (125.10), 3,256 (92.50), 4,116 (72.89), 4,795 (62.57), 6,425 (46.70), 6,755 (44.41), 8,630 (34.76), 8,650 (34.68), 9,170 (32.72), 9,750 (30.77), 9,870 (30.40), 10,550 (28.44), 12,850 (23.35), 13,390 (22.35), 14,470 (20.73), 14,590 (20.56), 16,270 (18.439), 17,300 (17.341), 18,340 (16.358), 19,220 (15.609), 19,820 (15.136), 21,060 (14.245), 21,420 (14.006).  
 Jersey City (W2XBY).—Fy., strike out 4,795 (62.57), 34,300 (8.75), add 34,592 (8.67).  
 Ocean Township (W2XG).—Fy., 1,604 (187.03), 2,398 (125.10), 3,256 (92.50), 4,116 (72.89), 4,795 (62.57), 6,425 (46.70), 6,755 (44.41), 8,630 (34.76), 8,650 (34.68), 9,170 (32.72), 9,750 (30.77), 9,870 (30.40), 10,550 (28.44), 12,850 (22.35), 13,390 (22.40), 14,470 (20.73), 14,590 (20.56), 16,270 (18.439), 17,300 (17.341), 18,340 (16.358), 19,220 (15.609), 19,820 (15.136), 21,060 (14.245), 21,420 (14.006), 27,500 (10.905), 31,650 (9.48), 36,600 (8.20).  
 Whippany (W3XN).—Fy., 194 (1545) to 6,000 (50).  
 NEW YORK:  
 Brooklyn (W2XBP).—Strike out all particulars.  
 Buffalo (W8XH).—Fy., 23,060 (13.01) to 28,000 (10.714).  
 Glenville (W2XM).—Strike out all particulars.  
 New York (W2XAT).—Strike out all particulars.  
 Rocky Point (W2XA).—Fy., 45 (7,000) to 75 (4,000).  
 Rocky Point (W2XAR).—Strike out all particulars.  
 Sayville (W2XBL).—Strike out all particulars.  
 Schenectady (W2XAE).—Strike out all particulars.

## PENNSYLVANIA:

Hazelton (W8XBC).—Strike out all particulars.

Narbeth (W3XB).—Strike out all particulars.

Oil City (W8XBD).—Strike out all particulars.

Philadelphia (W3XX).—Strike out all particulars.

TEXAS: Houston (W5XJ).—Strike out all particulars.

## Portable:

New Jersey: Ocean Township (W2XAV).—Fy., 1,604 (187.03), 2,398 (125.10), 3,256 (92.50), 4,116 (72.89), 4,795 (62.57), 6,425 (46.70), 6,755 (44.41), 8,630 (34.76), 8,650 (34.68), 9,170 (32.72), 9,750 (30.77), 9,870 (30.40), 10,550 (28.44), 12,850 (23.35), 13,390 (22.40), 14,470 (20.73), 14,590 (20.56), 16,270 (18.439), 17,300 (17.341), 18,340 (16.358), 19,220 (15.609), 19,820 (15.136), 21,060 (14.245), 21,420 (14.006).

New York: New York (W2XAA).—Fy., 1,604 (187.03), 2,398 (125.10), 3,256 (92.50), 4,116 (72.89), 4,795 (62.57), 6,425 (46.70), 6,755 (44.41), 8,630 (34.76), 8,650 (34.68), 9,170 (32.72), 9,750 (30.77), 9,870 (30.40), 10,550 (28.44), 12,850 (23.35), 13,390 (22.40), 14,470 (20.73), 14,590 (20.56), 16,270 (18.439), 17,300 (17.341), 18,340 (16.358), 19,220 (15.609), 19,820 (15.136), 21,060 (14.245), 21,420 (14.006).

## AIRCRAFT:

C-268 (W7XAA).—Strike out all particulars.

NC-4616 (W2XBX).—Fy., strike out 315 (952) to 350 (857), 3,076 (97.5).

X-7654 (W8XC).—Fy., strike out 8,650 (34.68).

VESSELS: Naroca (W9XN).—Strike out all particulars.

## RELAY BROADCASTING STATIONS, BY NAME OF STATIONS

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1929]

NEW YORK: Richmond Hill (W2XE).—Loc., changed to Jamaica, New York; fy., 11,840 (25.34), 15,280 (19.634).

## VISUAL BROADCASTING STATIONS, BY NAME OF STATIONS

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1929]

NEW JERSEY: Jersey City (W2XCR).—Fy., 2,750 (109.1) to 2,850 (105.3).

## MISCELLANEOUS

## LIST OF VESSELS EQUIPPED WITH A RADIO COMPASS

The following list of vessels is supplemental to the list published in the list of Commercial and Government Radio Stations of the United States, edition June 30, 1929, page 191. Notice that they are equipped with a compass has been published heretofore; however, they were omitted from the above-named list due to the fact that they were inadvertently not reported as being so equipped in reports received from operating companies for the fiscal year ended June 30, 1929:

Name	Call signal	Owner
A. A. Augustus	KDXQ	Pioneer S. S. Co.
Admiral Fiske	WGCD	Pacific S. S. Co.
Amazon	KDXP	Pioneer S. S. Co.
A. W. Osborne		Wilson Transit Co.
B. F. Jones		Interstate S. S. Co.
B. H. Taylor	KFLK	Bradley Transportation Co.
Calcite	KDZN	Do.
Captain Thomas Wilson		Wilson Transit Co.
Carl D. Bradley	WOBK	Bradley Transportation Co.
Charles L. Hutchinson	WMIU	Pioneer S. S. Co.
Charles S. Hebard		Wilson Transit Co.
Cities Service Toledo	WOCB	Cities Service Transportation Co.
D. P. Thompson		Pioneer S. S. Co.
Eastern Crown	KUNQ	Meteor S. S. Co.
Frank Billings	KDXM	Pioneer S. S. Co.
Frank E. Taplin		Wilson Transit Co.
G. A. Tomlinson	KDXJ	Pioneer S. S. Co.
General Garretson		Wilson Transit Co.
H. P. McIntosh		Do.
James E. Ferris	KDXK	Pioneer S. S. Co.
James Laughlin		Interstate S. S. Co.
James MacNaughton	KFCN	Wilson Transit Co.
James P. Walsh	KDXW	Pioneer S. S. Co.
J. E. Upson		Wilson Transit Co.
J. J. Sullivan	KDXV	Pioneer S. S. Co.
John G. Munson	KFSI	Bradley Transportation Co.
John S. Manuel	KDXL	Pioneer S. S. Co.
John Stanton	KDXT	Do.
Joseph Block		Inland S. S. Co.
Joseph G. Butler, Jr.	KDXU	Pioneer S. S. Co.
L. E. Block	KGFE	Inland S. S. Co.
Martin Mullen	KDXY	Pioneer S. S. Co.
N. F. Leopold		Inland S. S. Co.
Phillip D. Block	WCDG	Pioneer S. S. Co.
Price McKinney	KDXR	Do.
S. B. Coolidge	WBDQ	Do.
S. H. Robbins		Wilson Transit Co.
Thomas Walters		Interstate S. S. Co.
T. W. Robinson	WDDB	Bradley Transportation Co.
W. D. Calverley, Jr.	KDXS	Pioneer S. S. Co.
W. D. Rees		Wilson Transit Co.
W. F. White	WBDM	Bradley Transportation Co.
W. H. McGeen	WMIO	Pioneer S. S. Co.
William A. Paine	KDXZ	Do.
William C. Atwater	WDDL	Wilson Transit Co.
William G. Mather	WADJ	Cleveland Cliffs S. S. Co.
Willis L. King		Interstate S. S. Co.

GENERAL ORDERS OF THE FEDERAL RADIO COMMISSION

*Definition of an amateur station, additional frequency band opened, telephone bands specified (General Order No. 76, November 6, 1929).*—It is ordered: That General Order No. 24 be, and the same is hereby, amended to read as follows:

For the purpose of clarifying the amateur situation, the Federal Radio Commission has adopted the following definition and regulation:

"Any amateur station is a station operated by a person interested in radio technique solely with a personal aim and without pecuniary interest. Amateur licenses will not be issued to stations of other classes."

In accordance with the channels designated for amateur use under the new International Radiotelegraph Convention, the Federal Radio Commission has opened for amateur use the new additional band between 30,000 and 28,000 kilocycles. The Radio Division of the Department of Commerce is hereby authorized to open this band immediately for amateur use.

Amateur radio telephone apparatus will be licensed for operation only in the following bands:

Kilocycles

- 60,000 to 56,000
- 14,300 to 14,100
- 3,550 to 3,500
- 2,000 to 1,715

provided, however, that operation in the band of 14,300 to 14,100 kilocycles will be permitted only by operators holding extra first-class operator's licenses or, lacking such licenses, by operators who in their applications for station licenses show special technical qualification and ability to operate within the limits prescribed herein.

*Procedure to be followed in reply to notifications of violations of radio laws, regulations, and orders (General Order No. 75, October 30, 1929).*—Every licensee operating a radio station under a license from the Federal Radio Commission who receives a notification from a Department of Commerce supervisor or

inspector regarding any violation of the Federal laws in force, or any violation of the orders or regulations of the Federal Radio Commission or any violation of the terms and conditions of the station license, shall within three days of receipt of such notice send a written reply in triplicate to the supervisor or inspector from whom the notification was received.

The answer to each notice shall be complete in itself and shall not be abbreviated in the least by reference to any other communications or answers to previous notifications that the licensee may have received and answered.

If the notification relates to some violation that may be due to the physical or electrical characteristics of the transmitting apparatus the answer to the inspector shall state fully what steps if any are being taken to prevent future violations and if any new apparatus is to be installed the date such apparatus was ordered shall be given, the name of manufacturer, and promised date of delivery.

If the notification of violation relates to some violation caused by lack of attention or improper operation of transmitter, the name and license number of operator in charge shall be given.

*Installation of automatic frequency control apparatus must be authorized by the commission (General Order No. 77, November 8, 1929).*—It is ordered: That in order to regulate the kind of apparatus to be used with respect to its external effects, and to reduce interference between stations, any automatic frequency control apparatus, the purpose of which is to maintain the frequency of a radio transmitter upon the frequency assigned by the commission, or within the maximum tolerance therefrom allowed by the commission, shall be installed only upon receipt of, and in accordance with, written authorization from the commission.

Such authorization shall be applied for upon the form specifically provided by the commission for that purpose and such form shall be executed and submitted in the same manner as other applications for authorizations from the commission.

#### SCHEDULE OF RADIOPHONE WEATHER BROADCASTS BY AERONAUTICAL STATIONS

Following is the schedule of radiophone broadcasting of airways division, Department of Commerce, 24-hour service daily. At all radiophone stations these are made:

Emergency broadcasts at any time, delaying regular broadcasts as little as practicable therefor.

*Upper air and three hourly forecasts.*—Broadcast on the quarter hour following readiness to be furnished by local weather bureau office. Upper air to include as high as 13,000 feet. Broadcast local upper air only.

Hadley, N. J. (WWU), 290 kc. (1,035 m.).—On the hour: Broadcast terminal weather from Hadley, Washington, Bellefonte, and Cleveland. Thirty minutes after the hour: Broadcast Hadley to Cleveland weather.

Bellefonte, Pa. (WWQ), 302 kc. (995 m.).—On the hour: Broadcast terminal weather from Bellefonte, Hadley, and Cleveland. Thirty minutes after the hour: Broadcast Hadley to Cleveland weather.

Cleveland, Ohio (WVO), 344 kc. (870 m.).—On the hour: Broadcast terminal weather from Cleveland, Hadley, Bellefonte, and Chicago. Thirty minutes after the hour: Broadcast Bellefonte to Helmer, also Chicago and Hadley.

Maywood, Ill. (KDA), 350 kc. (855 m.).—On the hour: Broadcast terminal weather from Chicago, Cleveland, Kansas City, St. Louis, LaCrosse, Iowa City, and Omaha. Thirty minutes after the hour: Broadcast Cleveland to Chicago weather.

Wichita, Kans. (WEK), 344 kc. (870 m.).—On the hour: Broadcast terminal weather from Wichita, Kansas City, St. Louis, and Omaha.

Kansas City, Mo. (KRC), 321 kc. (935 m.).—On the hour: Broadcast terminal weather from Kansas City, Wichita, St. Louis, Chicago, and Omaha.

St. Louis, Mo. (KCQ), 338 kc. (890 m.).—On the hour: Broadcast terminal weather from St. Louis, Wichita, Kansas City, and Chicago.

Omaha, Nebr. (KJF), 315 kc. (950 m.).—On the hour: Broadcast terminal weather from Omaha, Kansas City, St. Louis, Chicago, Iowa City, North Platte, and Cheyenne.

North Platte, Nebr. (KVM), 344 kc. (870 m.).—On the hour: Broadcast terminal weather from North Platte, Omaha, and Cheyenne.

Cheyenne, Wyo. (KSG), 321 kc. (935 m.).—On the hour: Broadcast terminal weather from Cheyenne, Omaha, North Platte, Rock Springs, and Salt Lake City.

Rock Springs, Wyo. (KDN), 350 kc. (855 m.).—On the hour: Broadcast terminal weather from Rock Springs, Cheyenne, and Salt Lake City.

Salt Lake City, Utah (KGD), 327 kc. (915 m.).—On the hour: Broadcast terminal weather from Salt Lake City, Cheyenne, Rock Springs, Elko, and Reno.

Elko, Nev. (KOJ), 315 kc. (950 m.).—On the hour: Broadcast terminal weather from Elko, Salt Lake City, and Reno.

Reno, Nev. (KLG), 344 kc. (870 m.).—On the hour: Broadcast terminal weather from Reno, Salt Lake City, Elko, and Oakland.

Oakland, Calif. (KCV), 321 kc. (935 m.).—On the hour: Broadcast terminal weather from Oakland, Reno, Fresno, and Los Angeles. Thirty minutes after the hour: Broadcast airway weather Los Angeles to San Francisco.

Glendale, Calif. (KCT), 327 kc. (915 m.).—On the hour: Broadcast terminal weather from Los Angeles, Oakland, and Fresno. Thirty minutes after the hour: Broadcast airway weather Los Angeles to San Francisco.

EXAMINATION FOR ASSISTANT RADIO INSPECTOR

The United States Civil Service Commission announces that applications for assistant inspector (radio enforcement) must be on file with the Civil Service Commission, at Washington, D. C., not later than January 21, 1930.

The examination is to fill vacancies in the field service of the Department of Commerce throughout the United States, including Hawaii, Alaska, and Porto Rico.

The entrance salary is \$2,400 a year. Higher-salaried positions are filled through promotion.

The duties of the assistant radio inspector will be primarily to assist the radio inspector in the enforcement of the radio act. The assistant radio inspector will be required to inspect radio equipment on vessels and at land stations, which involves the carrying of 30 or 40 pounds of testing and measuring instruments; to make high frequency and field intensity measurements; to assist in the examination of radio operators, and to perform such office work as is required. The performance of these duties will involve considerable traveling, for which necessary traveling expenses will be allowed.

Competitors will be rated on theoretical and practical questions on radio and electrical engineering, and on their education, training, and experience.

Full information may be obtained from the United States Civil Service Commission, Washington, D. C., or the secretary of the United States Civil Service Board of Examiners at the post office or customhouse in any city.

CHANGE IN UNITED STATES NAVAL RADIO TIME SIGNAL CODE

The code for sending naval radio time signals will be slightly changed as soon as the transmitting clocks at the sending stations have been altered to the new code.

The new code is practically the same as the old code. The change consists of the incorporation of a feature which will make possible the identification of each minute of the 5-minute period. The tick for the twenty-ninth second of each minute will be omitted as at present. The omissions otherwise are all at the end of each minute and may be represented by diagram as follows, the omission of a dot in the diagram indicating the omission of a signal tick in the code sent out:

Minute	Second										
	50	51	52	53	54	55	56	57	58	59	60
55-----	—	—	—	—	—	—	—	—	—	—	—
56-----	—	—	—	—	—	—	—	—	—	—	—
57-----	—	—	—	—	—	—	—	—	—	—	—
58-----	—	—	—	—	—	—	—	—	—	—	—
59-----	—	—	—	—	—	—	—	—	—	—	—

The above code retains all of the familiar features of the code now in use and merely injects an identification of each minute by omitting the fifty-first second of the first minute of the signal followed by four ticks showing there are four minutes to go, and so on, the last minute being a marked departure from all those preceding.

A future notice will be contained in this BULLETIN giving the date on which the new code is put into effect.

## RADIO OPERATOR AWARDED MEDAL FOR DISTINGUISHED SERVICE

Malcolm Hanson, chief operator of the Byrd Expedition in Little America was recently awarded the Veteran Wireless Operators Association's gold medal for distinguished service during the present year.

## NEW CANADIAN RADIOBEACON

A new automatic radiobeacon has been established at Southeast Shoal, Lake Erie.

The characteristic of the station is the transmission of its call signal VGU for a period of 1 minute and 15 seconds, followed by a silent interval of 1 minute and 45 seconds, thus:

••• — — — •••
Silent

75 seconds
105 seconds

The beacon operates continuously during thick or foggy weather and hourly for 4 minutes and 15 seconds during clear weather commencing on the hour.

## CORRECTIONS TO ARCS OF BRITISH RADIO COMPASS STATIONS

Name	Call	Reliable sectors
Niton.....	GNI	070°-076°, 112°-247.
Wick.....	GKR	033°-204°.
Cullercoats.....	GCC	061°-125°.
Humber.....	GKZ	359°-136°.
Malln Head.....	GMH	231°-076°.

Bearings in sectors other than those mentioned above will be given if required. In such cases the bearings will be designated "unreliable."

## LOCATION OF NORTH FORELAND RADIO, GREAT BRITAIN, CHANGED

The position of the new installation is 1° 24' 50" E., 51° 21' 35" N. Operators taking bearings on this station (QTG) should carefully note this change. It now operates on a working frequency of 485 kc. (620 m.).

## HOURS OF OPERATION FOR TRANSMISSION OF WEATHER REPORTS BY DAVENTRY, ENGLAND, RADIOTELEPHONE STATION CHANGED

This station now transmits the weather shipping bulletin at 2115, G. M. T. instead of at 2130 G. M. T. The location of this station is approximately 1° 08' W., 52° 15' N.

## RADIO COMPASS STATION ESTABLISHED AT OKSO LIGHTHOUSE, NORWAY

This station established at Okso Lighthouse on the southeast coast in approximately 8° 04' E., 58° 04' N., call signal LMY, operates on 375 kc. (800 m.) and 500 kc. (600 m.).

The station which is experimental is not equipped with a transmitter for communication, consequently requests for bearings should be made to Flekkero (LGY) which keeps continuous watch and transmits the result of the observations.

Bearings will only be given for the sector 065°-250°. Outside this sector they are unreliable on account of "land effect." If the observation does not give a sharp result (badly defined minimum) the bearing will be indicated as approximate. Central European time will be used in the messages.

Vessels should request bearings in order that the best possible information can be obtained regarding their reliability. The tests should be made on both frequencies. When circumstances permit, a summary containing the following details should be forwarded to the Director of Telegraphs, Radio Office, Oslo, Norway; vessel's name; date and time (Central European) of the bearing; frequency; bearing given by the compass station; vessel's position (fixed by means other than by radio compass); exactness of compass bearing; weather conditions. For the present no charge will be made for bearings supplied.



RADIOBEACON ESTABLISHED AT SOUTH BISHOP LIGHT STATION, ENGLAND

A beacon has been established at this light station located on the west coast in approximately 5° 25' W., 51° 51' N.

It operates on a frequency of 300 kc. (1,000 m.) and during thick and foggy weather will transmit continuously for 1 minute every 4 minutes, the following signal: The signal GGB of the Morse code (— . . — . . — . .) at the rate of 15 words per minute for 48 seconds (approximately); a continuous dash (—) for 10 seconds approximately; the signal GGB made once, of 2 seconds' duration (approximately); a silent interval of 3 minutes.

During clear weather in order to afford facilities for obtaining bearings, three emissions of the whole character of the signal described above will be made consecutively at half-hourly intervals approximately, commencing at 10 minutes past the hour.

Although this beacon is permanent it may be found necessary to make some adjustment after establishment and the station should be considered as under test for a period of three months, beginning about December 1, during which time the signals may be subject to temporary interruptions.

TIME SIGNALS TRANSMITTED BY RIO DE JANEIRO-ARPOADOR, BRAZIL STATION

Time signals from Rio de Janeiro Observatory (PPE) are relayed by Rio de Janeiro-Arpoador (PPR) in accordance with the new International System of Time Signals, as follows:

G. M. T.				Signal						Meaning		
h.	m.	s.	h.	m.	s.	CT	CT	CT	horarios (time signals).			
13}	55	00				—	—	—	etc. (3 times)			Optional signals,
23}	56	05 to 23}	56	50		—	—	—	etc.			
	57	00	"	57	49	55	56	57	58	59	60	Time signal.
	57	55	"	58	00	(every 10 sec.)						
	58	08	"	58	50	55	56	57	58	59	60	Do.
	58	55	"	59	00	(every 10 sec.)						
	59	06	"	59	50	55	56	57	58	59	60	Do.
13}	59	55	"14}	00	00	•	•	•	•	•	•	
23}			24}									

In the event of failure the time signals are transmitted 30 minutes later (from 27 to 30 minutes, instead of from 57 to 60 minutes). No transmissions of time signals on Sundays or public holidays.

GENERAL CALL SIGNAL FOR CALLING COAST GUARD CUTTERS

Attention of radio operators and masters of vessels is called to the fact that call signal NCU has been assigned as a general call signal for calling a United States Coast Guard cutter using a frequency of 500 kc. (600 m.) anywhere on the United States coast. It may also serve as the address of a message which will be delivered to the nearest Coast Guard unit, ashore or afloat. This call which should be particularly advantageous in requesting assistance should not be used in calling a certain particular vessel for the transmission of messages. In this case the call signal of the vessel called should be used.

LISTS OF RADIO PUBLICATIONS AVAILABLE FOR DISTRIBUTION

The Superintendent of Documents, Government Printing Office, Washington, D. C., has available for distribution upon request (free of charge) a list of radio publications issued by the different Government agencies concerned with radio. The publications are also distributed by that office at the prices indicated in the list.

## DALLAS AND DENVER OFFICES OPENED

This office has opened branch offices in these cities which are in the fifth and ninth radio districts, respectively. The address of the Dallas office is 604 Burt Building, and the office in Denver is located in room 302 Post Office Building. Anyone residing in these localities desiring information relative to operators licenses, station licenses or other information of a general nature, especially pertaining to their locality may obtain such information by communicating to the radio inspector at these offices. The headquarters office of these districts are located in the Customhouse, New Orleans, La., and Engineering Building, Chicago, Ill., respectively.

## MEDICAL ADVICE BY STATIONS OF THE RADIOMARINE CORPORATION

All coastal stations operated by the Radiomarine Corporation of America offer free medical message service to ships of all countries.

Messages received from masters of vessels reporting symptoms observed in a sick member of the crew are promptly forwarded to the nearest United States marine hospital where the case is diagnosed by the medical staff from the information given in the master's message. A course of treatment is then decided upon and suitable instructions transmitted to the vessel.

No charge is made for the radiotelegraph service on such messages.

## ALTERATION IN TIMES OF TRANSMISSIONS OF ORFORDNESS, ENGLAND, RADIOBEACON

This beacon located in approximately  $1^{\circ} 34' E.$ ,  $52^{\circ} 05' N.$ , is now in operation for the whole of the 24 hours, and not only from 0500 to 2255 G. M. T. There will be alternate hourly transmissions on waves of type A1 and A2, as follows: 0100, A1; 0200, A2; 0300, A1; 0400, A2, etc.

## LISTS OF STATIONS AVAILABLE FOR DISTRIBUTION

The June 30, 1929, edition of the annual list of Amateur Radio Stations of the United States, is now available for distribution by the Superintendent of Documents, Government Printing Office, Washington, D. C., at 25 cents a copy.

The June 30, 1929, edition of the annual list of Commercial and Government Radio Stations of the United States, which includes broadcasting stations, will probably be ready for distribution some time during December, at 15 cents a copy.

All remittances, preferably by money order, should be forwarded direct to the Government Printing Office.

## AERONAUTIC RADIO RESEARCH

*Directive radiobeacon system.*—With the aural type directive radiobeacon system now in use on the airways of the United States, it is the practice to operate the radiobeacon and radiotelephone weather broadcast stations on the same radiofrequency, interrupting one service when the other is in use. This permits the pilot to use these services without the necessity of retuning the radio receiving set from the beacon to the phone service or vice versa. The two services are, however, not available simultaneously.

It would be advantageous if the pilot could have available his course indication even while listening to the weather broadcast. The visual type of radiobeacon offers possibilities for the simultaneous transmission of the two services on the same radiofrequency. The modulation frequencies used with the visual beacon are 65, 86.7, and 108.3 cycles, respectively. Intelligible speech does not require modulation frequencies below 300 cycles. The two sets of modulation frequencies may therefore be transmitted on the same carrier frequency. On the airplane a receiving set tuned to the transmitted carrier frequency may be employed, and a suitable filter circuit arrangement provided in the receiving set output so that the frequencies above 300 cycles to the vibrating reed course indicator. The Bureau of Standards is making a study of the most practicable transmitting circuit arrangements for the simultaneous transmission of the radiobeacon and radiotelephone signals. Preliminary experiments to test the practicability of these arrangements have been started.

*Vibrating reed course indicator.*—When mounted on an airplane instrument board it has heretofore been necessary to provide a separation of about 18 inches between the vibrating reed course indicator (used with the visual type radiobeacon) and the magnetic compass, in order that the compass readings should not

be affected by the magnet system of the course indicator. In order to obviate the need for such separation, experiments have been made on using sheet iron for the external mounting of the reed indicator. Preliminary measurements show that the indicator may then be located within 3 inches of the magnetic compass without affecting the compass readings.

*Fog landing.*—A number of successful test flights were made on a new system for guiding the pilot during landing by means of a radio beam. This system utilizes extremely high-frequency waves which are readily directed. The beam marks out a gliding path such that a pilot may effect a safe landing without seeing the ground. The landing path marked out by the beam begins at approximately 3 miles from the transmitter. The shape of the path can be judged from the following table:

Distance from transmitter	Height in feet
3 miles.....	2,000
2 miles.....	500
1 mile.....	240
½ mile.....	85
1,000 feet.....	15
750 feet.....	10
500 feet.....	5

It will be noted that the slope of this path decreases as the pilot approaches the ground; this tends to facilitate a proper landing.

DEVELOPMENT OF SECONDARY FREQUENCY STANDARDS

One phase of the work of the Bureau of Standards in improving frequency standards has been the progressive development of secondary standards. These are standards which are capable of being calibrated accurately and which can be relied upon to remain constant over a long period of time. Piezo oscillators are well suited for this work, and they have been intensively developed.

The quartz plate used in the bureau's most recent piezo oscillators is mounted in a special holder designed for minimum change of dimensions, in a thermostatically controlled inclosure which is capable of maintaining the quartz plate at a very constant temperature. The circuit arrangements and shielding are such that the frequency of the complete piezo oscillator is not affected by outside influences. An amplifier is built into each piezo oscillator and is so balanced that any type of connection may be made to the output without changing its frequency.

In connection with this work a study of the fundamental properties of piezo-electric materials is being made, with a view to improving the vibrating plates themselves. This includes intensive study of the elastic properties of quartz.

The frequencies of the secondary standards are compared against primary standards at regular intervals. These comparisons are made by measuring the frequency difference between selected harmonics of the fundamental frequency of each standard. Several such difference frequencies are measured, and a mean taken. The measurements of difference frequencies are made by means of an oscillograph, or by a direct-reading balance method.

Measurements over several months have shown that the piezo oscillators remain constant to a few parts in a million under all ordinary conditions of use. These conditions include occasional transportation by motor truck.

Descriptions of the various phases of this work will be published from time to time, and their publication announced in these columns. No such publications are available yet.