

# RADIO SERVICE BULLETIN

ISSUED MONTHLY

Washington, May 31, 1932

COMMISSION

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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 parenthesis.  
 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. 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. — Meter-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).

Frequencies for which ship stations are licensed to use are indicated in this publication as specified in the tables (classes L and H) hereunder.

For telegraph communication primarily with coastal telegraph stations: Class L (kilocycles-meters in parenthesis, 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 parenthesis, 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, 290 (33.23)	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 (43.54)	8, 300 (36.14)	*12, 420 (24.15)	
4, 145 (72.38)	6, 190 (43.47)	8, 320 (36.06)	12, 435 (24.13)	22, 025 (13.621)
4, 150 (72.29)	6, 200 (43.39)	8, 330 (36.01)	12, 450 (24.11)	22, 050 (13.605)
4, 160 (72.12)	*6, 210 (43.31)			*22, 080 (13.587)
4, 165 (72.03)	6, 220 (43.23)	11, 025 (27.21)	16, 460 (18.226)	22, 100 (13.575)
	6, 230 (43.15)	*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 tele phone 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 station, 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
Cape Chacon, Alaska. <sup>1</sup>	FO	KIDJ	2,512 (119.42)-----	PR	X	Alaska Pacific Salmon Corporation.
Do. <sup>2</sup> -----	FX	KIDK	246 (1,220), 274 (1,095), 3,092.5 (97.01).	PR	X	Do.
Do. <sup>3</sup> -----	FX	KIDL	3,092.5 (97.01)-----	PR	X	Do.
Cheyenne, Wyo. <sup>4</sup> ---	FA	KGTT	2,906 (103.23), 3,072.5 (97.63), 3,082.5 (97.32), 3,088 (97.15), 5,510 (54.45), 5,540 (54.15), 5,672.5 (52.88), 5,692.5 (52.7).	P	N	Aeronautical Radio (Inc.).
Chomly, Alaska. <sup>5</sup> ---	FO	KIDG	2,512 (119.41)-----	PR	X	Alaska Pacific Salmon Corporation.
Do. <sup>6</sup> -----	FX	KIDH	246 (1,220), 274 (1,095), 3,092.5 (97.01).	PR	X	Do.
Do. <sup>7</sup> -----	FX	KIDI	3,092.5 (97.01)-----	PR	X	Do.
Framingham, Mass. (police station). <sup>8</sup>	FO	WPEC	1,574 (190.6)-----	P	N	Department of Public Safety, Commonwealth of Massachusetts.
Hidden Inlet, Alaska. <sup>9</sup>	FX	KIDE	3,265 (91.88)-----	PR	X	Nakat Packing Co.
Kasaan, Alaska. <sup>10</sup> ---	FX	KIDB	3,092.5 (97.01)-----	PR	X	A. A. McCue.
Middleboro, Mass. <sup>11</sup>	FX	WPEL	1,574 (190.6)-----	P	N	Department of Public Safety, Commonwealth of Massachusetts.
Northampton, Mass. <sup>12</sup>	FX	WPEW	do-----	P	N	Do.
San Antonio, Tex. (police station). <sup>13</sup>	FX	KGZE	2,508 (119.71)-----	P	N	City of San Antonio and State of Texas.
Sand Point, Alaska (permanently moored vessel International). <sup>14</sup>	FX	KGXR	252 (1,190)-----	P	X	International Packing Co.
Tenakee, Alaska. <sup>15</sup> ---	FX	KICY	246 (1,220)-----	PR	X	Superior Packing Co.
View Cove, Alaska (Dell Island). <sup>16</sup>	FX	KIDU	178 (1,685)-----	PR	X	Superior Portland Cement (Inc.)
<i>Portable</i>						
(17)-----	FX	KIDM	1,526 (196.59)-----	P	X	Warner Bros. Pictures (Inc.).
(17)-----	FX	KIDN	do-----	P	X	Do.
(17)-----	FX	KIDP	do-----	P	X	Do.
(18)-----	FX	KIDS	do-----	P	X	Do.

<sup>1</sup> Loc. (approximate), 132° 00' 00" W., 54° 50' 00" N.; type, A1, A3.

<sup>2</sup> Loc. (approximate), 132° 00' 00" W., 54° 00' 00" N.; type, A1.

<sup>3</sup> Loc. (approximate), 132° 00' 00" W., 54° 00' 00" N.; type, A3.

<sup>4</sup> Loc. (approximate), 104° 46' 00" W., 41° 09' 24" N.; type, A3.

<sup>5</sup> Loc. (approximate), 132° 20' 00" W., 55° 15' 00" N.; type, A1, A3.

<sup>6</sup> Loc. (approximate), 132° 20' 00" W., 55° 15' 00" N.; type, A1.

<sup>7</sup> Loc. (approximate), 132° 20' 00" W., 55° 15' 00" N.; type, A3.

<sup>8</sup> Loc. (approximate), 71° 45' 00" W., 42° 20' 50" N.; type, A3.

<sup>9</sup> Loc. (approximate), 130° 20' 30" W., 54° 52' 10" N.; type, A3.

<sup>10</sup> Loc. (approximate), 132° 24' 00" W., 55° 32' 00" N.; type, A3.

<sup>11</sup> Loc. (approximate), 70° 54' 55" W., 41° 53' 30" N.; type, A3.

<sup>12</sup> Loc. (approximate), 72° 37' 50" W., 42° 19' 15" N.; type, A3.

<sup>13</sup> Loc. (approximate), 98° 28' 00" W., 29° 27' 00" N.; type, A3.

<sup>14</sup> Loc. (approximate), 160° 00' 00" W., 55° 00' 00" N.; type, A1.

<sup>15</sup> Loc. (approximate), 135° 00' 00" W., 57° 47' 00" N.; type, A1.

<sup>16</sup> Loc. (approximate), 133° 01' 05" W., 55° 04' 45" N.; type, A1.

<sup>17</sup> Loc., operates in different States; type, A3.

<sup>18</sup> Loc., operates in different States; type, A1.

## 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, 1930, 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—
Acadia <sup>1</sup> Frances C. Denehy	WHES WHEP	8	PG P	N X	Eastern S. S. Lines (Inc.) Frances C. Denehy	R. M. C. A. New England Telephone and Telegraph Co.
Frieda <sup>2</sup> Manhattan <sup>3</sup> Manhattan Lifeboat No. 17. <sup>4</sup> Manhattan Lifeboat No. 18. <sup>4</sup> Nantucket <sup>5</sup>	WQCT WIEA WIEB WIEC WTDR	8 8	PG PG P	X N X X	Union Sulphur Co. United States Lines Co. do do	M. R. T. Co. Do. Do. Do.
Quirigua <sup>6</sup>	KDCR	8	PG	N	Commonwealth of Massachusetts, Department of Education. United Mail S. S. Co.	Owner. T. R. T. Co.

<sup>1</sup> Type, A1, A2; fy., class L.

<sup>2</sup> Type, A2; fy., class L; power, 25/2.

<sup>3</sup> Type, A1, A2; fy., class L and H.

<sup>4</sup> Type, A2; fy., class L.

<sup>5</sup> Type, A1, A2; fy., class H; power, 30/5.

<sup>6</sup> Fy., class L and H.

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

[Additions to the List of Radio Stations of the United States, edition of June 30, 1930, and to the International List of Aircraft Stations published by the Berne bureau]

Station	Call signal	Frequency, in kilocycles; meters in parentheses	Service	Hours	License
NC-305-N (Kanal) <sup>1</sup>	KHIAZ	5,375 (55.81), 6,610 (45.39).	P	X	Inter-Island Airways (Ltd.).
NC-833-M (No. 25). <sup>2</sup>	KHPDW	3,105 (96.62), 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), 5,602.5 (52.98).	P	X	Varney Air Lines (Inc.).
NC-9657 (113). <sup>3</sup>	KHSUF	do.	P	X	National Air Transport (Inc.).
NC-10353 <sup>3</sup>	KHBIR	do.	P	X	Boeing Air Transport (Inc.).
NC-10354 <sup>3</sup>	KHBLO	do.	P	X	Do.
NC-10357 (No. 32). <sup>3</sup>	KHPJQ	do.	P	X	Varney Air Lines (Inc.).
NC-10804 <sup>3</sup>	KHTHS	3,105 (96.62), 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 (86.77), (86.52), 3,467.5, 3,485 (86.08), 4,917.5 (61), 5,602.5 (53.55), 5,612.5 (53.45), 5,632.5 (53.26).	P	X	American Airways (Inc.).
NC-10810 <sup>3</sup>	KHTIR	do.	P	X	Do.
NC-10818 <sup>3</sup>	KHTJQ	do.	P	X	Do.
NC-10840 <sup>3</sup>	KHTKP	do.	P	X	Do.
NC-10843 <sup>3</sup>	KHXPK	do.	P	X	Do.
NC-10844 <sup>3</sup>	KHXQJ	do.	P	X	Do.
NC-10846 <sup>3</sup>	KHTLO	do.	P	X	Do.
NC-10847 <sup>3</sup>	KHXRI	do.	P	X	Do.
NC-10891 <sup>3</sup>	KHTMN	do.	P	X	Do.
NC-10893 <sup>3</sup>	KHXSH	do.	P	X	Do.
NC-10894 <sup>3</sup>	KHTNM	do.	P	X	Do.
NC-11153 <sup>3</sup>	KHTOL	do.	P	X	Do.
NC-11155 <sup>3</sup>	KHTPK	do.	P	X	Do.

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

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

*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
KDCR	Quirigua..... b	KICY	Tenakee, Alaska..... fx
KGTT	Cheyenne, Wyo..... fa	KIDB	Kasaan, Alaska..... fx
KGXR	Sand Point, Alaska (permanently moored vessel, international)..... fx	KIDE	Hidden Inlet, Alaska..... fx
KGZE	San Antonio, Tex..... fx	KIDG	Chomly, Alaska..... fx
KHBIR	NC-10353..... a	KIDH	do..... fx
KHBLO	NC-10354..... a	KIDI	do..... fx
KHIAZ	NC-805-N (Kauai)..... a	KIDJ	Cape Chacon, Alaska..... fo
KHPDW	NC-833-M (No. 25)..... a	KIDK	do..... fx
KHPJQ	NC-10357 (No. 32)..... a	KIDL	do..... fx
KHSUF	NC-9657 (113)..... a	KIDM	Portable..... fx
KHTHS	NC-10604..... a	KIDN	do..... fx
KHTIR	NC-10810..... a	KIDP	do..... fx
KHTJQ	NC-10818..... a	KIDS	do..... fx
KHTKP	NC-10840..... a	KIDU	View Cove, Alaska (Dell Island)..... fx
KHTLO	NC-10846..... a	WHEP	Frances C. Denehy..... b
KHTMN	NC-10891..... a	WHEB	Acadia..... b
KHTNM	NC-10894..... a	WIEA	Manhattan..... b
KHTOL	NC-11153..... a	WIEB	Manhattan Lifeboat No. 17..... b
KHTPK	NC-11155..... a	WIEC	Manhattan Lifeboat No. 18..... b
KHXPK	NC-10843..... a	WPEL	Middleboro, Mass..... fx
KHXQJ	NC-10844..... a	WPEW	Northampton, Mass..... fx
KHXRI	NC-10847..... a	WPEZ	Framingham, Mass..... fx
KHXSH	NC-10893..... a	WQCT	Frieda..... b
		WTDR	Nantucket..... b

*Broadcasting stations, by name of State and city*

[Addition to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 4931]

State and city (Transmitter location; studio location in parentheses)	Call signal	Frequency, in kilocycles; meters in parentheses	Power (watts)
Alabama: Troy.....	WHET	1,210 (247.9).....	100
Colorado: Lamar.....	KIDW	1,420 (211.3).....	100
Massachusetts: Springfield.....	WHEU	1,420 (211.3).....	100

<sup>1</sup> Daytime only.

*Broadcasting stations, by call signals*

Call signal	Location of transmitter, studio location in parentheses (mail address)	Licensee	Frequency, in kilocycles; meters in parentheses	Power (watts)
KIDW	Lamar, Colo., 328 North Commercial St., Trinidad, Colo.	Southwest Broadcasting Co.....	1,420 (211.3).....	100
WHET	Troy, Ala., North Oak and East Walnut Sts.	Troy Broadcasting Co. (Joe K. Jernigan, Cyril W. Reddoch, Julian C. Smith, and John T. Hubbard, doing business as).	1,210 (247.9).....	100
WHEU	Springfield, Mass., 42 Arden Road, Watertown, Mass.	Albert S. Moffat.....	1,420 (211.3).....	100

<sup>1</sup> Daytime only.

*General 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 post-office address
Massachusetts: Boston...	W1XD	1,594 (188.21), 2,398 (125.1), 3,492.5 (85.89), 4,797.5 (62.53).	15	Submarine Signal Co., 247 Atlantic Avenue.
New Jersey: Arneys Mount.....	W3XV	34,600 (8.67), 41,000 (7.32), 51,400 (5.83), 60,000 (5) to 400,000 (0.75), 401,000 (0.74).	80,000	R. C. A. Communications (Inc.).
South Plainfield (Hadley Field).  <i>Portable</i>	W2XAH	278 (1,080).....	10	Bell Telephone Laboratories.
Michigan: Ann Arbor.....	W8XU	34,600 (8.67), 41,000 (7.32), 51,400 (5.83), 60,000 (5), to 400,000 (0.75).	5	Prof. Neil H. Williams, University of Michigan, Department of Physics.
Do.....	W8XV	do	15	Do.
(1).....	W10XE	34,600 (8.67), 41,000 (7.32), 51,400 (5.83), 60,000 (5), 400,000 (0.75).	0.5	RCA Victor Co. (Inc.).
(1).....	W10XT	do	.5	Do.

1 Licensed to operate in different States.

*Broadcast pick-up 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
<i>Vessel</i> St. John.....	WHER	1,566 (191.57), 2,390 (125.5).	15	Westinghouse Electric & Manufacturing Co.

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

Call signal	District and station	Call signal	District and station
W1XD W2XAH	First district: Boston, Mass. Second district: South Plainfield, N. J. (Hadley Field).	WHER	St. John.
W3XV	Third district: Arneys Mount, N. J.		<i>Vessel</i>
W8XU	Eighth district: Ann Arbor, Mich.	W10XE W10XT	<i>Portable</i>
W8XV	Do.	(1). (1).	

1 Licensed to operate in different States.

## 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]

- ALAMEDA, CALIF.—Fy., add 6,350 (47.24).  
 ALBUQUERQUE, N. MEX.—Fy., see Alameda, Calif. (above).  
 AMARILLO, TEX.—Fy., see Alameda, Calif. (above).  
 BOCA DE QUADRA, ALASKA, radio.—*Read* Kasaan, Alaska; loc. (approximate), 132° 24' 00" W., 55° 32' 00" N.; class, strike out FX; fy., 2,512 (119.42) only; service, strike out P; hours, 7 a. m. to 7 p. m.  
 BURBANK, CALIF., KSI.—Fy., see Alameda, Calif. (above).  
 CAPE CHACON, ALASKA.—*Read* Cape Chacon, Alaska, radio; class, strike out FX; fy., strike out 180 (1,665), 190 (1,580), add 460 (650); type, strike out B, add A1; service, strike out P and PR, add PG.  
 CHOMLY, ALASKA.—*Read* Chomly, Alaska, radio; class, strike out FX; type, strike out B, add A1; fy., strike out 180 (1,665), add 460 (650); service, strike out P and PR, add PG; hours, X.  
 COLUMBUS, OHIO, WSDP.—Fy., 2,316 (129.53), 2,356 (127.33), 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 (86.77), 3,467.5 (86.52), 3,485 (86.08), 4,115 (72.9), 4,917.5 (61), 5,602.5 (53.55), 5,612.5 (53.45), 5,632.5 (53.26).  
 DAYTON, OHIO.—Loc. (approximate), 84° 02' 00" W., 39° 49' 00" N.; fy., strike out 2,416 (124.17), add 2,430 (123.45).  
 HONOLULU, HAWAII, KDG.—Fy., add 11,640 (25.77).  
 HOUSTON, TEX. (municipal airport).—Fy., add 2,326 (128.97), 2,344 (127.98), 3,238 (92.64), 3,244 (92.47), 3,452 (86.9), 3,460 (86.7), 3,484 (86.1), 4,140 (72.46), 5,600 (53.57), 5,630 (53.28), 6,260 (47.92), 6,275 (47.8).  
 INDIANAPOLIS, IND. (municipal airport).—Fy., strike out 6,540 (45.87), 6,550 (45.8), 6,560 (45.73), 8,015 (37.43).  
 KINGMAN, ARIZ.—Fy., see Alameda, Calif. (above).  
 ST. LOUIS, MO. (Lambert Field), KGUUV.—*Read* Robertson, Mo. (Lambert Field).  
 SAVANNAH, GA.—Loc., 81° 06' 51" W., 32° 03' 34" N.; type, A1, A2.  
 TENAKEE, ALASKA, radio.—Class, strike out FX, add FC; fy., strike out 246 (1,220); service, strike out P.  
 TORRANCE, CALIF., radio (Los Angeles).—Fy., add 16,860 (17.794).  
 TULSA, OKLA. (municipal airport), KSY.—Fy., see Alameda, Calif. (above).  
 VIEW COVE, ALASKA, radio.—Class, strike out FX; fy., strike out 178 (1,685); service, strike out P; licensee, Superior Portland Cement, (Inc.).  
 WAHIAWA, HAWAII, radio (Island of Oahu).—Fy., add 8,280 (36.23), 8,580 (34.97).  
 WICHITA, KANS. (municipal airport), KGTD.—Fy., see Alameda, Calif. (above).  
 WINSLOW, ARIZ.—Fy., see Alameda, Calif. (above).  
 Strike out all particulars of the following-named station: San Bruno, Calif. (municipal airport).

## 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]

- ADAM E. CORNELIUS, ADMIRAL FISKE, ADMIRAL HALSTEAD, ADMIRAL WILEY, ALDEN A. MILLS.—Fy., class L.  
 ALLAN JACKSON.—Power, 26/8 and 2.5.  
 AMERICAN TRADER.—Power, 22/15.  
 AMOLCO, BARRALLTON, BESSEMER, BETTERTON.—Fy., class L.  
 BIRD CITY.—Name changed to Scappenn; type, add A1, A2; hours, strike out X; acts., M. R. T. Co.  
 BOSTON COLLEGE, CADILLAC, CAROLINE KFZO, CASIANA.—Fy., class L.  
 CHALLENGER.—Power, tube 15/2, spark 15/13.  
 CHARLES R. McCORMICK.—Fy., class L.  
 CHESTER O. SWAIN.—Power, 24/8 and 3.  
 CITIES SERVICE KANSAS, CITIES SERVICE MISSOURI.—Fy., class L.  
 CITY OF PHILADELPHIA.—Power, 20/9.

- C. J. BARKDULL, CLIFFORD F. MOLL, CLIFFWOOD, COMMERCIAL NAVIGATOR, COMMERCIAL PIONEER, CONSUMERS POWER, COSTA RICA, DEFIANCE, DIAMOND ALKALI.—Fy., class L.
- DILLWYN.—Power, 30/8 and 2.
- EASTERNER.—Fy., class L.
- ELEANOR BOLING.—Service, strike out P, add PG.
- ELIZABETH, ELWYN C. HALE, FAIRPORT, FISHER, FRANK H. GOODYEAR, GEORGE F. RAND, GEORGE H. INGALLS, GEORGE WASHINGTON WECJ, GEORGIAN KJUA, G. J. GRAMMER, GLOUCESTER, HALO.—Fy., class L.
- HANLEY.—Power, tube 24/2, arc 24/8.
- HARRY YATES, HAWAIIAN, H. C. CADMUS, HELEN WHITTIER, HENRY P. WERNER.—Fy., class L.
- HERBERT G. WYLIE.—Power, 20/5 and 2.5.
- H. F. ALEXANDER, HILTON.—Fy., class L.
- HUMACONNA.—Power, 17/10.
- HUMRICK, IRENE WQBE, JAMES ELLWOOD JONES, J. C. DONNELL, J. F. SCHOELLKOPF, Jr., JOHN CUDAHY, JOHN J. BOLAND, JOLIET, JULIA LUCKENBACH.—Fy., class L.
- J. W. VAN DYKE.—Power, tube 19/2.5, spark 19/10.
- LAKE BENBOW.—Power, 27/6.
- LAKE FLATONIA.—Name changed to Texas Planter.
- LAKE INGLENOOK.—Name changed to Texas Banker.
- LARRY DOHENY.—Fy., class L.
- LEWIS K. THURLOW.—Type, strike out B, add A2.
- MAINE KDPK, MAJOR WHEELER, MALIBU, MASSMAR, MATHEW LUCKENBACH.—Fy., class L.
- MINNEKAHDA.—Power, tube 28/5 and 3, arc 28/12.
- MITCHELL.—Fy., class L.
- MIZPAH.—Type, add A3; power, 22/12.
- MOBILE CITY.—Power, 26/10.
- MONTEREY LIFEBOAT No. 1, MONTEREY LIFEBOAT No. 2.—Power, 7.3/1; owner, Oceanic S. S. Co., (Inc.).
- MORRIS S. TREMAINE, MUNINDIES.—Fy., class L.
- MUNORLEANS.—Fy., class L; hours, add X.
- MUNPLACE, New Hampshire.—Fy., class L.
- NEW YORK WECF.—Hours, add X.
- NISHMAHA.—Fy., class L.
- NORMAN BRIDGE.—Power, 27/6 and 2.5.
- NORTHLAND WMDG.—Fy., class L.
- ONEIDA.—Power, 27/6; rates, all services 8 cents per word; accts., R. M. C. A.
- ONONDAGA.—Power, 20/7.
- ONTARIO WSBP.—Fy., class L.
- PAN BOLIVAR.—Power, 26/12 and 2.5; hours, add N.
- PEACOCK.—Fy., class L.
- POINT BREEZE.—Power, 19/8.
- POINT SALINAS.—Fy., class L.
- R. G. STEWART.—Hours, strike out N.
- RICHMOND KDOQ.—Owner, John A. Merritt & Co.
- ROSINCO.—Fy., class L.
- ROYAL ARROW.—Owner, Standard-Vacuum Transportation Co. (Inc.).
- RUTH KELLOGG.—Fy., class L.
- SAGAPORACK.—Power, 28/20.
- SANTA CLARA.—Fy., class L and H.
- SARTARTIA KIDC.—Fy., class L.
- S. B. HUNT.—Power, 26/7 and 2.
- SCHENECTADY.—Name changed to Scanyork; type, add A1, A2; hours, strike out X; accts., M. R. T. Co.
- SCHOHARIE, SEA HAWK, SHENANGO WGDG, SUFFOLK, SWIFT SCOUT.—Fy., class L.
- TAMPA.—Fy., class L; hours, strike out N.
- TEXADA, THEODORE H. WICKWIRE, THUNDER BAY QUARRIES, TIDE.—Fy., class L.
- TIDEWATER.—Power, 23/13 and 2.8.
- TILLICUM, TRIUMP, TYEE KFXP, UNITED STATES GYPSUM, WABASH.—Fy., class L.
- WALTER D. NOYES.—Power, 25/10.
- WATSONVILLE, WAUKEGAN, WAVE, WAWONA, W. E. HUTTON, WEST HOBOMAC, WEST MAHOMET.—Fy., class L.



WEST QUECHEE.—Power, 26/14.

WEST WAUNA, W. F. BURDELL, WILLET, WILLIAM T. ROBERTS, WILSCOX.—Fy., class L.

W. J. HANNA.—Power, 27/8 and 2.

W. M. BURTON.—Fy., class L.

W. S. FARISH.—Power, 24/12 and 2.5

WYOMING.—Fy., class L.

Strike out all particulars of the following-named stations: Arcturus, Aztec, Charles L. Hutchinson, Columbus, Easterling, Easterner, Eastern Planet, East Side, Elkhorn, G. A. Tomlinson, Grecian, Hamilton, Hatteras, H. F. DeBardeleben, Jadden, Janelew, Jefferson, John Stanton, Joseph Block, L. E. Block, Martin Mullen, Miami, Mosella, Musketeer, Narcissus, N. F. Leopold, Philip D. Block, Pioneer WOCW, Price McKinney, S. B. Coolidge, Shenango WJDB, Sierra WKCM, Stellaris, T. L. Durocher, W. D. Calverley, jr., West Alsek, West Amargosa, West Durfee, Westerner, West Gotomska, West Hematite, West Loquassuck, Westport, Westward Ho.

#### 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 Berne bureau}

NC-15-A (Resolute).—Fy., add 5,520 (54.35).

NC-127-W (No. 14).—Fy., 2,906 (103.23), 3,072.5 (97.63), 3,082.5 (97.32), 3,088 (97.15), 3,105 (96.61), 5,510 (54.45), 5,540 (54.15), 5,672.5 (52.88), 5,692.5 (52.7).

NC-435-H.—Licensee, National Air Transport (Inc).

Strike out all particulars of the following-named stations: NC-743-N, NC-744-N, NC-745-N, NC-746-N, NC-747-N.

#### 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}

AMARILLO, TEX.—Loc. (approximate), 101° 50' 00'' W., 35° 13' 00'' N.

BIG SPRING, TEX.—Loc. (approximate), 101° 20' 30'' W., 33° 13' 15'' N.

BUTTE, MONT.—Loc. (approximate), 112° 31' 00'' W., 45° 54' 00'' N.

ELKO, NEV.—Loc. (approximate), 115° 45' 00'' W., 40° 55' 00'' N.

GLENDALE, CALIF. (Los Angeles).—Loc. (approximate), 118° 15' 00'' W., 34° 09' 00'' N.

LA CROSSE, WIS.—Loc. (approximate), 91° 14' 00'' W., 43° 47' 00'' N.

LITTLE ROCK, ARK.—Loc. (approximate), 92° 13' 00'' W., 34° 43' 30'' N.

MAYWOOD, ILL. (Chicago).—Loc. (approximate), 87° 55' 00'' W., 41° 53' 00'' N.

NASHVILLE, TENN.—Loc. (approximate), 86° 37' 00'' W., 36° 09' 00'' N.

OAKLAND, CALIF. KCV.—Loc. (approximate), 122° 12' 00'' W., 37° 44' 00'' N.

RENO, NEV.—Loc. (approximate), 119° 49' 00'' W., 39° 32' 00'' N.

ROBERTSON, Mo. (St. Louis).—Loc. (approximate), 90° 22' 15'' W., 38° 44' 30'' N.

ROCK SPRINGS, WYO.—Loc. (approximate), 109° 14' 00'' W., 41° 37' 45'' N.

SALT STE. MARIE, MICH.—Fy., 410 (730).

SEATTLE, WASH. KCZ.—Loc. (approximate), 122° 19' 00'' W., 47° 28' 00'' N.

SILVER HILL, MD. (Washington, D. C.).—Loc. (approximate), 76° 57' 00'' W., 38° 50' 45'' N.

WAYNOKA, OKLA.—Loc. (approximate), 98° 49' 00'' W., 36° 22' 00'' N.

WILLIAMSVILLE, N. Y. (Buffalo).—Loc. (approximate), 78° 43' 00'' W., 42° 56' 30'' N.

WINSLOW, ARIZ.—Loc. (approximate), 110° 42' 00'' W., 35° 02' 00'' N.

YUMA, ARIZ.—Loc. (approximate), 114° 28' 00'' W., 32° 44' 00'' N.

#### STATIONS TRANSMITTING WEATHER REPORTS

{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 Stations Performing Special Services published by the Berne bureau}

WASHINGTON, D. C. (Annapolis, Md.), NSS.—Fy., add 17.8 (16,840)—0400 (for Europe).

WASHINGTON, D. C. (Arlington, Va.), NAA.—Fy., strike out 8,150 (36.8)—0400 G. C. T. (for Europe).

## 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]

SEMMES.—Call changed to NRDF; owner, U. S. Coast Guard.

Strike out all particulars of the following-named stations: Eagle 34, Ericsson, Cummings, Nantucket.

## 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]

NANTUCKET SHOALS LIGHT STATION, MASS.—Fy., strike out 314 (955), add 316 (950).

COLUMBIA RIVER LIGHT STATION, OREG.—New method of distance finding: When both signals are being operated for fog or low visibility the radiobeacon will transmit one long dash of 3 seconds during each transmission period of 60 seconds. The end of the long 3-second dash of the radiobeacon will be coincident with the termination of the third blast of a triple blast of the sound-in-air fog signal. The triple blast consists of three 1-second blasts at 1 second intervals and is sounded once every 3 minutes during fog or low visibility in place of the regular characteristic single blast. Otherwise the regular sound signal and radiobeacon characteristics will remain unchanged. The number of seconds elapsing between the termination of the 3-second radiobeacon dash and the termination of the triple blast of the sound-in-air fog signal, divided by 5, will give the approximate distance in nautical miles from the lightship. The distance thus derived may have a possible maximum error of 10 per cent. Masters of vessels equipped with radio receivers capable of receiving at about 300 kilocycles (1,000 meters) may utilize these signals for distance-finding purposes. The distance to which this method may be used will vary with atmospheric conditions. Mariners are requested to check the effectiveness of these signals for distance-finding purposes and forward the results to the superintendent of lighthouses, Portland, Oreg.

FIVE FINGER LIGHT STATION, ALASKA.—Hours, operates continuously during thick or foggy weather and daily in clear weather from 10 to 20 and 40 to 50 minutes after each hour.

## COMMERCIAL AND GOVERNMENT LAND, SHIP, AIRCRAFT, RADIOBEACON, AND DIRECTION-FINDING STATIONS, ALPHABETICALLY, BY CALL SIGNALS

KDP, read Chomly, Alaska radio; KFN, read Cape Chacon, Alaska radio; KGVU, read Robertson, Mo. (Lambert Field); KOBP, read Scanpenn; KOBT, read Texas Banker; KOGS, read Texas Planter; KZS, read Kasaan, Alaska; NAFZ, call changed to NRDF; WJIU, read Scanyork; strike out all particulars following the call signals KDCQ, KDFS, KDII, KDXJ, KDXR, KDXS, KDXT, KDXY, KEJD, KEJS, KEZP, KGFE, KGNV, KGNZ, KGOW, KGYO, KHXP, KHXQJ, KHXR, KHXS, KHXTG, KIFL, KIMQ, KJAI, KJUO, KOCL, KORM, KUPD, KURD, NIBD, NRDF, NRDH, WBCS, WBDE, WBDQ, WBES, WCDG, WCDI, WDDF, WECK, WECL, WEDY, WFEO, WFES, WGEA, WHCR, WJDB, WJDL, WJOI, WKCM, WMCU, WMIU, WOCW, WTRD.

## 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]

KFAC (Los Angeles, Calif.).—Loc. (approximate), 118° 22' 30" W., 34° 03' 00" N.

KFGY (Flagstaff, Ariz.).—Call changed to KUMA.

KGVO (Missoula, Mont.).—Fy., 1,200 (250).

WAPI (Birmingham, Ala.).—Licensee, WAPI Broadcasting Co.

WERE (Erie, Pa.).—Post-office address, Lawrence Hotel.

WEVD (Forest Hills, N. Y.).—Transmitter loc., changed to Brooklyn, N. Y., 73° 55' 31" W., 40° 43' 01" N.; post-office address, 673 Broadway, New York, N. Y.

WHEF (Kosciusko, Miss.).—Power, 100 night, 250 day.

WLBG (Petersburg, Va.).—Call changed to WPHR.  
 WMAQ (Addison, Ill.).—Post-office address, Merchandise Mart, Chicago, Ill.  
 WNYC (New York, N. Y.).—Fy., 810 (370).  
 WPAD (Paducah, Ky.).—Licensee, Paducah Broadcasting Co. (Inc.).  
 WPCH (Hoboken, N. J.).—Fy., 570 (526).  
 WSMB (New Orleans, La.).—Loc., 90° 04' 09" W., 29° 57' 01" N.  
 Strike out all particulars of the following-named station: WCHI (Deerfield, Ill.).

**GENERAL EXPERIMENTAL 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]

**DISTRICT OF COLUMBIA:**

Washington W3XX.—Strike out all particulars.

Washington W3XZ.—Strike out all particulars.

ILLINOIS: Chicago W9XY.—Strike out all particulars.

LOUISIANA: Shreveport W5XC.—Fy., 1,594 (188.21), 2,398 (125.1), 3,492.5 (85.89), 4,797.5 (62.53), 6,425 (46.69), 8,655 (34.66), 12,862.5 (23.32), 17,310 (17.33).

MASSACHUSETTS: South Dartmouth W1XP.—Fy., add 27,100 (11.07), 34,600 (8.67), 41,000 (7.31).

MICHIGAN: Detroit W8XN.—Strike out all particulars.

MINNESOTA: Minneapolis W9XI.—Strike out all particulars.

**NEW JERSEY:**

Mountain Lakes W3XQ.—Strike out all particulars.

Passaic W2XCD.—Call changed to W2XCE.

NEW YORK: Babylon W2XC.—Strike out all particulars.

OHIO: Cleveland W8XD.—Strike out all particulars.

WASHINGTON: Seattle W7XE.—Strike out all particulars.

*Portable*

COLORADO: Golden W9XE.—Strike out all particulars.

CONNECTICUT: Hartford W10XN.—Strike out all particulars.

MASSACHUSETTS: Boston W1XAF.—Strike out all particulars.

NEW JERSEY: Ocean Township W2XAV.—Fy., add 18,310 (16.384).

NEW YORK: Peeksville-Syracuse W10XN.—Strike out all particulars.

*Aircraft*

NC-8045 W10XM.—Read NC-8405.

NC-9138 W10XAK.—Strike out all particulars.

NX-7918 W10XH.—Strike out all particulars.

767 W2XCA.—Strike out all particulars.

**RELAY BROADCASTING 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]

CALIFORNIA: Sacramento W6XAF.—Strike out all particulars.

ILLINOIS: Downers Grove W9XF.—Fy., strike out 6,020 (49.83), add 6,100 (49.18), 17,780 (16.873).

MASSACHUSETTS: Boston W1XAL.—Fy., strike out 11,800 (25.42), add 11,790 (25.45).

**NEW JERSEY:**

Bound Brook W3XAL.—Fy., add 17,780 (16.873).

Wayne (near) W2XE.—Loc., changed to Jamaica, N. Y. (near); fy., strike out 11,830 (25.36), 15,270 (19.65).

PENNSYLVANIA: Saxonburg (near) W8XK.—Read East Pittsburgh, Pa.

*Portable*

FLORIDA: Miami W4XA.—Class of station changed to broadcast pick-up (portable); fy., strike out 2,368 (126.68), add 2,342 (128.09).

## VISUAL BROADCASTING STATIONS 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]

ILLINOIS: Chicago W9XAO.—Licensee, Western Television Research Co.  
 PENNSYLVANIA: East Pittsburgh W8XT.—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>		
Ace.....		Minnesota Atlantic Transit Co.
Commercial Alabaman.....	KUDS	Mooremack Gulf Lines (Inc.).
Eastern Temple.....	KDEZ	High Seas Transportation (Inc.).
Howard.....	WMCV	Merchants & Miners Transportation Co.
Jack.....		Minnesota Atlantic Transit Co.
Junjata.....	WMCW	Merchants & Miners Transportation Co.
King.....		Minnesota Atlantic Transit Co.
Queen.....		Do.
Ten.....		Do.
William F. Humphrey.....	KDSR	Tide Water Associated Transport Corporation.

## REGULATIONS GOVERNING THE ISSUANCE OF RADIO OPERATORS' LICENSES

## RADIOTELEGRAPH OPERATOR LICENSES

1. *Commercial extra first class.*—To be eligible for examination, an applicant for this class of license must hold a radiotelegraph operator first-class license and must have been actually engaged as an operator at stations open to public correspondence for at least 18 months during the two years previous to his application and must not have been penalized for violation of any radio act, treaty, or regulation binding on the United States. Applicants must pass code tests in transmission and reception at a speed of not less than 30 words per minute in continental Morse code and 25 words per minute in American Morse code, five characters to the word. The questions in this examination will cover the same subjects required for radiotelegraph and radiotelephone class of operator license, but considerably wider in scope.

Holders of license of this class are authorized to act as chief operator at any licensed radiotelegraph or radiotelephone station except amateur.

2. *Radiotelegraph operator first class.*—To be eligible for examination, an applicant for this class of license must have been actually engaged as an operator at ship or coastal stations open to public correspondence for at least 12 months. Applicants for this class of license must pass code tests in transmission and reception at a speed of at least 20 words per minute in continental Morse code, code groups, and 25 words per minute in continental Morse code, plain language (5 characters to the word).

The practical and theoretical examination shall consist of comprehensive questions under the following headings:

(a) Diagram of radio installation: Applicants are required to draw a complete wiring diagram of a modern marine radio installation as used aboard American vessels. The applicant may be required to draw either a spark, arc, or vacuum-tube transmitter (with radiotelephone attachment).

(b) Theory, adjustment, operation, and care of modern radiotelegraph and radiotelephone transmitting apparatus.

(c) Receiving apparatus.

(d) General principles of electricity.

(e) Operation and care of storage batteries.

(f) Power-supply apparatus.

(g) International regulations governing radio communication and the United States Radio Laws and Regulations.

Holders of this class of license are authorized to act as operator at any licensed radiotelegraph station except amateur, or to act as chief operator on a vessel in the first class engaged in international service.

3. *Radiotelegraph operator second class.*—Applicants for this class of license must pass code tests in transmission and reception at a speed of not less than 16 words per minute in continental Morse code, code groups, and 20 words per minute in continental Morse code, plain language (5 characters to the word). The practical and theoretical examination will cover the same subjects as radiotelegraph operator first-class license.

Holders of this class of license are authorized to act as operator at any licensed radiotelegraph station except amateur or as chief operator on a vessel in the first class engaged in international service. They will be authorized to act as chief operator on a vessel in the second class after license is indorsed certifying to six months' or more satisfactory service as an operator at radiotelegraph stations open to public correspondence.

4. *Radiotelegraph operator third class.*—Applicants for this class of license must pass a code test in transmission and reception at a speed of not less than 15 words per minute in continental Morse code, plain language (5 characters to the word), and a practical and theoretical examination consisting of comprehensive questions on the care and operation of vacuum-tube apparatus and radio communication laws and regulations.

Holders of this class of license will be authorized to operate any radiotelegraph station, except amateur, and stations open to international mobile public correspondence.

5. Holders of radiotelegraph operator licenses of the first, second, and third classes may qualify to operate radiotelephone stations by passing the regular radiotelephone operator examination of the class desired and having their licenses so indorsed.

6. Radiotelegraph operator first, second, and third class license examinations will include questions relative to the theory and operation of radiotelephone apparatus in order that the holders of these classes of licenses may operate radiotelephone apparatus employed in mobile and point-to-point service.

#### RADIOTELEPHONE OPERATOR LICENSES

No code test is required for these classes of licenses.

7. *Radiotelephone first class.*—Applicants for this class of license must pass a theoretical examination covering the following:

- (a) Diagram of modern broadcast installation.
- (b) Theory, adjustment, operation, and care of modern radiotelephone transmitters.
- (c) Receivers.
- (d) General principles of electricity.
- (e) Operation and care of storage batteries.
- (f) Power-supply apparatus.
- (g) Radio communication laws and regulations.

Holders of this class of license are authorized to act as operator at any licensed radio station except stations licensed for radiotelegraph service.

8. *Radiotelephone operator second class.*—Applicants for this class of license must pass an examination similar to that required for radiotelephone operator first class, but not so comprehensive in scope.

Holders of this class of license are authorized to act as operator at any licensed radio station except broadcast and stations licensed for radiotelegraph service.

9. *Radiotelephone operator third class.*—Applicants for this class of license will be required to pass an examination covering the laws and regulations governing radio communication and the general procedure of handling radiotelephone traffic between mobile and fixed points in aeronautical or marine harbor service.

This class of license will be valid for the operation of mobile radiotelephone stations equipped for operation on a single frequency and with apparatus so constructed as to prohibit any change in adjustment by operators.

#### AMATEUR OPERATOR LICENSES

The operation of an amateur station will be permitted only the holder of an amateur operator license.

10. *Amateur extra first class.*—To be eligible for examination for this class of license, an applicant must have had at least two years' service as a licensed amateur radiotelegraph operator and must not have been penalized for violation of any radio act, treaty, or regulation binding on the United States. The appli-

cant must pass code tests in transmission and reception at a speed of not less than 16 words per minute in continental Morse code, code groups, and 20 words per minute in continental Morse code, plain language (5 characters to the word), and a theoretical examination relating to amateur apparatus, both telegraph and telephone, and international regulations and acts of Congress affecting amateur stations and operators.

This license is valid for the operation of any licensed amateur radio station.

The amateur extra first-class license examination will be sufficiently wide in scope to authorize the holder of this class of license the unlimited radiotelephone privileges set forth in paragraph 377 of the Federal Radio Commission's Rules and Regulations.

11. *Amateur first class.*—Applicants for this class of license must pass a code test in transmission and reception at a speed of not less than 10 words per minute in continental Morse code (5 characters to the word), and an examination similar to that given for amateur extra first-class license but not so comprehensive in scope.

This license is valid only for the operation of licensed amateur radio stations not utilizing special phone privileges as set forth in paragraph 377 of the Rules and Regulations of the Federal Radio Commission.

Holders of this class of license, after at least one year's experience as a licensed operator at an amateur station, may be accorded unlimited phone privileges as indicated in paragraph 377 of the Rules and Regulations of the Federal Radio Commission after passing the supplemental examination and having their license so indorsed.

12. *Temporary amateur operator class.*—Application for this class of license will be accepted only from applicants residing more than 100 miles from examining point, which may be the district headquarters, a suboffice, or a city visited by an examining officer. The applicant must submit a sworn statement attesting to his ability to transmit and receive at a speed of not less than 10 words per minute in continental Morse code, and complete a questionnaire pertaining to the operation of an amateur radio installation.

Applications for examination for unlimited amateur phone privileges will not be accepted from holders of temporary amateur class operator license. Applicants for this examination must appear personally before an examining officer and pass a written examination.

#### PASSING MARK FOR ALL EXAMINATIONS

13. The percentage that must be obtained as a passing mark in each examination is 75 out of a possible 100. No credit will be given for experience in the examination for any class of license.

#### EXECUTION OF OATH OF SECRECY

14. Licenses are not valid until the oath of secrecy has been executed and the signature of the issuing officer affixed thereto.

All examinations, including the code test, must be written in longhand by the applicant.

#### RENEWALS

15. *Renewals*—(a) *Commercial operator extra first class.*—These licenses may be renewed without examination provided the record shows 12 months' satisfactory service at stations which the applicant is authorized to operate, at least 6 months of which must have been during the last 12 months of the license period.

*Provided further,* That the holders of these licenses employed as radio inspectors, radio instructors, or in similar occupations requiring exceptional qualifications, where the duties require the testing, or demonstrating, or otherwise using commercial radio apparatus and the telegraph codes, may be issued renewals of their licenses without examination, provided such employment has covered a period of 18 months out of the 2-year license period. Where the applicant has not regularly used the telegraph codes, he will be given the code examination as for an original license, and if he has used only one code he will be examined in the code not used.

(b) *Other renewals.*—Renewal licenses may be issued to holders of other classes (except amateur) without examination, provided the operator has had three months' satisfactory service during the last six months of the license term. One year's satisfactory service out of two years of the license term may be accepted for renewal at the discretion of the examining officer.

(c) No credit will be allowed for service unless it appears that such service was obtained under conditions that required the employment of a licensed operator.

(d) Amateur extra first-class and amateur first-class operator licenses may be renewed without examination, provided proof is submitted indicating frequent use of the continental Morse code during the license period. An affidavit indicating at least three amateurs with whom applicant has communicated by code within the last three months of the license term will constitute ample proof; lacking such proof; a code test will be required.

(e) Temporary amateur class licenses are not renewable. Holders of this class of license will be expected to pass the regular amateur examination during the license term. Failing to appear for examination when given an opportunity, or failing to pass examination, the temporary amateur-class license held will be canceled, and holder will not be issued another license of this class upon subsequent application.

(f) Holders of radiotelegraph licenses indorsed for operation of radiotelephone stations whose service has been wholly at radiotelephone stations will be required to pass the code test for the class of license held, and, failing this, will be issued a radiotelephone operator's license as a renewal of the class in which he previously qualified.

In cases where it is impossible for the applicant to appear for the code examination when making application for renewal, he will be issued a radiotelephone operator's license as above. However, in such cases the applicant may appear for code examination within three months after the date of the issuance of the radiotelephone license and be issued a license of the class formerly held, provided he passes the code examination. Failing to appear or failing to pass the code test during the three months' period, the applicant forfeits this privilege.

(g) Renewals or new licenses may be issued a reasonable length of time prior to the expiration of existing licenses, but must bear the exact date of issue, which must correspond with the date on Form 756 forwarded to the radio division. Operators who fail to apply for renewal of their licenses on or prior to the date of expiration must be reexamined.

(h) If, because of circumstances over which the applicant has no control, an operator is unable to apply for renewal of license on or prior to the date of expiration, an affidavit may be submitted to the radio division through the supervisor of radio or examining officer, attesting to the facts. After consideration by the radio division, advice will be forwarded to the supervisor of radio or examining officer in regard to the issuance of a renewal of the license.

(i) Service records must be completed and signed only by masters, employers, or the duly authorized agents of either.

(j) Any improper alteration of the service record or the forgery of the master's or employer's signatures, or any attempt to obtain a license by fraudulent means, or by attempting to impersonate another, or copying or divulging questions used in examinations, will constitute a violation of the regulations, for which the operator may suffer suspension of license or debarment from further examination for a period not exceeding two years at the discretion of the Secretary of Commerce.

16. *Duplicate licenses.*—Any operator applying for a duplicate license to replace an original which has been lost, mutilated, or destroyed will be required to submit an affidavit to the radio division through a supervisor of radio or examining officer, attesting to the facts regarding the manner in which the original was lost. The director of radio will consider the facts in the case and advise the supervisor of radio or examining officer in regard to the issuance of a duplicate license. Duplicates will be issued under the same serial number and date as the original, and will be marked "Duplicate" in red on the face of the license.

17. *Reexamination.*—No applicant who fails to qualify will be reexamined within three months from date of the previous examination. However, when an applicant for the radiotelegraph operator first-class or second-class license fails in the code examination, he may be reexamined the same day for any other class of license desired.

LICENSE INDORSEMENTS

18. Radiotelegraph class licenses to be valid for the operation of radiophone stations will be indorsed as follows: The holder of this license has qualified by examination for additional authority to operate any radiophone station. (If radiophone examination taken by applicant is for second-class radiotelephone operator's license, indorsement should be followed by "except broadcast.")

Date..... Examining officer.....

Amateur first-class licenses to be valid for unlimited radiotelephone operation will be indorsed as follows: The holder of this license has qualified by examination for unlimited amateur radiotelephone operation as indicated in Federal Radio Commission regulation No. 377.

Date \_\_\_\_\_ Examining officer \_\_\_\_\_  
 These regulations supersede "Regulations governing the issuance of radio operator licenses dated January 2, 1931," and all amendments thereto, and become effective July 1, 1932.

#### CHANGE IN LAW GOVERNING ISSUANCE OF RADIO OPERATORS' LICENSES

Herewith is quoted an amendment to the radio act of February 23, 1927, signed by the President on April 19, 1932:

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 3, subparagraph C of the act of February 23, 1927, as amended (U. S. C. title 47, sec. 85), is amended by striking out the word "persons" after the words "issue them to such" and inserting the words "citizens of the United States," so that the amended paragraph will read: "to prescribe the qualifications of station operators, to classify them according to the duties to be performed, to fix the forms of such licenses, and to issue them to such citizens of the United States as he finds qualified."*

#### NEW INTERNATIONAL LIST OF RADIO STATIONS IN ORDER OF FREQUENCIES AVAILABLE

The International Bureau of the Telegraph Union, Radiotelegraph Service, Berne, Switzerland, now has available for distribution the January, 1932 (third) edition of this list, at 35 Swiss gold francs (\$6.76), including supplements to the end of the current year and postage.

#### DATE OF INTERNATIONAL RADIO CONFERENCE FIXED

This conference will convene at 11 a. m., September 3, 1932, at Madrid, Spain. The International Telegraph Conference will be inaugurated at the same time.

#### RATIFICATION OF THE INTERNATIONAL RADIO CONVENTION OF 1927

Effective April 9, 1932, the Dominican Republic ratified this convention.

#### WEATHER BULLETINS TRANSMITTED BY FORT DE FRANCE, MARTINIQUE

This station, call signal FPI, from July 1 to October 31, transmits at 0100, 1300, 1900, 2000, on 500 kc/s. (600 m.), local meteorological observations, in plain language, thus: Barometer in millimeters; wind direction and force (Beaufort); amount of cloud (scale, 0-10); temperature in degrees centigrade; storm warnings when necessary.

#### CHANGES IN RADIOBEACONS OF ENGLAND, WALES, AND CHANNEL ISLANDS

With a view of reducing interference, the frequency (wave length), note frequencies; composition of signal, and times and duration of transmission of the stations named hereunder were changed during this month. For this purpose such stations will be divided into groups of three, each group working on a common frequency (wave length) and transmitting in sequence, so that no two stations within the same group will operate simultaneously.

An important feature of the changes is that the beacons transmit for 1 minute, 45 seconds every 6 minutes in lieu of for 1 minute every 4 minutes as in the past (except North Foreland Lighthouse). The stations will be dealt with in the following order:

Station	Location (approximate)		New frequency (wave length in parentheses)
	Latitude N	Longitude	
Dungeness Lighthouse	50 55	0 58 E.	291 (1,031).
Start Point Lighthouse	50 13	3 38 W.	297 (1,010).
South Bishop Lighthouse	51 51	5 25 W.	291 (1,031).
Casquets Lighthouse	49 43	2 23 W.	297 (1,010).
Bound Island Lighthouse	49 59	6 19 W.	306 (980).
Lundy Island North Lighthouse	51 12	4 41 W.	291 (1,031).
Skerries Lighthouse	53 25	4 36 W.	303 (990).
Cromer Lighthouse	52 55	1 19 E.	(Under consideration.)



Mariners are warned that during the first stages of these alterations interference may be temporarily increased. The existing code signal of three Morse letters applicable to each station will not be altered.

These changes were made following a conference held between the lighthouse authorities of countries bordering on the North Sea and English Channel.

#### CHANGES IN RADIOBEACONS OF HOLLAND

During June and July it is intended to carry out changes in the radio fog signals and beacons on the Maas Lighthouse Vessel and North Hinder Light Vessel. For this purpose the transmissions of these light vessels will be so arranged that they are in sequence with that of North Foreland Lighthouse which operates on the same frequency (wave length), in order that no two of these stations will operate simultaneously. The periods of the fog signals on Maas and North Hinder Light Vessels will be changed to 2 minutes every 6 minutes, while the beacons (clear-weather transmissions) will be changed to two emissions.

#### HANDLING OF SHIP-TO-SHORE TRAFFIC

In reply to a request from an adherent country to the International Radio Convention the International Bureau of the Telegraph Union, Radiotelegraph Service, expressed the opinion given hereunder of the intent of article 26 of the General Regulations annexed to the International Radio Convention. Radio operators should be governed accordingly.

**QUESTION.** Ship station X, not provided with a radiotelegraph installation of type A1 wave, transmits its radiotelegrams not to the nearest, nor approximately nearest, land station, but to a ship station which in turn retransmits them, over a type A1 wave, to a land station which is several thousands of kilometers (0.621 of a mile is equal to a kilometer) from the ship station of origin. Is this procedure in accordance with the regulations?

**ANSWER:** 1. Station X, not using type A1 waves, must transmit its radiotelegrams to the nearest land station, in accordance with paragraph 1 of article 26 of the General Regulations. The only exception provided for by these regulations is the following: When the mobile station can choose from numerous land stations located approximately at the same distance, it shall give preference to the one which is located on the territory of the country of destination or of normal transit of the radiotelegrams to be transmitted, on condition of not causing interference to the coast station which is really the closest. If station X transmits its radiotelegrams not to the nearest nor to the approximately nearest land station, but to a very remote land station through the intermediary of a mobile station using type A1 waves, it infringes the provisions of paragraph 1 of article 26 of the General Regulations.

2. Any mobile station which uses type A1 waves, included in the authorized band, may, in accordance with paragraph 2 of article 26 of the General Regulations, transmit its radiotelegrams to a coast station which is not the nearest. However, it is requested in that case to give preference to the land station located on the territory of the country of destination or of the country which it appears would insure most rationally the transit of the radiotelegrams to be transmitted.

If station X transmitted, on a type A1 wave, a radiotelegram to a very remote coast station through the intermediary of a mobile station, when it could reach directly a closer coast station, it would infringe the provisions of article 26 of the General Regulations.

The provisions of subparagraph 2, paragraph 9, article 3 of the Supplementary Regulations apply only to the retransmissions necessary in order to reach the nearest coast station. (NOTE.—The United States did not subscribe to the Supplementary Regulations at the Washington convention, 1927.)

#### BROADCASTING STATION FREQUENCY MEASUREMENTS DURING APRIL

During the month of April the radio division of the Department of Commerce measured the frequency (wave length) of 458 different broadcasting stations of the United States. Of those measured, 273 deviated less than 50 cycles, 77 less than 100 cycles, and 55 went over the 100-cycle mark but not over 200-cycle mark. The remaining 53 strayed over 200 cycles.

Those deviating less than 50 cycles represent 59.6 per cent of all measured, an increase of 6.1 per cent over February, the next best month.

As a large number of stations are installing frequency-control apparatus, considerable improvement should be shown in future measurements in order to comply

with General Order No. 116, effective June 22, which requires all broadcasting stations not to deviate more than 50 cycles either above or below their assigned frequency.

The following table gives the figures for the month of December, 1930, when they were first compiled, to April, 1932, the last month of complete record:

Month	Number stations measured	Less than 50 cycles	Less than 100 cycles	Less than 200 cycles	Over 200 cycles
December 1930	339		35 (13.5%)	66 (16.5%)	238 (70%)
January 1931	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%)
January 1932	449	230 (51.2%)	94 (20.9%)	63 (14%)	62 (13.9%)
February	450	241 (53.5%)	76 (17%)	63 (14%)	70 (15.5%)
March	519	274 (52.8%)	80 (15.4%)	79 (15.2%)	86 (16.6%)
April	458	273 (59.6%)	77 (16.8%)	55 (12%)	53 (11.6%)

## LESS THAN 50 CYCLES

Call signal		1	Transmitter location, str parentheses
KABC	San Antonio, Tex.	KGGF	South Coffeyville, Okla.
KCRG	Enid, Okla.	KGIZ	Grant City, Mo.
KDFN	Casper, Wyo.	KGKO	Wichita Falls, Tex.
KDKA	Saxonburg, Pa. (Pittsburgh).	KGKX	Sandpoint, Idaho.
KERN	Santa Maria, Calif.	KGKY	Scottsbluff, Nebr.
KFAB	Lincoln, Nebr.	KGO	Oakland, Calif. (San Francisco).
KFAC	Los Angeles, Calif.	KGRS	Armarillo, Tex.
KFBK	Sacramento, Calif.	KGVO	Missoula, Mont.
KFDM	Beaumont, Tex.	KGW	Faloma, Oreg. (Portland).
KFEQ	St. Joseph, Mo.	KHQ	Spokane, Wash.
KFH	Wichita, Kans.	KIT	Yakima, Wash.
KFI	Buena Park, Calif.—near (Los Angeles).	KJBS	San Francisco, Calif.
KFJI	Klamath Falls, Oreg.	KLO	Ogden, Utah.
KFJR	Portland, Oreg.	KLRA	Little Rock, Ark.
KFJZ	Fort Worth, Tex.	KLX	Oakland, Calif.
KFKU	Lawrence, Kans.	KLZ	Denver, Colo.
KFKX	} Bloomington, Ill. (Chicago).	KMA	Shenandoah, Iowa.
KYW		KMAC	San Antonio, Tex.
KFLV	Rockford, Ill.	KMBC	Independence, Mo. (Kansas City).
KFOR	Lincoln, Nebr.	KMED	Medford, Oreg.
KFOX	Long Beach, Calif.	KMJ	Fresno, Calif.
KFPM	Greenville, Tex.	KMO	Tacoma, Wash.
KFPY	Spokane, Wash.	KMOX	St. Louis, Mo.
KFRC	San Francisco, Calif.	KMPD	Beverly Hills, Calif.
KFSD	San Diego, Calif.	KMTR	Los Angeles, Calif.
KFUO	Clayton, Mo.	KNX	Los Angeles, Calif. (Hollywood).
KFVD	Culver City, Calif.	KOA	Denver, Colo.
KFWB	Hollywood, Calif.	KOAC	Corvallis, Oreg.
KFWI	San Francisco, Calif.	KOH	Reno, Nev.
KFXD	Nampa, Idaho.	KOIL	Council Bluffs, Iowa.
KFXF	Denver, Colo.	KOIN	Portland, Oreg.
KFXM	San Bernardino, Calif.	KOL	Seattle, Wash.
KFYR	Bismarck, N. Dak.	KOMO	Harbor Island, Wash. (Seattle).
KGCA	Decorah, Iowa.	KOY	Phoenix, Ariz.
KGCK	Wolf Point, Mont.	KPJM	Prescott, Ariz.
KGER	Long Beach, Calif.	KPO	San Francisco, Calif.
KGEZ	Kalispell, Mont.	KPPC	Pasadena, Calif.
KGFF	Shawnee, Okla.	KQW	San Jose, Calif.
KGJJ	Los Angeles, Calif.	KRE	Berkeley, Calif.
KGFK	Moorhead, Minn.	KRKD	Los Angeles, Calif.

LESS THAN 50 CYCLES—Continued

Call signal	Transmitter location, studio location in parentheses	Call signal	Transmitter location, studio location in parentheses
KRLD	Dallas, Tex.	WGCP	Newark, N. J.
KRSC	Seattle, Wash.	WGES	Chicago, Ill.
KSAC	Manhattan, Kans.	WGH	Newport News, Va.
KSD	St. Louis, Mo.	WGN	} Elgin, Ill.—near (Chicago).
KSL	Salt Lake City, Utah.	WLIB	
KSOO	Sioux Falls, S. Dak.	WGR	Amherst, N. Y. (Buffalo).
KSTP	Radio Center, Minn. (St. Paul).	WGY	Schenectady, N. Y.
KTAB	Oakland, Calif. (San Francisco).	WHAD	Milwaukee, Wis.
KTAR	Phoenix, Ariz.	WHAM	Rochester, N. Y.
KTAT	Birdville, Tex. (Fort Worth).	WHAS	Louisville, Ky.
KTBR	Portland, Oreg.	WHAZ	Troy, N. Y.
KTBS	Shreveport, La.	WHBU	Anderson, Ind.
KTHS	Hot Springs, Ark.	WBBY	West de Pere, Wis. (Green Bay).
KTM	Santa Monica, Calif. (Los Angeles).	WHDH	Gloucester, Mass. (Boston).
KTRH	Houston, Tex.	WHEC	Rochester, N. Y.
KTSA	San Antonio, Tex.	WHFC	Cicero, Ill.
KTSM	El Paso, Tex.	WHFK	Village of Seven Hills, Ohio (Cleveland).
KVI	Des Moines, Wash. (Tacoma).	WHN	New York, N. Y.
KVOO	Tulsa, Okla.	WHO	Des Moines, Iowa.
KWG	Stockton, Calif.	WHP	Lemoynne, Pa. (Harrisburg).
KWJJ	Portland, Oreg.	WIBG	Elkins Park, Pa.
KXRO	Aberdeen, Wash.	WIBO	Desplaines, Ill. (Chicago).
KXYZ	Houston, Tex.	WIBW	Topeka, Kans.
KYA	San Francisco, Calif.	WIBX	Utica, N. Y.
WAAB	Quincy, Mass. (Boston).	WINS	Astoria, N. Y. (New York City).
WAAF	Chicago, Ill.	WIP	} Philadelphia, Pa.
WAAT	Jersey City, N. J.	WFAN	
WAAW	Omaha, Nebr.	WIS	Columbia, S. C.
WABO	} Wayne, N. J. (New York City).	WISN	Milwaukee, Wis.
WBOQ		New Orleans, La.	WJAR
WABZ	Tallmadge, Ohio (Akron).	WJAS	Pittsburgh, Pa.
WADC	Birmingham, Ala.	WJAX	Jacksonville, Fla.
WAPI	} Grand Rapids, Mich.	WJAY	Cleveland, Ohio.
WASH		Zarepath, N. J.	WJBW
WOOD	West Lafayette, Ind.	WJDX	Jackson, Miss.
WAWZ	Glen Morris, Md. (Baltimore).	WJKS	Gary, Ind.
WBAA	Grapevine, Tex. (Fort Worth).	WJSV	Mount Vernon Hills, Va. (Alexandria).
WBAL	Richmond, Va.	WJTL	Atlanta, Ga. (Oglethorpe University).
WBAP	Rossville, N. Y. (Brooklyn).	WJW	Mansfield, Ohio.
WBBL	Martinsville, N. Y. (Buffalo).	WJZ	Bound Brook, N. J. (New York City).
WBBR	Huntsville, Ala.	WKAR	East Lansing, Mich.
WBEN	Hackensack, N. J.	WKAV	Laconia, N. H.
WBHS	New York, N. Y.	WKBB	Joliet, Ill.
WBMS	Needham, Mass.	WKBF	Clermont, Ind. (Indianapolis).
WBNX	Charlotte, N. C.	WKBH	La Crosse, Wis.
WBSO	Danville, Va.	WKBI	Cicero, Ill.
WBT	} Millis Township, Mass. (Boston).	WKBN	Youngstown, Ohio.
WBTM		Storrs, Conn.	WKRC
WBZ	Columbus, Ohio.	WKY	Oklahoma City, Okla.
WBZA	Lincoln, Nebr.	WKZO	Kalamazoo, Mich.
WCAO	Baltimore, Md.	WLBZ	Bangor, Me.
WCAH	Allentown, Pa.	WLEY	Lexington, Mass.
WCAJ	Anoka, Minn. (Minneapolis).	WLIT	Philadelphia, Pa.
WCAO	Chicago, Ill.	WLS	Downers Grove, Ill. (Chicago).
WCBA	Deerfield, Ill. (Chicago)—now deleted.	WLTH	Brooklyn, N. Y.
WCCO	Joliet, Ill.	WLVA	Lynchburg, Va.
WCFL	Culver, Ind.	WLW	Mason, Ohio (Cincinnati).
WCHI	Chicago, Ill.	WMAL	Washington, D. C.
WCLS	Scarboro, Me. (Portland).	WMAQ	Addison, Ill. (Chicago).
WCMA	Tampa, Fla.	WMBC	Detroit, Mich.
WCRW	Roanoke, Va.	WMBD	Peoria Heights, Ill.
WCSH	Brainerd, Tenn. (Chattanooga).	WMBQ	Brooklyn, N. Y.
WDAE	Gretna, La. (New Orleans).	WNAO	Quincy, Mass. (Boston).
WDBJ	Bellmore, N. Y. (New York City).	WBIS	Yankton, S. Dak.
WDOD	Providence, R. I.	WNAX	Fairhaven, Mass. (New Bedford).
WDSU	Harrisburg, Ill.	WNBH	Carbondale, Pa.
WEAF	Buffalo, N. Y.	WNBW	New York, N. Y.
WEAN	Chicago, Ill.	WNYC	Selma, Tex. (San Antonio).
WEBQ	Weymouth, Mass. (Boston).	WOAI	Trenton, N. J.
WEBR	Emory, Va.	WOC	Davenport, Iowa.
WEDC	Battle Creek, Mich.	WODA	Paterson, N. J.
WEEI	Downers Grove, Ill. (Chicago).	WOI	Ames, Iowa.
WEHO	Erie, Pa.	WOKO	Albany, N. Y.
WELL	Grapevine, Tex. (Dallas).	WOL	Washington, D. C.
WENR	Collamer, N. Y. (Syracuse).	WOPI	Bristol, Tenn.
WERE	Merrimac, N. H. (Manchester).	WOR	Kearny, N. J. (Newark).
WFAA	Philadelphia, Pa.	WORC	Auburn, Mass. (Worcester).
WFBL	Hopkinsville, Ky.	WEPB	Jefferson City, Mo.
WFEA	Mississippi City, Miss. (Gulfport).	WOS	Omaha, Nebr.
WFI		WOW	Fort Wayne, Ind.
WFIW		WOWO	
WGCM			

## LESS THAN 50 CYCLES

Call signal	Transmitter location, studio location in parentheses	Call signal	Transmitter location, studio location in parentheses
WPAD	Paducah, Ky.	WSAR	Fall River, Mass.
WPCH	Hoboken, N. J. (New York City).	WSB	Atlanta, Ga.
WPEN	Philadelphia, Pa.	WSBO	Chicago, Ill.
WPG	Atlantic City, N. J.	WSM	Nashville, Tenn.
WPRO	Cranston, R. I. (Providence).	WSUI	Iowa City, Iowa.
WPAW		WSTB	Rutland, Vt.
WQAM	Miami, Fla.	WTAG	Worcester, Mass.
WQBC	Vicksburg, Miss.	WTAM	Brecksville Village, Ohio (Cleveland).
WRAW	Reading, Pa.	WTR	Norfolk, Va.
WRAX	Philadelphia, Pa.	WPOR	
WRO	Washington, D. O.	WTAW	College Station, Tex.
WRDO	Augusta, Me.	WTIC	Mount Avon, Conn. (Hartford).
WREN	Lawrence, Kans.	WTJS	Jackson, Tenn.
WRHM	Fridley, Minn. (Minneapolis).	WTMJ	Brookfield, Wis. (Milwaukee).
WRJN	Racine, Wis.	WTOC	Savannah, Ga.
WRR	Dallas, Tex.	WVJ	Detroit, Mich.
WRUF	Gainesville, Fla.	WWRL	Woodside, N. Y.
WRVA	Mechanicsville, Va. (Richmond).	WWVA	Wheeling, W. Va.
WSAI	Mason, Ohio (Cincinnati).	WXYZ	Detroit, Mich.
WSAN	Allentown, Pa.		

## LESS THAN 100 CYCLES

KDB	Santa Barbara, Calif.	WEVD	Brooklyn, N. Y. (New York City).
KDYL	Salt Lake City, Utah.	WFBE	Cincinnati, Ohio.
KELW	Burbank, Calif.	WGAL	Lancaster, Pa.
KEX	Portland, Oreg.	WGST	Atlanta, Ga.
KFBL	Everett, Wash.	WHA	Madison, Wis.
KFEL	Edgewater, Colo.	WHB	Kansas City, Mo.
KFRU	Columbia, Mo.	WHOM	Jersey City, N. J.
KFSG	Los Angeles, Calif.	WIBA	Madison, Wis.
KFUL	Galveston, Tex.	WICO	Easton, Conn. (Bridgeport).
KGB	San Diego, Calif.	WIIM	Edge Moor-Carrcroft, Del. (Wilmington).
KGDM	Stockton, Calif.	WJAG	Norfolk, Nebr.
KGGC	San Francisco, Calif.	WJJD	Mooseheart, Ill.
KGHL	Billings, Mont.	WJR	Sylvan Lake Village, Mich. (Detroit).
KGKL	San Angelo, Tex.	WKBC	Birmingham, Ala.
KGMB	Honolulu, Hawaii.	WKBW	Amherst, N. Y. (Buffalo).
KHJ	Los Angeles, Calif.	WLAP	Louisville, Ky.
KICK	Red Oak, Iowa.	WLWL	Kearny, N. J. (New York City).
KID	Idaho Falls, Idaho.	WMAZ	Macon, Ga.
KOB	State College, N. Mex.	WMBI	Addison, Ill. (Chicago).
KOOS	Marshfield, Oreg.	WMBO	Auburn, N. Y.
KORE	Eugene, Oreg.	WMC	Bartlett, Tenn. (Memphis).
KPCB	Seattle, Wash.	WML	Brooklyn, N. Y.
KPQ	Do.	WMPO	Lapeer, Mich.
KROW	Richmond, Calif. (Oakland).	WMSG	New York, N. Y.
KWK	Kirkwood, Mo. (St. Louis).	WMT	Waterloo, Iowa.
KWKH	Kennonwood, La. (Shreveport).	WNBR	Memphis, Tenn.
KXL	Portland, Oreg.	WGBO	
KXO	El Centro, Calif.	WNXX	Knoxville, Tenn.
WAIU	Columbus, Ohio.	WQQ	Kansas City, Mo.
WBBO	Brooklyn, N. Y.	WPAP	Cliffside, N. J. (New York City).
WBBM	Glenview, Ill. (Chicago).	WQAO	
WBBZ		Ponca City, Okla.	WPTF
WCAU	Byberry, Pa. (Philadelphia).	WPTY	Raleigh, N. C.
WCAZ	Burlington, Vt.	WRNY	Coytesville, N. J. (New York City).
WCBM	Baltimore, Md.	WSPD	Toledo, Ohio.
WCDA	Cliffside Park, N. J. (New York City).	WTFI	Athens, Ga.
WCKY	Crescent Springs, Ky. (Covington).	WWL	New Orleans, La.
WDAF	Kansas City, Mo.	WWNC	Asheville, N. C.
WDAG	Amarillo, Tex.	WWSW	Wilkinsburg, Pa.
WEEU	Spring Township, Pa. (Reading).		

LESS THAN 200 CYCLES

Call signal	Transmitter location, studio location in parentheses	Call signal	Transmitter location, studio location in parentheses
KBPS	Portland, Oreg.	WCOA	Pensacola, Fla.
KECA	Los Angeles, Calif.	WCOD	Harrisburg, Pa.
KFIO	Spokane, Wash.	WDAS	Philadelphia, Pa.
KFFF	Oklahoma City, Okla.	WDRC	Bloomfield, Conn. (Hartford).
KFNF	Shenandoah, Iowa.	WEAO	Columbus, Ohio.
KGBZ	York, Nebr.	WFBM	Indianapolis, Ind.
KGFV	Kearney, Nebr.	WFBR	Baltimore, Md.
KGIR	Butte, Mont.	WGAR	Cuyahoga Heights, Ohio (Cleveland).
KGMP	Elk City, Okla.	WGBB	Freeport, N. Y.
KIDO	Boise, Idaho.	WGBF	Evansville, Ind.
KLS	Oakland, Calif.	WIAS	Ottumwa, Iowa (Des Moines).
KMLB	Monroe, La.	WJBK	Highland Park, Mich. (Detroit).
KMMJ	Clay Center, Nebr.	WKJC	Lancaster, Pa.
KREG	Santa Ana, Calif.	WLAC	Nashville, Tenn.
KRGV	Harlingen, Tex.	WLBW	Oil City, Pa.
KSET	Pocatello, Idaho.	WLBX	Long Island City, N. Y.
KSO	Clarinda, Iowa.	WLOE	Chelsea, Mass. (Boston).
KTFI	Twin Falls, Idaho.	WMBG	Richmond, Va.
KUJ	Walla Walla, Wash.	WMOA	Hoboken, N. J. (New York City).
KUMA	Flagstaff, Ariz.	WODX	Springhill, Ala. (Mobile).
KUOA	Fayetteville, Ark.	WORK	York, Pa.
KWWG	Brownsville, Tex.	WRBL	Columbus, Ga.
WACO	Waco, Tex.	WRBX	Roanoke, Va.
WBAK	Harrisburg, Pa.	WREC	} Whitehaven, Tenn. (Memphis).
WBCM	Hampton Township, Mich. (Bay City).	WROAN	
WBRC	Birmingham, Ala.	WSFA	Montgomery, Ala.
WCAM	Camden, N. J.	WTBO	Cumberland, Md.
WCGU	Brooklyn, N. Y.	WTEL	Philadelphia, Pa.

LOST COMMERCIAL RADIO OPERATORS' LICENSES

Hereunder is a list of radio operators' licenses which have been reported to this office as having been lost. Should any of them be found they should be returned to this office for cancellation. Supervisors and others concerned should see that lost licenses are not being used by unauthorized persons.

Name	Class	No.	Date issued	Where issued
Baruth, Harold J.	Second	6663	June 17, 1931	Chicago.
Beckett, George C.	First	4228	Dec. 30, 1929	San Francisco.
Billingslea, Marion C., jr.	Second	8400	Apr. 30, 1931	New Orleans.
Brown, E. S.	do	4813	Mar. 5, 1930	Do.
Byam, Lyman A., jr.	First	269	Aug. 26, 1930	Boston.
Coburn, E. D.	do	6665	Aug. 6, 1931	New Orleans.
Colliton, George E.	Second	2851	Feb. 27, 1931	St. Paul.
Comstock, Herbert L.	Broadcast limited	2522	Dec. 18, 1931	Chicago.
Darton, James	First	4527	Jan. 28, 1931	San Francisco.
Denleke, Bert Anthony	do	5935	Dec. 21, 1928	New Orleans.
Dodge, George W.	Second	6744	Aug. 21, 1931	Chicago.
Drainville, Albert J.	do	746	Oct. 16, 1929	New York.
Dyer, George G.	do	1098	July 18, 1930	Do.
Goldberg, Morris P.	First	6440	July 24, 1931	Baltimore.
Grimwood, Fred O.	Broadcast	812	Dec. 17, 1929	Detroit.
Gustafson, Aaron	Second	10314	Oct. 22, 1931	Chicago.
Hajny, George F.	do	6642	May 22, 1931	Do.
Halbert, Carl	do	8263	July 13, 1931	New Orleans
Henderson, James W.	Broadcast limited	737	June 25, 1930	Seattle.
Henry, Frank J.	First	3049	Oct. 28, 1929	Chicago.
Henry, James Matthew	Second	7281	May 11, 1931	New York.
Hoefner, Harold H.	do	6737	Aug. 18, 1931	Chicago.
Hollenback, Henry	Radiotelephone	766	July 31, 1931	Seattle.
Hoppe, Anthony John	Second	4332	Sept. 11, 1930	Detroit.

Name	Class	No.	Date issued	Where issued
Horton, Early A.	First	1721	Mar. 13, 1931	Dallas.
Hume, Gordon J.	Second	1102	July 21, 1930	New York.
Jordan, Robert P.	do.	9970	Dec. 3, 1931	Dallas.
Judson, Thomas	do.	7823	June 10, 1931	Baltimore.
Kidder, Harry	First	21	Nov. 16, 1929	Washington, D. C.
La Chicotte, Walter B., jr.	Second	931	Mar. 13, 1930	New York.
Langhoff, R.	do.	4620	May 12, 1930	Atlanta.
McChesny, Lewis M.	First	1576	Feb. 10, 1928	Philadelphia.
McNeill, George I.	Second	7583	Mar. 4, 1931	New York.
O'Connor, John T. G.	First	1159	Aug. 4, 1930	Do.
Penhollow, H. A.	Second	3735	Oct. 4, 1929	Kansas City.
Rahner, Carl H.	do.	4349	Oct. 7, 1930	Detroit.
Rhodes, Herman A.	First	6602	May 19, 1931	New Orleans.
Salvante, Louis Eugene	Second	738	Oct. 9, 1929	New York.
Scrivner, George R.	do.	5225	June 3, 1931	Kansas City.
Troeger, Henry	do.	9243	Dec. 29, 1931	New York.
Wagner, Ernest B.	First	3587	Nov. 5, 1931	Norfolk.
Wagner, Rev. James A.	Second	3148	July 27, 1929	Chicago.
Wagoner, C. V.	First	4903	Nov. 17, 1931	San Francisco.
Walker, Russell M.	Second	9563	July 30, 1931	Boston.
Wasson, John H.	First	4741	June 5, 1930	New Orleans.
Weber, Louis A.	Second	7339	June 10, 1931	New York.
Weston, Thomas C., 3d.	do.	7410	Sept. 29, 1930	Do.
Willits, Robert L.	do.	7071	Oct. 1, 1930	Boston.
Young, Franklin	Radiotelephone	1562	June 25, 1930	Los Angeles.

**FIELD INTENSITY MEASUREMENTS AT FREQUENCIES FROM 285 TO 5400 KILOCYCLES PER SECOND**

In a paper of the above title, by S. S. Kirby and K. A. Norton, Research Paper No. 429, Bureau of Standards Journal of Research, April, 1932, radio field intensities were measured at distances of only a few wave lengths from a transmitting station on a wide range of frequencies including the broadcast band, in order to determine the distance at which ground absorption became appreciable. Further measurements were made over greater distances, and the experimental data obtained were compared with Rolf's attenuation graphs. In this manner it was shown that Rolf's graphs could be used to predict absorption of the ground wave if the electrical constants of the ground were known. The electrical constants of the ground were determined for radio transmission paths between New York, N. Y., Washington, D. C., and Chicago, Ill. The experimental data were also compared with results given by the Austin-Cohen transmission formula.

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.