

# 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 Type	= Call signal (letters) assigned. = 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.
Power	= Height (meters) of antenna and intensity of current (meter-amperes) at its base (sample of manner in which published—100/100) or the normal radiated power expressed in meter-amperes (sample of manner in which published—100m amp.).
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, A=aircraft.
Hours	= Hours of operation: N=continuous service, X=no regular hour, Y=sunrise to sunset.
Accts.	= Message accounts settled by.
M. R. T. Co.	= Mackay Radio & Telegraph Co.
R. C. A.	= Radio Corporation of America.
R. M. O. 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.	= Meter-amperes.
U. S. L.	= Applies only to the list of Commercial and Government Radio Stations of the United States. = Equipped with a radio compass (direction finder).

Beginning in January, the frequencies which ship stations may be licensed to use will be indicated as follows:

For telegraph communication primarily with coastal telegraph stations: Class L (kilocycles-meters in parentheses, followed by symbol designating type of emission) =

143 (2,100), A-1, primarily for calling.  
 152 (1,975), A-1, A-2, working (other than Great Lakes).  
 153 (1,960), A-1, A-2, working.  
 154 (1,950), A-1, A-2, working.  
 155 (1,935), A-1, A-2, working.  
 156 (1,925), A-1, A-2, working.  
 157 (1,910), A-1, A-2, working.  
 158 (1,900), A-1, A-2, working (other than Great Lakes).  
 160 (1,875), A-1, A-2, working (other than Great Lakes).  
 375 (800), A-1, A-2, B, direction finding only.  
 394 (760), A-1, A-2, working (Great Lakes only).

400 (750), A-1, A-2, working (other than Great Lakes).  
 410 (730), A-1, A-2, B, working (other than Great Lakes).  
 410 (730), A-1, A-2, B, calling and distress (Great Lakes only).  
 425 (705), A-1, A-2, B, working.  
 454 (660), A-1, A-2, B, working (other than Great Lakes).  
 468 (640), A-1, A-2, working (other than Great Lakes).  
 500 (600), A-1, A-2, B, calling and distress (other than Great Lakes).

In addition to the frequencies designated hereinabove, this station may transmit on a frequency below 550 kc (545) used by a coastal telegraph station when directed to do so by the coastal telegraph station to which the frequency is assigned, provided that on frequencies below 150 kc (2,000) the emission shall be A-1 only.

Class H (kilocycles-meters in parentheses, on the following frequencies above 3,000 kc with A-1 or A-2 emission) =

3,105 (96.62)	5,530 (54.25)	8,260 (36.32)	12,360 (24.27)	16,580 (18.094)
3,115 (96.31)		*8,280 (36.23)	12,375 (24.24)	16,660 (18.007)
	6,170 (48.62)	8,290 (36.19)	12,390 (24.21)	16,680 (17.986)
*4,140 (72.46)	6,180 (48.54)	8,300 (36.14)	*12,420 (24.15)	
4,145 (72.38)	6,190 (48.47)	8,320 (36.06)	12,435 (24.13)	22,025 (13.621)
4,150 (72.29)	6,200 (48.39)	8,330 (36.01)	12,450 (24.11)	22,050 (13.605)
4,160 (72.12)	*6,210 (48.31)			*22,080 (13.587)
4,165 (72.03)	6,220 (48.23)	11,025 (27.21)	16,460 (18.225)	22,100 (13.575)
	6,230 (48.15)	*11,040 (27.17)	16,480 (18.204)	22,125 (13.559)
*5,515 (54.40)		11,055 (27.135)	16,500 (18.182)	22,150 (13.544)
*5,520 (54.35)	8,240 (36.41)	11,070 (27.10)	16,520 (18.160)	
5,525 (54.30)	8,250 (36.36)	11,085 (27.065)	*16,560 (18.116)	

In addition to the frequencies hereinabove designated this station may transmit on a frequency above 3,000 kc (100) used by a coastal telegraph station when directed to do so by the coastal telegraph station to which the frequency is assigned.

For telephone communications primarily with coastal telephone stations, for telephone or telegraph communication with coastal harbor stations, and for telephone or telegraph communication primarily between ship-harbor stations, the specific frequency or frequencies for which a station is licensed to use will be indicated.

## ADDITIONS

### 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, 1931, 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	Licensee
Bismarck, N. Dak. (airport). <sup>1</sup>	FA, FX	KNWD	2,668 (112.44), 2,672 (112.27), 2,854 (105.11), 3,005 (99.83), 5,377.5 (55.79).	P	X	Aeronautical Radio (Inc.).
Bismarck, N. Dak. (portable). <sup>1</sup>	FA	KGTP	2,854(105.11), 3,005(99.83), 5,377.5 (55.79).	P	X	Do.
Chatham, Alaska. <sup>2</sup>	FX	KICO	246 (1,220), 256 (1,170), 262 (1,145), 3,190 (94).	P	X	R. R. Farish.
Chatham, Alaska. <sup>3</sup>	FX	KICT	3,190 (94)	P	X	Do.
Chatham, Alaska. <sup>3</sup>	FC	KPU	425 (705), 500 (600)	PG	X	Do.
Chicago, Ill. (municipal airport). <sup>4</sup>	FA, FX	WSDS	2,665 (112.44), 2,672 (112.28), 2,854 (105.12), 3,005 (99.83), 5,377.5 (55.8).	P	N	Aeronautical Radio (Inc.).
Denver, Colo. <sup>4</sup>	FX	KICX	3,190 (94)	P	X	Board of Water Commissioners, city and county of Denver.
Eleven Mile Canyon, Colo. <sup>5</sup>	FX	KICL	do.	P	X	Do.
Hidden Inlet, Alaska. <sup>7</sup>	FX	KICF	252 (1,190), 274 (1,095)	PR	X	Nakat Packing Corporation.

<sup>1</sup> Type, A1, A2, A3.

<sup>2</sup> Loc., 134° 51' 37" W., 57° 31' 07" N.; type, A1.

<sup>3</sup> Loc., 134° 51' 37" W., 57° 31' 07" N.; type, A3.

<sup>4</sup> Loc. (approximate), 87° 46' 30" W., 41° 48' 00" N.; type, A1, A2, A3.

<sup>5</sup> Loc. (approximate), 105° 00' 00" W., 39° 45' 00" N.; type, A1.

<sup>6</sup> Loc. (approximate), 105° 25' 00" W., 38° 55' 00" N.; type, A1.

<sup>7</sup> Loc. (approximate), 130° 20' 30" W., 54° 52' 10" N.; type, A1.

Commercial land stations, alphabetically, by names of stations—Continued

Station	Class	Call signal	Frequency in kilocycles, meters in parentheses	Service	Hours	Licensee
Madison, Wis. (Royal airport). <sup>1</sup>	FA, FX	WSDR	2,668 (112.44), 2,672 (112.28), 2,854 (105.12), 3,005 (99.83), 5,377.5 (55.8).	P	Y	Aeronautical Radio (Inc.).
Milwaukee, Wis. <sup>2</sup>	FA, FX	WAEH	do.	P	Y	Do.
Nakeen, Alaska (Bristol Bay). <sup>3</sup>	FX	KICC	178 (1,685), 274 (1,095), 3,265 (91.88).	PR	X	Nakat Packing Corporation.
Port Alexander, Alaska. <sup>4</sup>	FX	KGXW	2,994 (100.2)	P	X	Karl Hansen.
Rocky Point, N. Y. <sup>5</sup>	FX	WDC	14,785 (20.29)	PR	X	R. C. A. Communications (Inc.).
Do.	FX	WDD	7,510 (39.95)	PR	X	Do.
Savannah, Ga.	FC	WSV	143 (2,100), 170 (1,765), 408 (735), 476 (630), 500 (600).	PG	N	R. M. C. A.
Sioux City, Iowa (Rickenbacker airport). <sup>6</sup>	FA, FX	KGTM	3,162.5 (94.86), 3,172.5 (94.56), 3,182.5 (94.26), 5,572.5 (53.835), 5,582.5 (53.74), 5,662.5 (52.98).	P	X	Aeronautical Radio (Inc.).
Sioux Falls, S. Dak. <sup>7</sup>	FA, FX	KGTG	do.	P	N	Do.
Steamboat Bay, Alaska (Noyes Island). <sup>8</sup>	FC	KICU	2,538 (118.2)	P	X	R. R. Farish.
Do.	FX	KICV	256 (1,170), 268 (1,120), 274 (1,095), 3,190 (94).	P	X	Do.
Do.	FX	KICW	3,190 (94)	P	X	Do.
Tacoma, Wash. <sup>9</sup>	FA, FX	KGXV	278 (1,080)	P	X	Tacoma Field (Pierce County Airport).
Union Bay, Alaska. <sup>10</sup>	FX	KIBV	252 (1,190), 274 (1,095), 3,265 (91.88).	PR	X	Nakat Packing Corporation.
Waterfall, Alaska. <sup>11</sup>	FX	KIBZ	3,265 (91.88)	PR	X	Do.
PHILIPPINE ISLANDS						
Catabangan (Camarines Sur). <sup>12</sup>	FX	KZOR	4,665 (64.3)	P	X	Philippine Lumber Manufacturing Co.
Isarog (Camarines Sur). <sup>13</sup>	FX	KZFW	4,825 (62.18)	P	X	Cadwallader-Gibson Lumber Co.

- <sup>1</sup> Type, A1, A2, A3.
- <sup>2</sup> Loc. (approximate), 87° 54' 00" W., 42° 57' 30" N.; type, A1, A2, A3.
- <sup>3</sup> Loc., 155° 47' 22" W., 58° 50' 17" N.; type, A1.
- <sup>4</sup> Loc. (approximate), 134° 37' 00" W., 56° 12' 00" N.; type, A3.
- <sup>5</sup> Loc. (approximate), 72° 58' 30" W., 40° 55' 45" N.; type, A1, A2.
- <sup>6</sup> Type, A3.
- <sup>7</sup> Loc., 96° 45' 54" W., 43° 31' 30" N.; type, A3.
- <sup>8</sup> Loc., 133° 40' 41" W., 55° 39' 25" N.; type, A3.
- <sup>9</sup> Loc., 133° 40' 41" W., 55° 39' 25" N.; type, A1.
- <sup>10</sup> Loc., 122° 28' 50" W., 47° 08' 46" N.; type, A3.
- <sup>11</sup> Loc. (approximate), 132° 08' 40" W., 55° 39' 30" N.; type, A1.
- <sup>12</sup> Loc. (approximate), 133° 32' 40" W., 55° 47' 15" N.; type, A3.
- <sup>13</sup> Loc., 122° 38' 18" W., 13° 52' 47" N.; type, A2.
- <sup>14</sup> Loc. (approximate), 123° 24' 00" W., 13° 53' 00" N.; type, A2.

Commercial ship stations, alphabetically, by names of vessels

[Additions to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1931, 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 account settled by—
Chiriqui <sup>1</sup>	KDCH	8	PG	N	United Mail S. S. Co.	T. R. T. Co. Owner.
Denali <sup>2</sup>	WHEB		P	X	Floyd W. Hanchett	Do.
Folly II <sup>3</sup>	WHEE		P	X	Robert Toohy	Do.
Naushon <sup>4</sup>	WODS	8	PG	X	New England S. S. Co.	R. M. C. A. Owner.
Perseus <sup>5</sup>	KZPR	4	PG		Madrigal & Co.	Do.
Regulus <sup>6</sup>	KZRS	4	PG		do.	Do.

- <sup>1</sup> Power, 30/12.
- <sup>2</sup> Type, A3; power, 8/1.
- <sup>3</sup> Type, A3; power, 10/1.
- <sup>4</sup> Type, A1, A2; fy., 375 (800), 400 (750), 425 (705), 500 (600); power, 10/4.
- <sup>5</sup> Fy., 375 (800), 429 (700), 500 (600); hours, 8 to 11 a. m., 2 to 5 p. m., 9 to 11 p. m.
- <sup>6</sup> Fy., 500 (600); hours, 8 to 11 a. m., 3 to 6 p. m., 9 to 11 p. m.

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

[Additions to the List of Radio Stations of the United States, edition of June 30, 1931, and to the International List of Aircraft Stations, published by the Berne bureau]

Station	Call signal	Frequency, in kilocycles; meters in parentheses	Service	Hours	Licensee
NC-410-H <sup>1</sup>	KHWQJ	2,922 (102.67), 2,946 (101.83), 2,986 (100.47), 3,105 (96.62), 5,652.5 (53.074), 5,840 (51.369)	P	X	Eastern Air Transport (Inc.)
NC-538-E (No. 24) <sup>2</sup>	KHVFU	2,864 (106.11), 3,005 (99.83), 3,105 (96.61), 5,377.5 (55.79)	P	X	Northwest Airways (Inc.)
NC-874-H (No. 27) <sup>2</sup>	KHVSH	do	P	X	Do.
NC-7522 (No. 28) <sup>2</sup>	KHVTG	do	P	X	Do.
NC-8122 (No. 47) <sup>2</sup>	KHVFU	do	P	X	Do.
NC-8410 (No. 32) <sup>2</sup>	KHVVE	do	P	X	Do.
NC-8419 (No. 33) <sup>2</sup>	KHVWD	do	P	X	Do.
NC-8704 (No. 45) <sup>2</sup>	KHVXC	do	P	X	Do.
NC-9676 (No. 34) <sup>2</sup>	KHVVYB	do	P	X	Do.
NC-9933 (No. 46) <sup>2</sup>	KHVZA	do	P	X	Do.

<sup>1</sup> Type, A1, A3.<sup>2</sup> Type, A3.

## Marine radiobeacon stations

Addition to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1931, and to the International List of Stations Performing Special Services, published by the Berne bureau]

ROCHESTER HARBOR, N. Y.—Transmits every 180 seconds, groups of two dashes for 60 seconds, silent 120 seconds, thus:

$\frac{\text{---}}{60 \text{ seconds}}$ 
                         
  $\frac{\text{Silent}}{120 \text{ seconds}}$

Fy., 302 (993); hours, operates continuously during thick or foggy weather and daily in clear weather the last 15 minutes of each hour.

Distance finding: Whenever both the radiobeacon and the sound fog signal are in operation at this station, the radiobeacon will transmit a long distinctive dash (3 seconds) the termination of which is coincident with the beginning of a long blast (5 seconds) of the sound signal. This long blast is followed by a 1-second silence and a 1-second blast, to indicate definitely to the observer the particular long blast which is sounded at the termination of the long dash. The number of seconds elapsing between hearing the termination of the long radio dash and the beginning of this long blast of the sound signal divided by five will give the approximate distance of the observer from the light station in statute miles. The distance thus derived should be correct within a limit of error of 10 per cent. During the operating minute of the radiobeacon the sound signal characteristic will be as follows: Silent 53 seconds, blast 5 seconds, silent 1 second, blast 1 second. During the two minutes between operating minutes of the radiobeacon the regular station characteristic of the sound fog signal will be maintained, except that the silent period will in each case precede the blast. Hearing the long dash in the radiobeacon code of the station will indicate to the mariner the presence of fog conditions at that station.

SANDUSKY HARBOR, OHIO.—Transmits every 180 seconds, groups of dash dot dot dash for 60 seconds, silent 120 seconds, thus:

$\frac{\text{--- . . ---}}{60 \text{ seconds}}$ 
                         
  $\frac{\text{Silent}}{120 \text{ seconds}}$

Fy., 306 (980); hours, operates continuously during thick or foggy weather and daily in clear weather the last 15 minutes of each hour.

Airway radiobeacons, alphabetically by names

Name of station	Type of wave—frequency in kilocycles, wave length (meters) in parentheses for the emission	Characteristic signal emitted by the station and remarks	Name of station	Type of wave—frequency in kilocycles, wave length (meters) in parentheses for the emission	Characteristic signal emitted by the station and remarks
Albuquerque, N. Mex.	296 (1,015)	—•••	Newark, N. J.	338 (890)	••••
Alma, Calif.	240 (1,250)	•••••	Oklahoma City, Okla.	308 (975)	••••
Amarillo, Tex.	248 (1,210)	••••	Pittsburgh, Pa.	254 (1,180)	••••
Archbold, Ohio	278 (1,080)	••••	Portland, Oreg.	284 (1,055)	••••
Birmingham, Ala.	350 (855)	••••	Raleigh, N. C.	350 (855)	••••
Burlington, Iowa	326 (920)	••••	Rockford, Ill.	338 (890)	••••
Charleston, S. C.	332 (905)	••	Redeo, N. Mex.	254 (1,180)	••••
Dagget, Calif.	248 (1,210)	••••	San Diego, Calif.	314 (955)	••••
El Paso, Tex.	314 (955)	••••	Shasta Springs, Calif.	350 (855)	••••
Fargo, N. Dak.	350 (855)	••••	Shreveport, La.	320 (940)	••••
Grand Dalles, Wash.	248 (1,210)	••••	Smiths Grove, Ky.	284 (1,055)	••••
Harrisburg, Pa.	314 (955)	••••	Spokane, Wash.	344 (870)	••••
Jackson, Miss.	260 (1,155)	••••	Springfield, Mo.	248 (1,210)	••••
Jacksonville, Fla.	344 (870)	••••	Sweetwater, Tex.	284 (1,055)	••••
Kingman, Ariz.	302 (995)	••	Tacoma, Wash.	260 (1,155)	••••
La Crosse, Wis.	254 (1,180)	••	Texarkana, Ark.	240 (1,250)	••••
Little Rock, Ark.	272 (1,105)	••••	Tucson, Ariz.	338 (890)	••••
Los Angeles, Calif.	284 (1,055)	••••	Wellton, Ariz.	266 (1,130)	••••
Medford, Oreg.	266 (1,130)	••••	Williams, Calif.	320 (940)	••••
Memphis, Tenn.	326 (920)	••••	Wink, Tex.	272 (1,105)	••••
Milwaukee, Wis.	240 (1,250)	••••	Winslow, Ariz.	350 (855)	••••
Minneapolis, Minn.	266 (1,130)	••••			

NOTE.—The type of emission of the above-named stations is A3. They are operated by the Department of Commerce, Bureau of Lighthouses, airways division.

Airway marker radiobeacons, alphabetically by names of stations

Name of station	Frequency in kilocycles, wave length (meters) in parentheses	Characteristic signal
Adair, Iowa	308 (974), 314 (955)	••••
Adairsville, Ga.	266 (1,128), 314 (955)	••••
Agua Caliente, Ariz.	266 (1,130)	••••
Anderson, S. C.	248 (1,210), 266 (1,128)	••••
Anthony, Kans.	332 (905)	••••
Archbold, Ohio	248 (1,210)	••••
Arlington, Oreg.	344 (872)	••••
Atwater, Calif.	332 (905)	••••
Baldy Mesa, Calif.	314 (955)	••••
Beowawe, Nev.	272 (1,105), 332 (904)	••••
Blue Canyon, Calif.	240 (1,250), 254 (1,180)	••••
Cambridge, Ohio	248 (1,210), 284 (1,055)	••••
Cascade Locks, Oreg.	284 (1,055)	••••
Castle Rock, Wash.	320 (940)	••••
Columbiaville, N. Y.	332 (904), 320 (938)	••••
Concord, Calif.	344 (870)	••••
Gardner, Kans.	302 (995)	••••
Goffs, Calif.	338 (890)	••••
Grantsville, Utah	302 (993), 338 (888)	••••
Greenville, Ky.	344 (870)	••
Hayesville, Ohio	254 (1,180), 314 (955)	••••
Humbolt, Nev.	240 (1,250), 344 (870)	••••
Kirksville, Mo.	344 (870)	••••
Knoxville, Mo.	284 (1,055)	••••
Kylertown, Pa.	332 (905)	••
Livermore, Calif.	272 (1,105), 338 (890)	••••
Locomotive Springs, Utah	272 (1,105)	••••
McConnellsburg, Pa.	320 (940)	••••
Meacham, Oreg.	314 (955), 338 (888)	••••
Monteagle, Tenn.	326 (920), 350 (855)	••••
Morse, Ill.	308 (975), 272 (1,105)	••••
Mountain Home, Idaho	284 (1,055)	••••
Oceanside, Calif.	290 (1,035)	••••
Pendleton, Mo.	266 (1,130)	••••
Sexton Mountain, Oreg.	260 (1,154), 320 (938)	••••
South Boston, Va.	266 (1,128)	••••
Stafford Springs, Conn.	272 (1,105)	••••
Strevell, Idaho	284 (1,055)	••••
Tejon, Calif.	320 (940)	••••
Umatilla, Oreg.	314 (955)	••••
Ventosa, Nev.	314 (955)	••••
Wendover, Utah	314 (955), 338 (890)	••••

NOTE.—All operate on 273 (1,080), A3, low power, in addition to the frequencies shown. They are all operated by the Department of Commerce, Bureau of Lighthouses, Airways Division.

*Commercial and Government land, ship, aircraft, radiobeacon, and direction-finding stations, alphabetically by call signals*

Call signal	Name of station	Call signal	Name of station
KDCH	Chiriqui..... b	KICL	Eleven Mile Canyon, Colo..... fx
KGTG	Sioux Falls, S. Dak..... fa, fx	KICO	Chatham, Alaska..... fx
KGTM	Sioux City, Iowa (Rickenbacker air- port)..... fa, fx	KICT	do..... fx
KGTP	Bismarck, N. Dak..... fa	KICU	Steamboat Bay, Alaska (Noyes Is- land)..... fc
KGXW	Port Alexander, Alaska radiotele- phone..... fx	KICV	do..... fx
KGXZ	Tacoma, Wash..... fa, fx	KICW	do..... fx
KHVFU	NC-538-E (No. 24)..... a	KICX	Denver, Colo..... fx
KHVSH	NC-874-H (No. 27)..... a	KNWD	Bismarck, N. Dak. (airport)..... fa, fx
KHVTG	NC-7522 (No. 28)..... a	KPU	Chatham, Alaska radio..... fc
KHVUF	NC-8122 (No. 47)..... a	KZCR	Catabangan, P. I. (Camarines Sur)..... fx
KHVVE	NC-8410 (No. 32)..... a	KZFW	Isarog, P. I. (Camarines Sur)..... fx
KHVWD	NC-8419 (No. 33)..... a	KZPR	Perseus..... b
KHVXC	NC-8704 (No. 45)..... a	KZRS	Regulus..... b
KHVYB	NC-9676 (No. 34)..... a	WAEH	Milwaukee, Wis..... fa, fx
KHVA	NC-9933 (No. 46)..... a	WDC	Rocky Point, N. Y..... fx
KHWQJ	NC-410-H..... a	WDD	do..... fx
KIBV	Union Bay, Alaska..... fx	WHED	Denali..... b
KIBZ	Waterfall, Alaska..... fx	WHEE	Folly II..... b
KICC	Nakeen, Alaska (Bristol Bay)..... fx	WODS	Naushon..... b
KICF	Hidden Inlet, Alaska..... fx	WSDR	Madison, Wis. (royal airport)..... fa, fx
		WSDS	Chicago, Ill. (municipal airport)..... fa, fx

*Broadcasting stations, by name of State and city*

[Addition to the List of Radio Stations of the United States, edition of June 30, 1931]

State and city (Transmitter location; studio location in parentheses)	Call signal	Frequency, in kilocycles; meters in parentheses	Power (watts)
Mississippi: Kosciusko.....	WHEF	1,500 (200).....	100
New Hampshire: Newington (Portsmouth).....	WHEB	740 (405).....	1 250

<sup>1</sup> Daytime only.

*Broadcasting stations, by call signals*

Call signal	Location of transmitter, studio location in parentheses (mail address)	Licensee	Frequency, in ki- locycles; meters in parentheses	Power (watts)
WHEB	Newington, N. H. (Ports- mouth), P. O. Box 213, Ports- mouth.	Granite State Broadcasting Cor- poration.	740 (405).....	1 250
WHEF	Kosciusko, Miss., 417 West Adams St.	J. Niles Boyd Wholesale Groce- ry Co., J. O. Ashworth, and J. R. Smithson doing business as Attala Milling & Produce Co.	1,500 (200).....	100

<sup>1</sup> Daytime only.

*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, 1931]

Station	Call signal	Frequency in kilocycles; meters in parentheses	Power (watts)	License and postoffice address
Alaska: Ketchikan..	K7XD	1,594 (188.21), 2,398 (125.1), 3,492.5 (85.9), 4,797.5 (62.53), 6,425 (46.69), 8,655 (34.66), 12,862.5 (23.325), 17,310 (17.331).	1,000	Telephone Bond & Share Co., 101 West Eleventh St. Kansas City, Mo.
California: Dixon...	W6XN	7,565 (39.65), 7,610 (39.42), 10,840 (27.68), 15,355 (19.537), 15,415 (19.461), 21,060 (14.245).	-----	Transpacific Communication Co. (Ltd.).
Illinois: Chicago.....	W9XB	60,000 (5) to 400,000 (.75)	-----	Chicago Federation of Labor.
New Jersey: Carlstadt.	W2XCF	1,594 (188.21), 2,398 (125.1), 3,492.5 (85.9), 4,797.5 (62.53), 6,425 (46.7), 8,655 (34.66), 12,862.5 (23.325), 17,310 (17.33), 23,100 (12.99), 25,700 (11.67), 26,000 (11.54), 27,100 (11.07).	2,000	American Radio News Corporation, 235 East Forty-fifth St., New York, N. Y.
<i>Portable</i>				
New Jersey.....	W2XU	34,600 (8.67), 41,000 (7.32), 51,400 (5.84).	10	Bell Telephone Laboratories (Inc.).
Do.....	W2XW	do.....	10	Do.
Do.....	W2XY	do.....	10	Do.

*Relay broadcasting and pick-up 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, 1931]

Station	Call signal	Frequency in kilocycles; meters in parentheses	Power (watts)	Owner
Florida: Miami Beach. <i>Portable</i>	W4XB	6,040 (49.67).....	2,500	Laurence E. Dutton, c/o Isle of Dreams Broadcasting Corporation.
Washington, Seattle....	W7XAW	2,342 (128.09).....	2.4	Fisher's Blend Station (Inc.), Fourth Ave. and University St., 66-A Cobb Bldg.

*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, 1931]

Station	Call signal	Frequency, in kilocycles; meters in parentheses	Power (watts)	Owner
Michigan: Pontiac.....	W8XF	2,000 (150) to 2,100 (142.9), 42,000 (7.14) to 46,000 (6.52), 48,500 (6.18) to 50,300 (5.96), 60,000 (5) to 80,000 (3.75).	500	WJR, The Goodwill Station
Ohio: Cuyahoga Heights Village.	W8XL	43,000 (6.97) to 46,000 (6.52), 48,500 (6.18) to 50,300 (5.96), 60,000 (5) to 80,000 (3.75).	200	WGAR Broadcasting Co., Twelfth St. and Euclid Ave., Cleveland, Ohio.

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

Call signal	District and station	Call signal	District and station
W2XCF	Second district: Carlstadt, N. J.	W7XAW	Seventh district: Seattle, Wash. (portable).
W2XU	New Jersey (portable).	K7XD	Ketchikan, Alaska.
W2XW	Do.	-----	-----
W2XY	Do.	W8XF	Eighth district: Pontiac, Mich.
W4XB	Fourth district: Miami Beach, Fla.	W8XL	Cuyahoga Heights Village, Ohio.
W6XN	Sixth district: Dixon, Calif.	W9XB	Ninth district: Chicago, Ill.

## 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, 1931, and to the International List of Fixed and Land Stations published by the Berne bureau]

- ALITAK, ALASKA.—Fy., 227 (1,320), 268 (1,120), 274 (1,095).  
 ALITAK, ALASKA, radio (Kodiak Island).—Class, strike out FX; fy., strike out 227 (1,320), 268 (1,120), 272 (1,105); service, strike out PR.  
 ANNETTE ISLAND, ALASKA, KIBL.—Licensee, Pacific American Fisheries.  
 ANNETTE ISLAND, ALASKA, radio.—Class, strike out FX; fy., strike out 256 (1,170), 274 (1,095); service, strike out PR; licensee, Pacific American Fisheries.  
 BECHAROF, ALASKA, radio.—Class, strike out FX; type, strike out B; fy., strike out 246 (1,220), 272 (1,105); service, strike out PR.  
 BIRMINGHAM, ALA., WPM.—Fy., strike out 169 (1,775), 3,105 (96.61), 3,420 (87.7), 5,525 (54.3), 6,515 (46.05), add 163 (1,840).  
 CHATHAM, ALASKA, radio.—Read Chatham, Alaska KGIN; class strike out FC; fy., 2,538 (118.2) only; service, strike out PG.  
 CHIGNIK, ALASKA, radio KHC.—Class, strike out FX; fy., strike out 246 (1,220), 252 (1,190), 272 (1,105); service, strike out PR.  
 CLARKS POINT, ALASKA, radio.—Class, strike out FX; type, strike out B; fy., strike out 246 (1,220), 272 (1,105); service, strike out PR.  
 CYPRESS, CALIF. KGX.—Fy., 7,430 (40.38) only.  
 DALY, ALASKA, KIBI.—Licensee, Pacific American Fisheries.  
 DALY, ALASKA, radio.—Class, strike out FX; fy., strike out 222 (1,350), 272 (1,105); service, strike out PR; licensee, Pacific American Fisheries.  
 DETROIT, MICH. (Belle Isle) WPDZ.—Fy., strike out 2,410 (124.5), add 2,414 (124.27).  
 DRIER BAY, ALASKA, radio.—Class, strike out FX; type, strike out A3; fy., strike out 212 (1,415), 219 (1,370), 274 (1,095), 2,320 (129.3), 3,160 (94.9); service, strike out PR.  
 DUNDAS, ALASKA, radio.—Class, strike out FX; fy., strike out 246 (1,220), 256 (1,170); service, strike out PR.  
 EGEKIK, ALASKA, radio.—Fy., strike out 3,184 (94.22), add 3,190 (94).  
 EKUK, ALASKA, radio.—Fy., strike out 3,184 (94.22), add 3,190 (94).  
 FALSE PASS, ALASKA, radio.—Class, strike out FX; fy., strike out 227 (1,320), 252 (1,190); service, strike out P.  
 FUNTER, ALASKA, radio.—Class, strike out FX; type, strike out A3; fy., strike out 246 (1,220), 2,320 (129.3), 3,166 (94.75); service, strike out PR.  
 HAWK INLET, ALASKA, radio.—Class, strike out FX; fy., strike out 217 (1,380), 246 (1,220); service, strike out PR.  
 HICKSVILLE, N. Y., WJQ.—Fy., strike out 4,745 (63.22).  
 HIDDEN INLET, ALASKA, KICB.—Fy., strike out 2,320 (129.3), add 2,566 (116.91).  
 HIDDEN INLET, ALASKA, radio.—Class, strike out FX; fy., strike out 252 (1,190), 274 (1,095), 2,320 (129.3); service, strike out PR.  
 HONOLULU, HAWAII, KDG.—Fy., strike out 5,335 (56.23), add 7,340 (40.87), 7,355 (40.79), 7,955 (37.72).  
 HOOD BAY, ALASKA, radio.—Class, strike out FX; fy., strike out 212 (1,415), 246 (1,220); service, strike out PR.  
 IKATAN, ALASKA, KIBO.—Licensee, Pacific American Fisheries.  
 IKATAN, ALASKA, radio.—Class, strike out FX; fy., strike out 222 (1,350), 252 (1,190); service, strike out PR; licensee, Pacific American Fisheries.  
 JOLO, P. I., radio (Jolo).—Ship schedule, strike out.  
 KAKE, ALASKA, radio.—Class, strike out FX; type, strike out A2, A3; fy., strike out 262 (1,145), 274 (1,095), 2,320 (129.3), 3,166 (94.75); service, strike out PR.  
 KARLUK, ALASKA, radio (Kodiak Island).—Class, strike out FX; fy., strike out 227 (1,320), 268 (1,120), 272 (1,105); service, strike out PR.  
 KATALLA, ALASKA, radio.—Class, strike out FX; fy., strike out 178 (1,685); service, strike out PR.  
 KENAI, ALASKA, radio KLD.—Class, strike out FX; fy., strike out 219 (1,370), 256 (1,170); service, strike out P.  
 KENAI, ALASKA, radio KYZ.—Class, strike out FX; fy., strike out 212 (1,415), 219 (1,370), 3,184 (94.22); service, strike out P.  
 KETCHIKAN, ALASKA, radio.—Class, strike out FX; type, strike out A3; fy., strike out 2,320 (129.3), 3,160 (94.9), add 2,512 (119.42); service, strike out P.  
 KING COVE, ALASKA, KIBM.—Licensee, Pacific American Fisheries.



- KING COVE, ALASKA, radio.—Class, strike out FX; fy., strike out-222 (1,350), 252 (1,190); service, strike out PR; licensee, Pacific American Fisheries.
- KOGGIUNG, ALASKA, radio.—Fy., see Egegik, Alaska radio.
- KVICHAK, ALASKA, radio KHB.—Class, strike out FX; fy., strike out 246 (1,220), 272 (1,105); service, strike out PR.
- LATOUCHE, ALASKA, radio.—Class, strike out FX; fy., strike out 219 (1,370); service, strike out PR.
- LAZY BAY, ALASKA, KIBJ.—Licensee, Pacific American Fisheries.
- LAZY BAY, ALASKA, radio.—Class, strike out FX; fy., strike out 222 (1,350), 252 (1,190), 268 (1,120); service, strike out PR; licensee, Pacific American Fisheries.
- LIBBYVILLE, ALASKA, KIAL.—Fy., strike out 272 (1,105), 3,184 (94.22), add 274 (1,095), 3,190 (94).
- LIBBYVILLE, ALASKA, radio.—Class, strike out FX; type, A1; fy., strike out 219 (1,370), 256 (1,170), 272 (1,105), 3,184 (94.22); service, strike out PR.
- LOCKANOK, ALASKA, radio.—Fy., see Egegik, Alaska radio.
- LOS ANGELES, CALIF, KGVW.—Fy., strike out 1,554 (193.05).
- MEMPHIS, TENN, WPI.—Fy., 163 (1,840), 229 (1,310), 438 (6,850), 3,120 (96.2), 4,780 (62.76), 5,520 (54.35), 6,210 (48.31), 6,250 (48).
- MINNEAPOLIS, MINN., KQP.—Fy., 163 (1,840), 438 (6,850), 3,120 (96.2), 4,780 (62.76), 6,210 (48.31), 6,250 (48).
- MOBILE, ALA., WPP.—Fy., strike out 165 (1,820), 3,112 (96.4), 3,420 (87.7), 4,116 (72.88), 5,525 (54.3), 6,515 (46.05), add 163 (1,840), 3,120 (96.2), 4,780 (62.76), 6,210 (48.31), 6,250 (48).
- NAKEEN, ALASKA (Bristol Bay) KICD.—Fy., see Hidden Inlet, Alaska KICB.
- NAKEEN, ALASKA, radio (Bristol Bay).—Class, strike out FX; fy., strike out 178 (1,685), 272 (1,105), 2,320 (129.3); service, strike out P.
- NAKNEK, ALASKA, radio.—Class, strike out FX; fy., strike out 246 (1,220), 268 (1,120), 272 (1,105); service, strike out PR.
- NUSHAGAK, ALASKA, radio KNJ.—Class, strike out FX; fy., strike out 256 (1,170), 272 (1,105); service, strike out PR.
- NUSHAGAK, ALASKA, radio KNO.—Fy., strike out 3,184 (94.22), add 3,190 (94).
- NUSHAGAK, ALASKA, radio KZV.—Class, strike out FX; fy., strike out 262 (1,145), 272 (1,105); service, strike out P.
- OKLAHOMA CITY, OKLA., KGSC.—Fy., add 5,510 (54.45), 5,540 (54.15).
- PALO ALTO, CALIF., KWP.—Fy., add 15,535 (19.311).
- PILLAR BAY, ALASKA, KIBR.—Licensee, Pacific American Fisheries.
- PILLAR BAY, ALASKA, radio.—Class, strike out FX; fy., strike out 222 (1,350), 262 (1,145), 274 (1,095); service, strike out P; licensee, Pacific American Fisheries.
- PILOT POINT, ALASKA, radio.—Class, strike out FX; type, strike out B; fy., strike out 246 (1,220), 272 (1,105); service, strike out PR.
- PORT ALEXANDER, ALASKA, radio.—Class, strike out FX; fy., 2,538 (118.2) only; service, strike out PR.
- PORT ALTHORP, ALASKA, radio.—Class, strike out FX; type, strike out A3; fy., strike out 246 (1,220), 2,320 (129.3), 3,166 (94.75); service, strike out PR.
- PORT ARMSTRONG, ALASKA, radiotelephone.—Fy., strike out 3,178 (94.39), add 2,994 (100.2).
- PORT MOLLER, ALASKA, KIBK.—Licensee, Pacific American Fisheries.
- PORT MOLLER, ALASKA, radio.—Class, strike out FX; fy., strike out 222 (1,350), 252 (1,190); service, strike out PR; licensee, Pacific American Fisheries.
- QUADRA, ALASKA, radio.—Class, strike out FX; fy., strike out 256 (1,170), 274 (1,095); service, strike out PR.
- ROSE INLET, ALASKA, radio.—Class, strike out FX; type, strike out A3; fy., strike out 274 (1,095), 2,320 (129.3), 3,166 (94.75); service, strike out PR.
- RUBY (permanently moored vessel in Koggiung River), ALASKA.—Service, strike out P, add PR.
- ST. PAUL, MINN. (municipal airport).—Loc., changed to Minneapolis, Minn. (municipal airport), 93° 12' 56" W., 44° 53' 30" N.
- SANTA FLAVIA, radio (moored vessel in Nushagak River), ALASKA.—Class, strike out FX; fy., strike out 256 (1,170), 272 (1,105); service, strike out PR.
- SAYVILLE, N. Y., WKS.—Fy., add 16,285 (18.22).
- SAYVILLE, N. Y., WKT.—Fy., add 16,370 (18.326).
- SELDOVIA, ALASKA, radio.—Class, strike out FX; fy., strike out 178 (1,685); service, strike out P.
- STEAMBOAT BAY, ALASKA, radio (Noyes Island).—Class, strike out FX; fy., strike out 256 (1,170), 268 (1,120), 274 (1,095), 2,428 (123.55), 3,160 (94.93); service, strike out PR.

- TAMPA, FLA.—Accts., R. M. C. A., effective April 1, 1932.
- TAKU, ALASKA, radio.—Class, strike out FX; fy., strike out 220 (1,365), 246 (1,220); service, strike out P.
- TYEE, ALASKA, radio.—Class, strike out FX; fy., 222 (1,350), 262 (1,145), 274 (1,095), 2,428 (123.55); service, strike out PR.
- UGANIK, ALASKA, KIBH.—Licensee, Uganik, Fisheries (Inc.).
- UGANIK, ALASKA, radio.—Class, strike out FX; fy., 217 (1,380), 227 (1,320), 268 (1,120); service, strike out PR; licensee, Uganik Fisheries (Inc.).
- UNION BAY, ALASKA, KIBW.—Fy., see Hidden Inlet, Alaska KICB.
- UNION BAY, ALASKA, KICG.—Fy., 3,265 (89.15) read 3,265 (91.88).
- UNION BAY, ALASKA, radio.—Class, strike out FX; fy., strike out 252 (1,190), 274 (1,095), 2,320 (129.3); service, strike out PR.
- UYAK, ALASKA, radio KHA.—Class, strike out FX; fy., strike out 227 (1,320), 268 (1,120), 272 (1,105), 2,428 (123.55); service, strike out PR.
- UYAK, ALASKA, radio KHV.—Class, strike out FX; fy., strike out 256 (1,170), 268 (1,120); service, strike out PR.
- WARREN, ALASKA, KIBP.—Licensee, Pacific American Fisheries.
- WARREN, ALASKA, radio.—Class, strike out FX; fy., strike out 222 (1,350), 272 (1,105); service, strike out PR; licensee, Pacific American Fisheries.
- WATERFALL, ALASKA, KIBY.—Fy., see Hidden Inlet, Alaska KICB.
- WATERFALL, ALASKA, radio.—Class, strike out FX; fy., strike out 178 (1,685), 268 (1,120), 274 (1,095), 2,320 (129.3), 3,172 (94.57); service, strike out PR.
- YAKUTAT, ALASKA, radio.—Class, strike out FX; fy., strike out 220 (1,365), 272 (1,105); service, strike out PR.
- ZACHAR BAY, ALASKA, KIBN.—Fy., add 252 (1,190); licensee, Pacific American Fisheries.
- ZACHAR BAY, ALASKA, radio.—Class, strike out FX; fy., strike out 222 (1,350), 252 (1,190), 268 (1,120); service, strike out PR; licensee, Pacific American Fisheries.
- Strike out all particulars of the following-named stations: Big Port Walter, Alaska, radio; Burnett Inlet, Alaska, radio; Evans Bay, Alaska, radio; Fort Wayne, Ind. (WSDJ); Hydaburg, Alaska; Juneau, Alaska; Kahuku, Hawaii, KGI; Kahuku, Hawaii, KIE; Los Angeles, Calif., KGVZ; Mary Island Light-house, Alaska; Mazama (permanently moored vessel at Herendeen Village, Alaska); Mount Baker (moored vessel near Ugashik, Alaska); Naknek, Alaska, KMK; Naknek, Alaska (Hyades-moored vessel); New Brunswick, N. J., WIA; Nushagak, Alaska, radio KLJ; Ponce, P. R.; Port Armstrong, Alaska; Port Herbert, Alaska; Red Bluff Bay, Alaska, radio; Saginaw Bay, Alaska; Sand Point, Alaska (permanently moored vessel "International"); San Juan, P. R., NXA; San Juan, P. R., WGX; Seattle, Wash., KGQX; Shepard Point, Alaska, radio; Snug Harbor, Alaska; Tambang, P. I. (Camarines Sur); Ugashik, Alaska; Uzinki, Alaska.

#### 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, 1931, and to the International List of Ship Stations, published by the Berne bureau]

- A. A. AUGUSTUS.—Fy., class L.
- A. D. MACBETH.—Power, 12/4.
- ADMIRAL EVANS, ADMIRAL FARRAGUT, ADMIRAL SCHLEY.—Fy., class L.
- AFEL.—Power, 70/12.
- ALABAT.—Type, A2; power, 20/1.5
- ALBAY.—Fy., strike out 396.8 (756), add 383 (785); power, 21/4
- AMERICAN LEGION.—Accts., R. M. C. A.
- ANTIGUA.—Call changed to KDCJ; power, 30/12; accts., T. R. T. Co.
- ARGUS.—Type, A2; fy., strike out 458 (655), add 451.1 (665); power, 25/3.
- ATLANTIC GULF.—Type, add A1; fy., strike out 429 (700), add 394 (760), 8,330 (36); power, 27/9.
- BICOL.—Power, 20/2.
- BOHOL.—Type, A2; power, 21/3.
- CAMPEADOR.—Power, 25/4.
- CAPITAN LUIS.—Power, 12/4.
- CEBU.—Fy., strike out 444.4 (675), add 400 (750); power, 21/6.
- COMPANIA DE FILIPINAS.—Fy., add 429 (700); power, 21/3.
- CONCORD.—Hours, strike out N, add X.
- COTABATO.—Type, A2; power, 23/1.
- DOMINGA-A.—Power, 23/4.

- DON JUAN O.—Power, 23/2.  
 DOS HERMANOS.—Power, 23/5.  
 EELBECK.—Fy., class L.  
 EXTON.—Hours, strike out N.  
 FERNANDEZ HERMANOS.—Power, 23/5.  
 F. ESCANO.—Power, 20/2.  
 FIRE BOAT No. 31.—Name changed to Thomas A. Ring.  
 FIRE BOAT No. 44.—Name changed to Angus J. McDonald.  
 FIRE BOAT No. 47.—Name changed to John P. Dowd.  
 FLORENCE D.—Type, add A2; fy., add 400 (750), 4,825 (62.18); power, 26/6.5.  
 FORTITUDE.—Power, 15.2/1.5.  
 FORTUNA.—Fy., add 455 (660); power, 26/1.5.  
 FRANK H. BUCK, GEORGE WASHINGTON KDCL.—Fy., class L.  
 GEORGE WASHINGTON WECJ.—Power, 24/12.  
 GOVERNOR TAFT.—Type, A2; power, 12/3.5.  
 GULFSTATE.—Fy., class L.  
 HAITI.—Power, 22/10.  
 HALSEY, HENRY S. GROVE.—Fy., class L.  
 HERMAN F. WHITON.—Accts., M. R. T. Co.  
 ISIDORO PONS.—Fy., add 419.6 (715); power, 23/2.  
 ISLAS FILIPINAS.—Fy., strike out 455 (660), add 400 (750); power, 23/2.  
 ISLAS VISAYAS.—Type, strike out B, add A2; fy., strike out 425 (705), add 429 (700); power, 12/5.5.  
 JEFFERSON MYERS, JOHN A. KLING.—Fy., class L.  
 JOLO.—Fy., strike out 396.8 (756), add 429 (700); power, 25/5.  
 KANLAON.—Type, A2; power, 21/5.  
 KENOWIS, KENTUCKY.—Fy., class L.  
 KINAU.—Type, A2; fy., strike out 438 (685), add 455 (660); power, 15/1.5.  
 KOLAMBUGAN.—Type, A2; power, 20/2.  
 LAMORA.—Fy, class L.  
 LEPU'S.—Type, A2; power, 23/6.  
 LEYTE.—Fy., strike out 375 (800), add 400 (750); power, 21/4.5.  
 LIDIV.—Correct call signal WGEV; type, A2; fy., 2,362 (127.01).  
 LOS ALAMOS.—Owner, Sabine Transportation Co. (Inc.).  
 LUZON.—Power, 20/5.  
 MACTAN.—Power, 21/5.  
 MAGALLANES.—Power, 23/5.  
 MATTHEW J. BOYLE.—Type, A3; fy., 1,558 (192.55); hours, X.  
 MAUBAN.—Type, add B; fy., add 448 (670); power, 25/6.  
 MAYAN.—Type, A2; power, 33/2.  
 MELVILLE DOLLAR.—Accts., Dollar S. S. Lines (Inc.).  
 MINEOLA.—Owner, William R. Virtue.  
 MONTANES.—Power, 16/4.  
 MONTEREY.—Power, 35/11.  
 MONTEREY LIFEBOAT No. 1.—Type, A2; fy., 500 (600), 5,520 (54.35).  
 MONTEREY LIFEBOAT No. 2.—Type, A2; fy., 500 (600), 5,520 (54.35).  
 MUNARGO.—Accts., R. M. C. A.  
 MUNORLEANS.—Hours, strike out X, add N.  
 NAGA.—Type, A2; power, 20/1.8.  
 NEGROS.—Power, 43/5.  
 NEIL MACLEOD.—Fy., strike out 397 (756), add 400 (750); power, 28/5.  
 NTRA. SRA. DE LA PAZ.—Power, 26/4.  
 PACIFIC SPRUCE.—Fy., class L.  
 PALAWAN.—Power, 20/2.5.  
 PAN AMERICA.—Accts., R. M. C. A.  
 PANAY.—Fy., add 400 (750); power, 30/10.  
 POINT ANCHA.—Accts., M. R. T. Co.  
 POINT CHICO.—Accts., M. R. T. Co.  
 POINT SALINAS.—Accts., M. R. T. Co.  
 PRINCESA.—Type, A2; power, 16/3.  
 RIZAL.—Type, A2; power, 20/5.  
 ROBERT P. CLARK.—Fy., strike out 410 (730).  
 SALVAGER.—Type, add A2; power, 26/12.  
 SAMAL.—Fy., strike out 375 (800), add 392.2 (765); power, 31/7.  
 SAMAR.—Fy., add 500 (600); power, 20/1.  
 SAN JUAN.—Type, strike out A arc.  
 SANTA BARBARA.—Fy., class L.

SANTA CECILIA WADT.—*Read Santa Cecilia.*  
 SANTA ELISA, SANTA TERESA.—Panama Mail S. S. Co. (Inc.).  
 SANTOAMARO.—Service, strike out P; add PG.  
 SANTO DOMINGO.—Power, 21/4.  
 SHELTON, SIBONEY.—Fy., class L.  
 SORSOGON.—Fy., strike out 571.4 (525), add 429 (700); power, 23/10.  
 SOUTHERN CROSS.—Fy., strike out class H, add class L; accts., R. M. C. A.  
 SUGBU.—*Read Sugbo*; power, 28/5.5.  
 SURINAME.—Fy., class L.  
 TIDE.—Power, 15/5.  
 TONG YEK.—Fy., strike out 425 (705), add 455 (660); power, 33/7.  
 TOPA TOPA.—Owner, Waterman S. S. Corporation; accts., M. R. T. Co.  
 TRABAJADOR.—Type, A2; power, 10/5.  
 ULISES.—Fy., strike out 400 (750), add 455 (660); power, 21/2.  
 VENUS KZAV.—Fy., strike out 400 (750), add 429 (700), 8,330 (36); power, 30/10.  
 VIZCAYA.—Fy., strike out 315 (952), add 398.9 (752); power, 27/9.  
 WESTERN WORLD.—Accts., R. M. C. A.  
 WEST HIKA, WEST MADAKET.—Fy., strike out 454 (660).  
 YLOILO.—Fy., strike out 400 (750), add 429 (700); power, 20/3.  
 YORBA LINDA.—Fy., class L.  
 YUSINGCO.—Power, 20/3.

Strike out all particulars of the following-named stations: Anna Helen, Aquilo, Ballcamp, Bidwell, Charles Nelson, Chester, City of Victoria, Conseo, Dorothy WKDD, Forest King, Frango, George L. Olson, Golden Forest, Haleakala, Kayoia, Kittiwake, Mahukona, Mary Pinchot, Nomad, Nor'easter, North Dakota, Sahlou, Samona, Saramar III, S. O. Co. No. 95, Spitkit II, Sucubaco, Sudawsonco, Suelco, Sumanco, Sunelseco, Sunewco, Vega, Wallowa, Whitney Olson, Willamette, Zelda, ZR-3.

#### 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, 1931, and to the International List of Aircraft Stations, published by the Berné bureau]

C-183-E, C-185-E, C-187-E, C-188-E, C-189-E, C-190-E.—Licensee, National Air Transport (Inc.).  
 NC-7-A (Puritan).—Type, A1, A3; fy., 3,105 (96.62), 5,520 (54.35).  
 NC-129-M.—Licensee, Transcontinental & Western Air (Inc.).  
 NC-134-E (No. 23).—Type, A3; fy., 2,854 (105.11), 3,005 (99.83), 3,105 (96.62), 5,377.5 (55.79).  
 NC-328-N (No. 401 W. A. E.).—Licensee, Transcontinental & Western Air (Inc.).  
 NC-331-N.—Licensee, Transcontinental & Western Air (Inc.).  
 NC-333-N.—Licensee, Transcontinental & Western Air (Inc.).  
 NC-334-N (Fokker 3).—Licensee, Transcontinental & Western Air (Inc.).  
 NC-392-E (F-109).—Licensee, Transcontinental & Western Air (Inc.).  
 NC-447-W (Travel-aire).—Type, A3; fy., 2,854 (105.11), 2,906 (103.24), 3,005 (99.83), 3,072.5 (97.64), 3,082.5 (97.32), 3,088 (97.15), 3,105 (96.62), 3,162.5 (94.86), 3,172.5 (94.56), 3,182.5 (94.26), 3,222.5 (93.09), 3,232.5 (92.8), 3,242.5 (92.52), 3,257.5 (92.09), 3,447.5 (87.02), 3,457.5 (86.771), 3,467.5 (86.52), 3,485 (86.08), 4,917.5 (61), 5,377.5 (55.79), 5,510 (54.45), 5,540 (54.15), 5,572.5 (53.835), 5,582.5 (53.74), 5,602.5 (53.55), 5,612.5 (53.45), 5,632.5 (53.26), 5,662.5 (52.71), 5,672.5 (52.89), 5,692.5 (52.71).  
 NC-455-E (F-110), NC-456-E (F-111), NC-528-M.—Licensee, Transcontinental & Western Air (Inc.).  
 NC-537-E (No. 22).—Type, A3; fy., see NC-134-E (No. 23).  
 NC-583-K (F-115).—Licensee, Transcontinental & Western Air (Inc.).  
 NC-842-M.—Licensee, Boeing Air Transport (Inc.).  
 NC-854-E (No. 25).—Type, A3; fy., see NC-134-E (No. 23).  
 NC-7991 (No. 21).—*Read NC-7791 (No. 21).*  
 NC-8047 (F-105), NC-8048 (F-104).—Licensee, Transcontinental & Western Air (Inc.).  
 NC-8411, NC-8413, NC-9608 (The City of New York), NC-9607, NC-9638, NC-9639, NC-9641, NC-9643 (City of Albuquerque), NC-9645 (City of Wichita), NC-9646, NC-9647 (City of Indianapolis), NC-9648 (City of Columbus), NC-9650 (City of St. Louis), NC-9651 (City of Philadelphia), NC-9686.—Fy., add 5,510 (54.44), 5,540 (54.15).  
 NC-10225-M, NC-10339.—Licensee, Boeing Air Transport (Inc.).

NC-10822, NC-10823, NC-10871.—Type, A3; fy., 2,906 (103.24), 3,072.5 (97.64), 3,082.5 (97.32), 3,088 (97.15), 3,105 (96.62), 5,510 (54.45), 5,540 (54.15), 5,672.5 (52.89), 5,692.5 (52.71).

Strike out all particulars of the following-named stations: C-291, G-10118 (Glider), NC-1V (Arf Pint), NC-48-K, NC-311-N, NC-336-H (Petersburg), NC-985-H, NC-4616, NC-9190, NC-9662, NR-115-W (Sirius), NR-199-E, NR-211, NR-227-W, NR-687-E, R-331-E (Pride of Hollywood), R-898-W, R-3622 (Zenith Albatross).

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

[Alterations and corrections to be made to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1931, and to the International List of Fixed and Land Stations, published by the Berne bureau]

FORT PREBLE, ME. (Portland).—Loc., changed to Fort Williams, Me., 70° 12' 10'' W., 43° 38' 50'' N.

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

[Alterations and corrections to be made to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1931, and to the International List of Ship Stations, published by the Berne bureau]

Strike out all particulars of the following-named stations: Bache, Harbor Trader, Ranger, WTET, U. S. Customs Patrol Boat No. 522, U. S. Customs Patrol Boat No. 538.

#### GOVERNMENT 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, 1931, and to the International List of Aircraft Stations, published by the Berne bureau]

NS-1 KHRLO.—Type, A3; hours, X.

NS-1Y KHRWD.—Type, A1, A3; hours, X.

NS-2Y KHRXC.—Type, A3; hours, X.

#### MARINE RADIOBEACON STATIONS

[Alterations and corrections to be made to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1931, and to the International List of Stations Performing Special Services, published by the Berne bureau]

BLUNTS REEF LIGHTSHIP, CALIF.—Fy., strike out 305 (984), add 290 (1,034); hours, change to transmits continuously during thick or foggy weather and in clear weather from 15 to 30 minutes past each hour.

POINT ARENA LIGHT STATION, CALIF.—Fy., strike out 295 (1,017), add 290 (1,034); hours, change to transmits continuously during thick or foggy weather and in clear weather from 15 to 30 minutes past each hour.

#### COMMERCIAL AND GOVERNMENT LAND, SHIP, AIRCRAFT, RADIOBEACON, AND RADIO-COMPASS STATIONS, ALPHABETICALLY BY CALL SIGNALS

KDUL, read Thunder Bay Quarries; KFPA, read Thomas A. Ring; KFPC, read Angus J. McDonald; KFPD, read John P. Dowd; KGIN, read Chatham, Alaska; KHVOL, read NC-7791 (No. 21); KNWA, read Minneapolis, Minn. (municipal airport); KZBB, read Sugbo; WADT, read Santa Cecilia; WGEX, read WGEV; WHEG, call changed to KDCJ; KDCJ, read Antigua; WTN, read Fort Williams, Me.; strike out all particulars following the call signals KDBH, KDBR, KDDH, KDEQ, KDFJ, KDMO, KDQL, KDTI, KENM, KENV, KESQ, KEXJ, KFEU, KFGS, KFGU, KFJ, KFZU, KGBF, KGI, KGIP, KGNS, KGQW, KGQX, KGRR, KGVZ, KGXR, KHBUF, KHCAL, KHD, KHE, KHH, KHIR, KHIVE, KHIXC, KHIZA, KHNJQ, KHNRI, KHNRF, KHNXC, KHNYP, KHNZA, KHRHS, KHRKP, KHTFU, KHVAZ, KHVCX, KHVDW, KIE, KJJ, KLJ, KMK, KMU, KOCJ, KOV, KP, KP, KRU, KUR, KUSC, KUZJ, KVC, KXS, KYD, KZFW, KZU, NWD, NXA, WCDW, WG, WHDC, WKDD, WHDK, WIA, WKDO, WLCV, WMDN, WOBI, WOCH, WODH, WQDH, WQDN, WRBZ, WSDJ, WTDK, WTDL, WRBB, WSBB, WTDI, WTD, WTEA, WTET.

## 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, 1931 and the International List of Broadcasting Stations, published by the Berne bureau]

- KCMC (Tupelo, Miss.).—Loc., changed to Texarkana, Ark., 94° 02' 02'' W., 33° 26' 49'' N.; post-office address, 2600 Locust St.; fy., 1,420 (211.3)  
 KGGF (South Coffeyville, Okla.).—Studio loc., Coffeyville, Kans.  
 KGKX (Sandpoint, Idaho).—Licensee, Sandpoint Broadcasting Co.  
 KRGV (Harlingen, Tex.).—Loc., 97° 41' 51'' W., 26° 11' 40'' N.  
 KRKD (Inglewood, Calif.).—Trans., and studio location changed to Los Angeles, Calif., 118° 14' 33'' W., 33° 33' 13'' N.; post-office address, 541 South Spring St.  
 KTRH (Houston, Tex.).—Licensee, KTRH Broadcasting Co.  
 KTSA (San Antonio, Tex.).—Loc., 98° 25' 17'' W., 29° 25' 30'' N.  
 KWCR (Cedar Rapids, Iowa).—Loc., 91° 40' 04'' W., 41° 58' 36'' N.; post-office address changed to Third Ave. and Third St.; fy., 1,420 (211.3).  
 KWSC (Pullman, Wash.).—Loc., 117° 09' 49'' W., 46° 43' 42'' N.  
 WASH (Grand Rapids, Mich.).—Trans., location changed to Furnwood, Mich. (near Jenison), 85° 50' 00'' W., 42° 49' 10'' N.; studio location, Grand Rapids, Mich.  
 WCSC (Charleston, S. C.).—Licensee, South Carolina Broadcasting Co.  
 WENC (Americus, Ga.).—Power, 100 daytime only.  
 WFBC (Knoxville, Tenn.).—Licensee, Virgil V. Evans.  
 WGN (Elgin, Ill.).—Licensee, WGN (Inc.).  
 WHAP (Carlstadt, N. J.-New York, N. Y.).—Call changed to WFAB.  
 WIAS (Ottumwa, Iowa).—Fy., 1,310 (229).  
 WLIB (Elgin, Ill.).—Licensee, WGN (Inc.).  
 WOS (Jefferson City, Mo.).—Licensee, Missouri State Marketing Bureau.  
 WREN (Lawrence, Kans.).—Loc., 95° 14' 40'' W., 38° 58' 30'' N.  
 Strike out all particulars of the following-named station: KFUP (Denver, Colo.).

## EXPERIMENTAL 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, 1931]

- ILLINOIS: Addison, W9XAL.—Strike out all particulars.  
 MASSACHUSETTS: Boston, W1XD.—Strike out all particulars.  
 MICHIGAN: Houghton, W9XAW.—Fy., strike out 1,604 (187.03), 3,256 (92.5), 4,795 (62.57), 8,650 (34.68), 12,850 (23.35), 17,300 (17.341); add 1,594 (188.21), 3,492.5 (85.9), 4,797.5 (62.53), 8,655 (34.66), 12,862.5 (23.325), 17,310 (17.33).  
 NEW JERSEY:  
 Camden, W3XAI.—Fy., 1,550 (193.5), 2,100 (142.9) to 2,200 (136.4), 43,000 (6.97) to 46,000 (6.52), 48,500 (6.18) to 50,300 (5.96), 60,000 (5) to 80,000 (3.75).  
 Holmdel, W2XN.—Fy., strike out 1,604 (187.03), 3,256 (92.5), 4,795 (62.57), 8,650 (34.68), 12,850 (23.35), 17,300 (17.341); add 1,594 (188.21), 3,492.5 (85.9), 4,797.5 (62.53), 8,655 (34.66), 12,862.5 (23.325), 17,310 (17.33).  
 Jersey City, W2XBY.—Strike out all particulars.  
 Linden, W2XCY.—Strike out all particulars.  
 Mendham, W3XR.—Fy., add 278 (1,080), 3,415 (87.84), 5,592.5 (53.63), 5,642.5 (53.16).  
 Ocean Township, W2XJ.—Fy., add 25,700 (11.67), 26,000 (11.54), 27,100 (11.07), 34,600 (8.67), 41,000 (7.32), 51,400 (5.83), and above 401,000 (.74).  
 Wayne, W2XDR.—Strike out all particulars.  
 NEW YORK:  
 Brooklyn, W2XDF.—Strike out all particulars.  
 Le Roy, W8XAC.—Strike out all particulars.  
 PENNSYLVANIA: Philadelphia, W3XM.—Strike out all particulars.

## Portable

- KENTUCKY, W10XAF.—Strike out all particulars.  
 NEW JERSEY:  
 New Jersey, W2XDE.—Strike out all particulars.  
 Hoboken, W2XDQ.—Strike out all particulars.  
 Ocean Township, W2XAV.—Fy., strike out 18,310 (16.384); add 25,700 (11.67), 26,000 (11.54), 27,100 (11.07), 34,600 (8.67), 41,000 (7.32), 51,400 (5.83), 60,000 (5) to 400,000 (.75), and above 401,000 (.74).

**NEW YORK:**

New York, W2XAN.—Strike out all particulars.

New York, W2XDM.—Fy., strike out 3,256 (92.13), 4,795 (62.56), 8,650 (34.68), 12,850 (23.35), 17,300 (17.341); add 1,594 (188.21), 3,492.5 (85.9), 4,797.5 (62.53), 8,655 (34.66), 12,862.5 (23.325), 17,310 (17.33).

New York, W2XDN.—See New York, W2XDM.

PENNSYLVANIA: Delaware County, W3XAA.—Strike out all particulars.

SIXTH RADIO DISTRICT, W6XAC.—Fy., strike out 1,604 (187.03), 3,256 (92.5), 4,795 (62.57), 8,650 (34.68), 12,850 (23.35), 17,300 (17.341); add 1,594 (188.21), 3,492.5 (85.9), 4,797.5 (62.53), 8,655 (34.66), 12,862.5 (23.325), 17,310 (17.33).

WEST VIRGINIA (State of), W8XAE.—Strike out all particulars.

UNITED STATES—throughout W10XAU.—Strike out all particulars.

*Aircraft*

NC-417-H, W10XAA.—Fy., add 3,415 (87.84), 5,592.5 (53.63), 5,642.5 (53.16).  
 NC-952-V, W2XBX.—Fy., add 3,415 (87.84), 5,592.5 (53.63), 5,642.5 (53.16).

*Vessels*

JAMES MACNAUGHTON, W10XAX.—Strike out all particulars.

RELAY BROADCASTING AND BROADCASTING PICK-UP 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, 1931]

PENNSYLVANIA: East Pittsburgh, W8XK.—Loc., changed to Saxonburg, Pa. (near).

VISUAL BROADCASTING 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, 1931]

ILLINOIS: Downers Grove, W9XR.—Strike out all particulars.

**NEW YORK:**

Beacon, W2XBU.—Strike out all particulars.

Long Island City, W2XBO.—Strike out all particulars.

**MISCELLANEOUS**

CHANGES IN THE LIST OF VESSELS EQUIPPED WITH A RADIO COMPASS

[Additions to the lists published in Commercial and Government Radio Stations of the United States, edition June 30, 1931, and to the International List of Ships Stations published by the Berne bureau]

Name	Call signal	Owner
<b>COMMERCIAL</b>		
Antigua.....	KDCJ	United Mail S. S. Co.
City of Los Angeles.....	KOZC	Los Angeles S. S. Co.
Monterey.....	WHEX	Oceanic S. S. Co. (Inc.).
Onelda.....	KDJQ	Ford Motor Co.
Orion.....	WODE	Carl J. Forstmann.

The radio compass has been removed from the following-named vessels: Commercial—Chester, Eastern Temple, Helen Whittier.

LIST OF GOVERNMENT SHIP STATIONS, CALL SIGNALS OF WHICH ARE CHANGED  
EFFECTIVE MAY 1, 1932.

Ship	Old call	New call	Owner or operated by
Annapolis	NABX	WTDN	State of Pennsylvania.
Boxer	NIQM	WTDO	Department of Interior, Bureau of Education.
Briarcliff	NEZB	WTDQ	New York Naval Militia.
California State	NIJB	WTDQ	State of California.
Discoverer	NIJT	WTEB	Department of Commerce, Coast and Geodetic Survey.
Dorothy	NURN	WTDJ	Department of Commerce, Bureau of Fisheries.
Elsie	NIZM	WTEC	Department of Commerce, Coast and Geodetic Survey.
Empire State	NORF	WTDT	State of New York.
Explorer	NAV M	WTED	Department of Commerce, Coast and Geodetic Survey.
Fathomer	NESR	WTEE	Do.
Gilbert	NEFD	WTEF	Do.
Guide	NIJN	WTEG	Do.
Helianthus	NIZN	WTEH	Do.
Hydrographer	NEDC	WTEI	Do.
Lydonia	NAJT	WTEJ	Do.
Marindin	NIZP	WTEK	Do.
Marinduque	NIGV	WTEZ	Do.
Mikawe	NIZQ	WTEM	Do.
Mitchell	NIZR	WTEN	Do.
Nantucket	NAMS	WTD R	State of Massachusetts.
Natoma	NUGG	WTEO	Department of Commerce, Coast and Geodetic Survey.
Oceanographer	NEDF	WTEP	Do.
Ogden	NIZS	WTEQ	Do.
Pathfinder	NENC	WTER	Do.
Pioneer	NIJL	WTES	Do.
President	NURL	WTDS	Post Office Department.
Rodgers	NIET	WTEU	Department of Commerce, Coast and Geodetic Survey.
Scandinavia	NIZV	WTEV	Do.
Surveyor	NEVG	WTEW	Do.
Westdahl	NIQP	WTEX	Do.
Wildcat	NIVM	WTEY	Do.

EXAMINATIONS FOR UNLIMITED AMATEUR PHONE OPERATORS' LICENSE BY MAIL  
DISCONTINUED

Effective April 15, 1932, examinations for unlimited amateur phone privileges by mail will be discontinued. Applicants desiring examination for this privilege must appear personally before one of the examining officers of the Radio Division at one of the examining points, which may be either the district headquarters, a suboffice, or any city visited by an examining officer.

## RENEWALS OF TEMPORARY AMATEUR OPERATORS' LICENSES DISCONTINUED

After one year from April 15, 1932, renewals of temporary amateur class operators' licenses will not be issued. Holders of this class of license will be expected to pass the regular amateur examination during the 1-year term of such license, and failing to pass this examination, the temporary amateur license held will be canceled.

## REGULATIONS GOVERNING THE ISSUANCE OF RENEWAL AMATEUR OPERATORS' LICENSES

An applicant should appear at an examining office for a code test in order that the division may be apprised of his ability to copy and transmit code in accordance with the regulations; or, in lieu thereof; submit an affidavit stating that his or her station has been in operation within the last three months prior to the expiration of license and naming three licensed amateurs with whom the applicant has been in communication by Continental Code, such amateurs corroborating this statement and affixing their signatures to the said affidavit.

Service at an amateur phone station exclusively will not be considered for renewal of an amateur class license unless the applicant successfully passes a code test as set forth in the regulations.

## AMATEUR STATIONS TO BE OPERATED ONLY BY OPERATORS HOLDING AMATEUR OPERATORS' LICENSE:

Effective July 1, 1932, amateur stations will be operated only by operators holding amateur operators' licenses. Amateur stations now being operated by the holders of any commercial class of license will be required to pass the regular amateur examination and obtain an amateur first-class license which will authorize the operation of an amateur station.



RADIO OPERATOR CONVICTED FOR VIOLATION OF RADIO ACT

A licensed operator recently was convicted and sentenced to one year and one day in a penitentiary for the operation of an unlicensed station. In addition to this penalty his operator's license was suspended by the Secretary of Commerce.

CHANGE IN PROCEDURE FOR BROADCASTING GALE WARNINGS BY BRITISH STATIONS

On and after April 1, 1932, gale warnings will be broadcast on the frequency of 500 kc/s (600 m.) from the following-named coast stations only: Wick (GKR), Humber (GKZ), Niton (GNI), Fishguard (GRL), Valentia (GCK), Malin Head (GMH).

The warnings will be broadcast from the station or stations appropriate to the area within which the gale is expected immediately upon receipt at the station and also when this time is outside the periods of single operator watch at 18 minutes past the first hour, within the next such period. The date and time of origin will be given in each warning.

Warnings will be preceded by the safety signal TTT (— — —) repeated at short intervals 10 times on full power. The warning will be broadcast one minute later.

EXAMPLE.—“Gale warning Thursday 1230 G. M. T., easterly gale south of line Spurn head to Galway and in Dogger district.”

Gale warnings will be broadcast only when winds of gale force (force 8 of the Beaufort scale) or above are expected. When a “whole gale” (force 10 or above) is expected this will be stated.

This procedure is experimental and radio operators are requested to report to their controlling companies upon its efficiency for the information of the Mercantile Marine Department, Board of Trade, London, England, S. W. 1.

DISSEMINATION OF WARNINGS TO NAVIGATION BY BRITISH STATIONS CHANGED

On and after April 1, 1932, navigational warnings will be broadcast from stations in Great Britain and Ireland as shown in the tables hereafter.

It will be observed that in Schedule A the times at which the broadcasts will be made are 1218 and 2118 G. M. T. (approximately). In order to avoid any possibility of interference with adjacent stations, stations will as far as practicable avoid transmitting the warning simultaneously with the stations immediately adjacent to them. It may therefore occasionally happen that individual stations will begin transmitting warnings a few minutes after the exact time scheduled. The warnings will normally be broadcast only at the times mentioned in Schedule A. In cases of exceptional urgency, however, broadcasts will be made immediately upon receipt at the station as well as at these times. Warnings will be preceded by the safety signal TTT (— — —) repeated at short intervals ten times on full power. The warning will be broadcast one minute later. Warnings will be broadcast at the scheduled times for as many days as may be necessary. A warning will be repeated on request of the station concerned, at the usual coast station charge for inquiry and reply. Operators should, however, make every effort to obtain the warning at the scheduled hours of transmission.

This procedure is experimental and radio operators are requested to report to their controlling companies upon its efficiency for the information of the Mercantile Marine Department, Board of Trade, London, England, S. W. 1.

*Stations broadcasting general warnings—Schedule A*

[Warnings will be broadcast only from the station or stations nearest the danger reported]

Station	Call signal	Position, latitude, longitude	Time (G. M. T.)	Nature of service
Wick.....	GKR	58 26 N. 3 06 W.	1218, 2118	Broadcasts to shipping in the North Sea and to shipping approaching or leaving the Pentland Frith.
Humber.....	GKZ	53 20 N. 0 17 E.	1218, 2118	Broadcasts to shipping in the North Sea.
Niton.....	GNI	50 35 N. 1 17 W.	1218, 2118	Broadcasts to shipping in the English Channel and Straits of Dover.
Fishguard.....	GRL	52 01 N. 4 59 W.	1218, 2118	Broadcasts to shipping approaching or leaving St. George's Channel and the Bristol Channel.
Valentia.....	GCK	51 56 N. 10 21 W.	1218, 2118	Broadcasts to shipping in the Atlantic.
Malin Head.....	GMH	55 22 N. 7 20 W.	1218, 2118	Broadcasts to shipping in the Atlantic and to shipping approaching or leaving the Firth of Clyde, the Minches, and the North Channel.

## Stations broadcasting local warnings—Schedule B

[These warnings relate only to the Thames, Mersey, Humber, and their immediate approaches]

Station	Call signal	Position, latitude, longitude	Time (G. M. T.)	Nature of service
Humber.....	GKZ	53 20 N. 0 17 E.	-----	Advises ships approaching or leaving the Humber of dangers within the area bounded by Kilnsea beacon—No. 1 Binks buoy—Spurn Light Vessel—Halls sand bell buoy—Donna Nook beacon.
North Foreland.....	GNF	51 22 N. 1 25 E.	0200, 0800 1400, 2000	Information re wrecks in River Thames above Southend will be broadcast immediately after the casualty and at each scheduled hour of broadcast for the following 24 hours, after which no further transmission will be made. Fog warnings which will refer exclusively to visibility in Gravesend Reach, will be broadcast when necessary, in plain language, every 2 hours, until notice of improved visibility is broadcast, the latter message being transmitted once only if given during the hours of compulsory wireless watch; otherwise it will be repeated during the next such period. (See Notice to Wireless Operators No. 2 of the year 1932.)
Seaforth.....	GLV	53 28 N. 3 01 W.	-----	Advises ships approaching the port of Liverpool of dangers within the area bounded by North-West Mark (Formby point)—Northwest Lightboat—Hilbre Islet. Vessels leaving the River Mersey, and requiring such warnings by wireless, can obtain them on request to this station at the usual coast station charges for inquiry and reply.

NOTE.—All the stations in both tables broadcast on 500 kc/s (600 meters).

## BROADCASTING STATION FREQUENCY MEASUREMENTS DURING FEBRUARY

The Radio Division of the Department of Commerce during last month measured the frequency of 450 or about 75 per cent out of the approximately 600 broadcasting stations in this country; 241 or 53.5 per cent deviated less than 50 cycles, 76 or 17 per cent deviated less than 100 cycles, 63 or 14 per cent did not vary over 200 cycles, and the remaining 70 or 15.5 per cent went over 200 cycles either above or below their assigned frequency.

These figures indicate improvement over previous monthly measurements.

The following table gives the figures for the months December, 1930, to February, 1932, inclusive:

	Number stations measured	Less than 50 cycles	Less than 100 cycles	Less than 200 cycles	Over 200 cycles
December	339		35 (13.5%)	66 (16.5%)	238 (70%)
January	363	-----	54 (15%)	102 (27%)	207 (58%)
February	367	-----	99 (27%)	55 (15%)	213 (58%)
March	337	65 (19.3%)	63 (18.8%)	77 (22.8%)	132 (39.1%)
April	314	72 (22.9%)	54 (17.2%)	92 (29.3%)	96 (30.6%)
May	326	78 (23.9%)	89 (27.3%)	68 (20.9%)	91 (27.9%)
June	330	97 (29.4%)	71 (21.5%)	69 (20.9%)	93 (28.2%)
July	294	94 (32%)	70 (23.8%)	60 (20.4%)	70 (23.8%)
August	304	117 (38.5%)	64 (21%)	67 (22%)	56 (18.5%)
September	328	115 (35%)	72 (22%)	68 (21%)	73 (22%)
October	381	136 (35.7%)	97 (25.4%)	72 (18.9%)	76 (20%)
November	383	153 (40%)	86 (22.5%)	76 (20%)	68 (17.5%)
December	422	190 (45%)	98 (23.2%)	64 (15.2%)	70 (16.6%)
1932					
January	449	230 (51.2%)	94 (20.9%)	63 (14%)	62 (13.9%)
February	450	241 (53.5%)	76 (17%)	63 (14%)	70 (15.5%)

LESS THAN 50 CYCLES

Call signal	Transmitter location, studio location in parentheses	Call signal	Transmitter location, studio location in parentheses
KCRC	Enid, Okla.	KTAB	Oakland, Calif. (San Francisco).
KDB	Santa Barbara, Calif.	KTAR	Phoenix, Ariz.
KDKA	Saxonburg, Pa. (Pittsburgh).	KTAT	Birdville, Tex. (Fort Worth).
KERN	Bakersfield, Calif.	KTBR	Portland, Oreg.
KFAB	Lincoln, Nebr.	KTBS	Shreveport, La.
KFAC	Los Angeles, Calif.	KTHS	Hot Springs, Ark.
KFBK	Sacramento, Calif.	KTRH	Houston, Tex.
KFDM	Beaumont, Tex.	KTSM	El Paso, Tex.
KFDY	Brookings, S. Dak.	KVI	Des Moines, Wash. (Tacoma).
KFEQ	St. Joseph, Mo.	KVOO	Tulsa, Okla.
KFH	Wichita, Kans.	KVOR	Colorado Springs, Colo.
KFI	Buena Park, Calif. (Los Angeles).	KVOS	Bellingham, Wash.
KFJB	Marshalltown, Iowa.	KWG	Stockton, Calif.
KFJI	Klamath Falls, Oreg.	KWK	Kirkwood, Mo. (St. Louis).
KFJR	Portland, Oreg.	KWLC	Decorah, Iowa.
KFKX	Bloomington Township, Ill. (Chicago).	KXL	Portland, Oreg.
KYW		KXRO	Aberdeen, Wash.
KFLV	Rockford, Ill.	KXYZ	Houston, Tex.
KFOR	Lincoln, Nebr.	KYA	San Francisco, Calif.
KFPM	Greenville, Tex.	WAAB	Quincy, Mass. (Boston).
KFPY	Spokane, Wash.	WAAF	Chicago, Ill.
KFRC	San Francisco, Calif.	WADC	Tallmadge, Ohio (Akron).
KFRU	Columbia, Mo.	WAWZ	Zarepath, N. J.
KFSD	San Diego, Calif.	WBAA	West Lafayette, Ind.
KFVD	Culver City, Calif.	WBAL	Glen Morris, Md. (Baltimore).
KFVS	Cape Girardeau, Mo.	WBBC	Brooklyn, N. Y.
KFWB	Hollywood, Calif.	WBBM	Glenview, Ill. (Chicago).
KFWF	St. Louis, Mo.	WBRT	
KFWI	San Francisco, Calif.	WBBZ	Ponca City, Okla.
KFXD	Nampa, Idaho.	WBEN	Martinsville, N. Y. (Buffalo).
KFXF	Denver, Colo.	WBEO	Marquette, Mich.
KFXJ	Grand Junction, Colo.	WBRE	Wilkes-Barre, Pa.
KFYR	Bismarck, N. Dak.	WBSO	Needham, Mass.
KGBX	St. Joseph, Mo.	WBT	Charlotte, N. C.
KGCR	Watertown, S. Dak.	WBZ	Millis Township, Mass. (Boston).
KGCU	Mandan, N. Dak.	WBZA	
KGDA	Mitchell, S. Dak.	WCAC	Columbus, Ohio.
KGDM	Stockton, Calif.	WCAH	Northfield, Minn.
KGER	Long Beach, Calif.	WCAU	Byberry, Pa. (Philadelphia).
KGFJ	Los Angeles, Calif.	WCAX	Burlington, Vt.
KGGC	San Francisco, Calif.	WCBM	Baltimore, Md.
KGIZ	Grant City, Mo.	WCBS	Springfield, Ill.
KGKO	Wichita Falls, Tex.	WCCO	Anoka, Minn. (Minneapolis).
KGKX	Sandpoint, Idaho.	WCDA	Cliffside Park, N. J. (New York, N. Y.).
KGMB	Honolulu, Hawaii.	WCFL	Chicago, Ill.
KGNF	North Platte, Nebr.	WCHI	Deerfield, Ill. (Chicago).
KGO	Oakland, Calif. (San Francisco).	WCKY	Crescent Springs, Ky. (Covington).
KGU	Honolulu, Hawaii.	WCRW	Chicago, Ill.
KGW	Faloma, Oreg. (Portland).	WCSH	Scarboro, Me. (Portland).
KHJ	Los Angeles, Calif.	WDAF	Kansas City, Mo.
KIT	Yakima, Wash.	WDAG	Amarillo, Tex.
KJBS	San Francisco, Calif.	WDAY	West Fargo, N. Dak. (Fargo).
KJR	Seattle, Wash.	WDBJ	Roanoke, Va.
KLX	Oakland, Calif.	WDEL	Wilmington, Del.
KLZ	Denver, Colo.	WDOD	Brainerd, Tenn. (Chattanooga).
KMA	Shenandoah, Iowa.	WDRC	Bloomfield, Conn. (Hartford).
KMBC	Independence, Mo. (Kansas City).	WDSU	Gretna, La. (New Orleans).
KMED	Medford, Oreg.	WDZ	Tuscola, Ill.
KMJ	Fresno, Calif.	WEAF	Bellmore, N. Y. (New York, N. Y.).
KMO	Tacoma, Wash.	WEAN	Providence, R. I.
KMOX	St. Louis, Mo.	WEBQ	Harrisburg, Ill.
KMEC	Beverly Hills, Calif.	WEDC	Chicago, Ill.
KMTR	Los Angeles, Calif.	WEEL	Weymouth, Mass. (Boston).
KNX	Los Angeles, Calif. (Hollywood).	WEUU	Spring Township, Pa. (Reading).
KOA	Denver, Colo.	WENR	Downers Grove, Ill. (Chicago).
KOAC	Corvallis, Oreg.	WEVD	Forest Hills, N. Y. (New York, N. Y.).
KOIL	Council Bluffs, Iowa.	WFAA	Grapevine, Tex. (Dallas).
KOL	Seattle, Wash.	WFAN	Philadelphia, Pa.
KOMO	Harbor Island, Wash. (Seattle).	WFBL	Collamer, N. Y. (Syracuse).
KOY	Phoenix, Ariz.	WFEA	Merrimac, N. H. (Manchester).
KPO	San Francisco, Calif.	WFI	Philadelphia, Pa.
KQW	San Jose, Calif.	WFLA	Clearwater, Fla.
KRE	Berkeley, Calif.	WSUN	
KRLD	Dallas, Tex.	WFOJ	Lancaster, Pa.
KRMD	Shreveport, La.	WGAL	Mississippi City, Miss. (Gulfport).
KSAC	Manhattan, Kans.	WGOM	Chicago, Ill.
KSD	St. Louis, Mo.	WGES	Newport News, Va.
KSL	Salt Lake City, Utah.	WGH	
KSO	Clarinda, Iowa.		
KSOO	Sioux Falls, S. Dak.		
KSTP	Radio Center, Minn. (St. Paul).		

## LESS THAN 50 CYCLES—Continued

Call signal	Transmitter location, studio location in parentheses	Call signal	Transmitter location, studio location in parentheses
WGN	Elgin, Ill. (Chicago).	WMT	Waterloo, Iowa.
WLIB		WNAC	Quincy, Mass. (Boston).
WGR	Amherst, N. Y. (Buffalo).	WBIS	
WGY	Schenectady, N. Y.	WNBF	Fairhaven, Mass. (New Bedford).
WHAS	Louisville, Ky.	WNBH	Springfield, Vt.
WHB	Kansas City, Mo.	WNBX	New York, N. Y.
WHBL	Sheboygan, Wis.	WNYO	Selma, Tex. (San Antonio).
WHDF	Calumet, Mich.	WOAI	Trenton, N. J.
WHEC	Rochester, N. Y.	WOAX	Davenport, Iowa.
WHFC	Cicero, Ill.	WOO	Paterson, N. J.
WHO	Des Moines, Iowa.	WODA	Ames, Iowa.
WHP	Lemoyne, Pa. (Harrisburg).	WOI	Washington, D. C.
WIAS	Ottumwa, Iowa (Des Moines).	WOR	Kearny, N. J. (Newark).
WIBO	Desplains, Ill. (Chicago).	WORC	Auburn, Mass. (Worcester).
WIBU	Poynette, Wis.	WEPS	
WIBW	Topeka, Kans.	WOW	Omaha, Nebr.
WISN	Milwaukee, Wis.	WPAD	Paducah, Ky.
WJAR	Providence, R. I.	WPER	Philadelphia, Pa.
WJAX	Jacksonville, Fla.	WPG	Atlantic City, N. J.
WJBC	La Salle, Ill.	WPTF	Raleigh, N. C.
WJBW	New Orleans, La.	WQBC	Vicksburg, Miss.
WJDX	Jackson, Miss.	WRAW	Reading, Pa.
WJMS	Ironwood, Mich.	WRAX	Philadelphia, Pa.
WJSV	Mt. Vernon Hills, Va. (Alexandria).	WRC	Washington, D. C.
WJZ	Bound Brook, N. J. (New York, N. Y.)	WRDO	Augusta, Me.
WKAV	Laconia, N. H.	WREN	Lawrence, Kans.
WKBF	Clermont, Ind. (Indianapolis).	WRHM	Fridley, Minn. (Minneapolis).
WKBH	La Crosse, Wis.	WRUF	Gainesville, Fla.
WKBI	Cicero, Ill.	WRVA	Mechanicsville, Va. (Richmond).
WKBN	Youngstown, Ohio.	WSAR	Fall River, Mass.
WKRO	Cincinnati, Ohio.	WSB	Atlanta, Ga.
WLB	St. Paul, Minn.	WSEN	Columbus, Ohio.
WLBC	Muncie, Ind.	WSM	Nashville, Tenn.
WLBX	Long Island City, N. Y.	WSUI	Iowa City, Iowa.
WLBZ	Bangor, Me.	WTAM	Brecksville Village, Ohio (Cleveland).
WLIT	Philadelphia, Pa.	WTAR	Norfolk, Va.
WLS	Downers Grove, Ill. (Chicago).	WFOR	
WLTH	Brooklyn, N. Y.	WTIC	Mt. Avon, Conn. (Hartford).
WLVA	Lynchburg, Va.	WTMJ	Brookfield, Wis. (Milwaukee).
WMAL	Washington, D. C.	WWJ	Detroit, Mich.
WMAQ	Addison, Ill. (Chicago).	WWL	New Orleans, La.
WMBO	Detroit, Mich.	WWNC	Asheville, N. C.
WMBD	Peoria Heights, Ill.	WWVA	Wheeling, W. Va.
WMBI	Addison, Ill. (Chicago).		
WMBQ	Brooklyn, N. Y.		

## LESS THAN 100 CYCLES

KDFN	Casper, Wyo.	WABC	Wayne, N. J. (New York, N. Y.).
KECA	Los Angeles, Calif.	WBOQ	
KELW	Burbank, Calif.	WAPI	Birmingham, Ala.
KEX	Portland, Oreg.	WBAP	Grapevine, Tex. (Fort Worth).
KFFJ	Oklahoma City, Okla.	WBBL	Richmond, Va.
KFJM	Grand Forks, N. Dak.	WBCM	Hampton Township, Mich. (Bay City).
KFOX	Long Beach, Calif.	WBNX	New York, N. Y.
KFSG	Los Angeles, Calif.	WBTM	Danville, Va.
KFUL	Galveston, Tex.	WCAO	Baltimore, Md.
KGAR	Tucson, Ariz.	WCBA	Allentown, Pa.
KGB	San Diego, Calif.	WHHC	Emory, Va.
KGBZ	York, Nebr.	WGAR	Cuyahoga Heights, Ohio (Cleveland).
KGCA	Decorah, Iowa.	WGBF	Evansville, Ind.
KGEK	Yuma, Colo.	WHAM	Rochester, N. Y.
KGEZ	Kalispell, Mont.	WHAZ	Troy, N. Y.
KGGF	South Coffeyville, Okla.	WHDH	Gloucester, Mass. (Boston).
KGHL	Billings, Mont.	WHK	Village of Seven Hills, Ohio (Cleveland).
KGKY	Scottsbluff, Nebr.	WILM	Carrcroft-Edge Moor, Del. (Wilmington).
KGRS	Amarillo, Tex.	WINS	Astoria, New York (New York, N. Y.).
KHQ	Spokane, Wash.	WJAY	Cleveland, Ohio.
KLO	Ogden, Utah.	WJBO	New Orleans, La.
KMMJ	Clay Center, Nebr.	WJJD	Mooseheart, Ill.
KOIN	Portland, Oreg.	WJKS	Gary, Ind.
KPCB	Seattle, Wash.	WJR	Sylvan Lake Village, Mich. (Detroit).
KREG	Santa Ana, Calif.	WKBW	Amherst, N. Y. (Buffalo).
KROW	Richmond, Calif. (Oakland).	WKY	Oklahoma City, Okla.
KUSD	Vermillion, S. Dak.	WKZO	Kalamazoo, Mich.
KWJJ	Portland, Oreg.	WLAC	Nashville, Tenn.
KWKO	Kansas City, Mo.	WLBF	Kansas City, Kans.
KXA	Seattle, Wash.	WLEY	Lexington, Mass.
KXO	El Centro, Calif.		
WAAW	Omaha, Nebr.		

LESS THAN 100 CYCLES—Continued

Call signal	Transmitter location, studio location in parentheses	Call signal	Transmitter location, studio location in parentheses
WLOE	Chelsea, Mass. (Boston).	WPCH	Hoboken, N. J. (New York, N. Y.).
WMSG	New York, N. Y.	WSBC	Chicago, Ill.
WNAX	Yankton, S. Dak.	WSBT	South Bend, Ind.
WOMT	Manitowoc, Wis.	WSPD	Toledo, Ohio.
WOWO	Fort Wayne, Ind.	WTAD	Quincy, Ill.
WPAP	Cliffside, N. J. (New York, N. Y.).	WTBO	Cumberland, Md.
WQAO		WWRL	Woodside, N. Y.
WPAW	Cranston, R. I. (Providence).		
WPRO			

LESS THAN 200 CYCLES

KBTM	Paragould, Ark.	WCAE	Pittsburgh, Pa.
KDYL	Salt Lake City, Utah.	WCAM	Camden, N. J.
KFBB	Great Falls, Mont.	WCAP	Asbury Park, N. J.
KFBI	Milford, Kans.	WCAZ	Carthage, Ill.
KFEL	Edgewater, Calif.	WCLO	Janesville, Wis.
KFNF	Shenandoah, Iowa.	WOOD	Harrisburg, Pa.
KFPW	Fort Smith, Ark.	WDAS	Philadelphia, Pa.
KFXM	San Bernardino, Calif.	WFBE	Baltimore, Md.
KFGY	Flagstaff, Ariz.	WFDV	Rome, Ga.
KGCX	Wolf Point, Mont.	WHA	Madison, Wis.
KGGM	Albuquerque, N. Mex.	WHBY	West de Pere, Wis. (Green Bay).
KGIR	Butte, Mont.	WHIS	Bluefield, W. Va.
KLRA	Little Rock, Ark.	WIBA	Madison, Wis.
KLS	Oakland, Calif.	WILL	Urbana, Ill. (Champaign).
KOH	Reno, Nev.	WJAS	Pittsburgh, Pa.
KOOS	Marshfield, Oreg.	WKBS	Galesburg, Ill.
KORE	Eugene, Oreg.	WLBG	Ettrick, Va. (Petersburg).
KPRO	Houston, Tex.	WLW	Mason, Ohio (Cincinnati).
KQV	Pittsburgh, Pa.	WLWL	Kearney, N. J. (New York, N. Y.).
KSCJ	Sioux Falls, S. Dak.	WMBG	Richmond, Va.
KSEI	Pocatello, Idaho.	WMBH	Joplin, Mo.
KTFI	Twin Falls, Idaho.	WMC	Bartlett, Tenn. (Memphis).
KTM	Santa Monica, Calif. (Los Angeles).	WMCA	Hoboken, N. J. (New York, N. Y.).
KTW	Seattle, Wash.	WODK	Springhill, Ala. (Mobile).
KWCR	Cedar Rapids, Iowa.	WOOD	Furnwood, Mich. (Grand Rapids).
KWKH	Kennewood, La. (Shreveport).	WOQ	Kansas City, Mo.
KWWG	Brownsville, Tex.	WOV	Secaucus, N. J. (New York, N. Y.).
WAAM	Newark, N. J.	WRBX	Roanoke, Va.
WAAT	Jersey City, N. J.	WRJN	Racine, Wis.
WBAK	Harrisburg, Pa.	WRNY	Coyotesville, N. Y. (New York, N. Y.).
WBOW	Terre Haute, Ind.	WXYZ	Detroit, Mich.
WBRC	Birmingham, Ala.		

GREAT LAKES RADIO AIDS TO NAVIGATION

Schedule 1 annexed hereto contains a list of coast radio stations on the inland waters of Canada. Messages to and from any of these stations pertaining to weather conditions and forecasts, ice reports, and reports on aids to navigation will be handled without charge.

Schedule 2 shows certain of these stations on the Great Lakes which broadcast weather, ice and other reports relating to navigation at the routine periods indicated.

Schedule 3 contains a list of automatic radio beacons now in operation on the Great Lakes. An additional period has been added to the clear weather transmissions.

SCHEDULE 1.—List of coast radio stations

Station	Call signal	Frequency in kilocycles, meters in parentheses	Lat. N.			Long. W.		
			°	'	"	°	'	"
Kingston.....	VBH	410 (730).....	44	14	5	76	27	30
Toronto.....	VBG	410 (730).....	43	36	50	79	23	10
Port Burwell.....	VBF	410 (730).....	42	38	35	80	47	14
Point Edward.....	VBE	410 (730).....	43	0	10	82	24	55
Tobermory.....	VBD	410 (730).....	45	15	55	81	39	40
Midland.....	VBC	410 (730).....	44	44	40	79	51	45
Sault Ste. Marie.....	VBB	410 (730).....	46	31	5	84	17	50
Port Arthur.....	VBA	410 (730).....	48	26	30	89	13	45

The above stations are owned by the Department of Marine and are operated by the Canadian Marconi Co., under contract. They are open during the season of navigation, continuously day and night.

SCHEDULE 2.—*Weather and other reports transmitted by radiotelegraph*

Station location	Call signal	Information transmitted	Time (E. S. T.)
Kingston, Ontario.....	VBH	Weather forecasts..... Reports respecting dangers to navigation in Lake Ontario and St. Lawrence River to Montreal.	10.50 a. m. and p.m.
Toronto, Ontario.....	VBG	Weather forecasts..... Reports respecting dangers to navigation in Lake Ontario.	10.30 a. m. and p.m.
Port Burwell, Ontario..	VBF	Weather forecasts..... Reports respecting dangers to navigation in Lake Ontario.	10.50 a. m. and p.m.
Point Edward, Ontario.	VBE	Weather forecasts..... Reports respecting dangers to navigation in Lake Erie.	11.00 a. m. and p.m.
Midland, Ontario.....	VBC	Weather forecasts..... Reports respecting dangers to navigation in Lake Huron.	10.50 a. m. and p.m.
Sault Ste. Marie, Ontario	VBB	Weather forecasts..... Reports respecting dangers to navigation in Georgian Bay and Lake Huron.	11.10 a. m. and p.m.
Port Arthur, Ontario...	VBA	Weather forecasts..... Reports respecting dangers to navigation in Lake Superior and Lake Huron. Reports respecting dangers to navigation in Thunder Bay and Lake Superior.	11.20 a. m. and p.m.

NOTE.—Especially urgent reports respecting dangers to navigation are also transmitted by all of the above stations on 410 kc/s (730 meters) immediately upon receipt in addition to the routine transmissions on 187 kc/s (1,604 meters).

## SCHEDULE 3.—Radio beacons

Name	Lat. N.	Long. W.	Call signal	Frequency in kilocycles, meters in parentheses	Transmission characteristics
Main Duck, Lake Ontario.....	° ' " 43 55 53	° ' " 76 38 20	VGD	310 (963)	.....
Long Point, Lake Erie.....	42 33 00	80 03 20	VGF	305 (984)	.....
South East Shoal, Lake Erie.....	41 49 40	82 27 40	VGU	290 (1,034)	.....
Cove Island, Lake Huron.....	45 19 40	81 44 09	VGO	300 (1,000)	.....
Michipicoten, Lake Superior.....	47 45 15	85 35 45	VGM	295 (1,017)	.....

NOTES.—The duration of the dash or dashes combined is approximately equal to the length of the repeated call signal. The clear weather transmissions commence on the hour with the exception of Long Point, where transmission commences at four minutes and thirty seconds past the hour.

The clear weather transmission periods are repeated three times, viz.: Characteristic for one minute and fifteen seconds, silence for one minute and forty-five seconds; characteristic for one minute and fifteen seconds, silence for one minute and fifteen seconds; then characteristic for one minute and fifteen seconds; characteristic whenever the atmosphere in the vicinity of the station is so obscure as to impede navigation, the radiobeacons will be operated continuously in the manner indicated in the preceding paragraph.

CHIEF OF

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 U. S. DEPARTMENT OF COMMERCE  
 BUREAU OF MARINE SERVICE  
 WASHINGTON, D. C.

## GULF OF ST. LAWRENCE ICE PATROL

An ice patrol will be maintained in the Gulf of St. Lawrence from: Cape Ray to Bird Rocks; Bird Rocks to vicinity of Heath Point; Heath Point to Cape Ray; from the opening of navigation in the spring until the route is clear of ice.

The call signal VCQP has been allotted for the ice patrol vessel. This is a special call and will be used by whatever vessel is engaged in the service.

A regular message embodying ice conditions from Cape Race to Quebec, and recommendations as to route to be followed will be made up by the ice patrol every four hours, commencing as from midnight Eastern Standard Time (75th meridian), and kept on file for immediate transmission by radio to ships, upon request.

This information will also be broadcast four times daily by the ice patrol VCQP, as follows: (a) At 8 a. m. and 8 p. m. (E. S. T.) on 500 kilocycles (600 meters) I. C. W.; (b) at 8.30 a. m. and 8.30 p. m. (E. S. T.) on 185 kilocycles (1,621 meters) I. C. W.

The coast radio stations at Chebucto Head (VAV), North Sydney (VCO), and Grindstone (VCN) will be prepared to pass copy of this message to ships requesting it.

In addition the following stations will broadcast a brief summary of the above mentioned message:

Stations	Time E. S. T.	Frequency in kilocycles, meters in parentheses	Remarks
Louisburg, VAS.	11.00 a. m. 11.00 p. m.	107 (2,804) C. W.	Following weather forecasts.
Cape Race, VCE.	11.20 a. m. 11.20 p. m.	500 (600) I. C. W.	Do.

Ships requiring the latest information on the Gulf route should communicate directly with the ice patrol vessel VCQP on 500 kilocycles (600 meters).

The work of the patrol will be greatly facilitated if incoming ships will cooperate in supplying information regarding ice in their vicinity.

NOTE: All bearings, unless otherwise noted, are true and are given from 0° (North) to 360°, measured clockwise, followed by the magnetic bearing in degrees in brackets, miles are nautical miles, heights are above high water of ordinary spring tides, and all depths are at low water of ordinary spring tides.

Pilots, masters, or others interested are earnestly requested to send information of dangers, changes in aids to navigation, notice of new shoals or channels, errors in publications, or any other facts affecting the navigation of Canadian waters to the Director of Radio, Department of Marine, Ottawa, Canada.

## LIST OF NEWFOUNDLAND AMATEUR STATIONS

Call	Owner	Location	Call	Owner	Location
VO8A	Ernest Ash	St. Johns	VO8O	A. J. Burke	Terenceville.
VO8C	Alex J. Christian	Grand Falls	VO8Z	E. Jerrett	Brigus.
VO8G	Dr. W. F. Gear	do	VO8AE	Deep Sea Mission	St. Anthony.
VO8I	R. W. Sullivan	do	VO8WG	do	Northwest River,
VO8K	Rev. J. P. Kerwan	Hr. Breton			Labrador.
VO8L	A. J. Crocker	9 Boncloddy St., St. Johns.	VO8AW	James Moores, jr.	Carbonear.
VO8M	C. V. Leslie	Port Albert	VO8MC	Rev. Brother Stoyles.	Moult Cashel, St. Johns.

## AIRPLANE RECEIVING EQUIPMENT FOR VISUAL RADIO RANGE BEACONS

Radio is used in two principal ways as an aid to air navigation. One of these is communication and the other is directional guidance. On the airways of this country, directional guidance takes the form of radio range beacon stations which send out direction signals which enable the airplane pilot to navigate the established course along the airway without the use of directional apparatus aboard the airplane.



The Bureau of Standards, serving as the research division of the Aeronautics Branch of the Department of Commerce, continuously carries on research for the improvement of this and other radio aids to air navigation. The radio range beacon is now available in two forms, one in which a signal is received aurally by the airplane pilot, and one in which a visual indication on the airplane instrument board tells the pilot whether he is on course or off to the right or the left. The visual indicators and associated equipment have become commercially available. Airplane operators and others have expressed a desire for information on the installation and use of such equipment. To meet this, the Bureau of Standards has prepared a complete set of specifications entitled "Airplane Receiving Equipment for Visual Radio Range Beacons". This is available gratis to operators of airplanes or anyone interested, upon request addressed to Aeronautics Research Division, Bureau of Standards, Washington, D. C. This includes information on receiving sets, reed indicators, pointer type indicators, combined course and volume indicating instruments, and an installation wiring diagram.

General information on the visual radio range beacon system is given in Bureau of Standards Research Paper 159, Development of the Visual Type Airway Radio-beacon System, obtainable from the Superintendent of Documents, Washington, D. C., for 20 cents. To secure satisfactory operation of any radio receiving equipment on most airplanes, it is necessary that the engine and all electrical equipment be carefully shielded and the airplane structure bonded. Detailed specifications for shielding and bonding are given in Appendixes 1 and 2 of Second Report of Liaison Committee on Aeronautic Radio Research; this publication is obtainable gratis upon request addressed to Aeronautics Branch, Department of Commerce, Washington, D. C.

Technical information on other phases of the airplane receiving equipment for the visual radio range-beacon system is given in the following publications, obtainable from the Superintendent of Documents, Washington, D. C., at the prices stated: RP 330, Automatic Volume Control for Aircraft Radio Receivers, 10 cents; RP 28, Design of Tuned-reed Course Indicators for Aircraft Radio-beacon, 5 cents; RP160, A Tuned Reed Course indicator for the 4 and 12 Course Aircraft Radio Range, 15 cents; RP338, Theory of Design and Calibration of Vibrating-reed Indicators for Radio Range Beacons, 10 cents; RP336, A Course Indicator of Pointer Type for the Visual Radio Range Beacon System, 15 cents.

#### SOME STUDIES OF RADIO TRANSMISSION OVER LONG PATHS MADE ON THE BYRD ANTARCTIC EXPEDITION

In a paper of the above title, by L. V. Berkner, Research Paper 412, Bureau of Standards Journal of Research, February, 1932, field intensity measurements of high-frequency waves (9,000 to 15,000 kc) at great distances, taken at Dunedin, New Zealand, during 1929-1930, are given. The relation of diurnal and seasonal changes in field intensity to the changes of daylight and darkness along the path are discussed. Special cases of the variation of intensity contrary to that which might be expected from the nature of variation of daylight along the path are illustrated. Evidence of correlation between magnetic disturbances and loss in field intensity along certain paths is indicated, while a lack of such correlation along other paths at nearly the same time and along a reciprocal path is mentioned. The effect of prolonged darkness along a given path is investigated.

Reprint copies of this paper will be available within a few weeks and may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C. The price will be quoted by that office on application.