DEPARTMENT OF COMMERCE

RADIO SERVICE BULLETIN

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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 List of Radiotelegraph Stations, appearing in this bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

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

NEW STATIONS

Commercial land stations, alphabetically, by names of stations

[Additions to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1928, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

Station	Call signal	Frequency in kilocycles, meters in parentheses	Service	Hours	Station controlled by—
Albuquerque, N. Mex.[1]	KSI	414 (724.6)	FA and AB.		Transcontinental Air Transport.
Altoona, Pa.[2]	WHL	249.9 (1,200)	FX	X	Pennsylvania Railroad.
Boston, Mass.[3]	WMP	1,712 (175.23)	FX	N	Commonwealth of Massachusetts, State Police.
Bradenton, Fla.[4]	WNE	3,202 (93.7)	FX	X	Florida Power & Light Co.
Buffalo, N. Y.[5]	WMJ	1,712 (175.23)	FX	X	City of Buffalo, Police Department.
Butler, Pa.[6]	WHJ	3,160 (94.9), 3,166 (94.75), 3,172 (94.57), 3,178 (94.4), 3,184 (94.22), 3,238 (96.65), 3,244 (92.47).	FX	X	West Penn Power Co.
Cheat Haven, W. Va.[6]	WHH	do	FX	X	Do.
Chicago, Ill.[7]	WOF	3,220 (92.3)	FX	X	Commonwealth Edison Co.
Clovis, N. Mex.[1]	KST	420 (714)	FA and AB.		Transcontinental Air Transport.
Columbus, Ohio [1]	WHG	393 (763)	FA and AB.		Do.
Daytona Beach, Fla.[8]	WNX	3,202 (93.7)	FX	X	Florida Power & Light Co.
Fort Lauderdale, Fla.[9]	WNQ	do	FX	X	Do.
Fort Pierce, Fla.[10]	WNZ	do	FX	X	Do.
Gallup, N. Mex.[1]	KSP	414 (724.6)	FA and AB.		Transcontinental Air Transport.
Highland Park, Mich.[1]	WMO	1,712 (175.23)	FX	X	Highland Park Police.
Indianapolis, Ind.[1]	WHM	400 (750)	FA and AB.		Transcontinental Air Transport.
Jersey City, N. J.[11]	WHU	3,202 (93.7)	FX	X	Public Service Electric & Gas Co.
Kingman, Ariz.[1]	KSX	400 (750)	FA and AB.		Transcontinental Air Transport.
Lake City, Fla.[12]	WNM	3,202 (93.7)	FX	X	Florida Power & Light Co.
Lakeland, Fla.[13]	WNF	do	FX	X	Do.
Miami, Fla.[14]	WNH	do	FX	X	Do.
Newark, N. J.[15]	WHV	do	FX	X	Public Service Electric & Gas Co.
Palatka, Fla.[16]	WNP	do	FX	X	Florida Power & Light Co.
Palo Alto, Calif. (near).[22]	KNK	14,680 (20.44), 14,710 (20.39), 18,780 (15.974), 19,540 (15.253).	FX	N	M. R. T. Co.
Ponca City, Okla.[3]	KSF	1,600 (187.5), 1,652 (181.6), 1,664 (180.29), 1,680 (178.6), 1,704(176.06).	FX	X	Marland Production Co.
Punta Gorda, Fla.[17]	WNS	3,202 (93.7)	FX	X	Florida Power & Light Co.
St. Augustine, Fla.[18]	WNV	do	FX	X	Do.
Sanford, Fla.[19]	WNT	do	FX	X	Do.
Waynooka, Okla.[1]	KSY	393 (763)	FA and AB.		Transcontinental Air Transport.
West Palm Beach, Fla.[20]	WMR	5525 (54.3), 5555 (54), 11110 (27).	PG	N	M. R. & T. Co.
Do.[21]	WNG	3202 (93.7)	FX	X	Florida Power & Light Co.
Winslow, Ariz.[1]	KSV	457 (656.5)	FA and AB.		Transcontinental Air Transport.

[1] Type, A1, A2, and A3.
[2] Type, A1.
[3] Type, A3.
[4] Loc. (approximately) 82° 34′ 00″ W., 27° 29′ 45″ N.; type, A1 and A3.
[5] Type, A1 and A3.
[6] Type, A2 and A3.
[7] Type, A2.
[8] Loc. 81° 01′ 29″ W., 29° 12′ 38″ N.; type, A1 and A3.
[9] Loc. 80° 12′ 00″ W., 26° 04′ 06″ N.; type, A1 and A3.
[10] Loc. 80° 19′ 32″ W., 27° 26′ 54″ N.; type, A1 and A3.
[11] Loc. 74° 04′ 25″ W., 40° 44′ 40″ N.; type, A1, A2, and A3.
[12] Loc. 82° 38′ 45″ W., 30° 11′ 34″ N.; type, A1 and A3.
[13] Loc. 82° 00′ 22″ W., 28° 02′ 51″ N.; type, A1 and A3.
[14] Loc. 80° 11′ 24″ W., 25° 46′ 24″ N.; type, A1 and A3.
[15] Loc. 74° 07′ 20″ W., 40° 44′ 25″ N.; type, A1, A2, and A3.
[16] Loc. 81° 37′ 45″ W., 29° 38′ 46″ N.; type, A1 and A3.
[17] Loc. 82° 02′ 51″ W., 26° 56′ 00″ N.; type, A1 and A3.
[18] Loc. 81° 19′ 13″ W., 29° 53′ 12″ N.; type, A1 and A3.
[19] Loc. (approximately) 80° 19′ 00″ W., 28° 50′ 00″ N.; type, A1 and A3.
[20] Loc. 80° 01′ 55″ W., 26° 42′ 00″ N.; type, A1 and A2.
[21] Loc. 80° 03′ 54″ W., 26° 42′ 15″ N.; type, A1 and A3.
[22] Type, A1 and A2.

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

Station	Call signal	Frequency in kilocycles, meters in parentheses	Service	Hours	Station controlled by—
Portable					
Fifth radio district [2]	KDD	1600 (187.5), 1652 (181.6), 1664 (180.29), 1680 (178.6), 1704 (176.06).	FX	N	F. S. Chapman.
Ninth radio district.[2]	WGC	do	FX	N	Do.
Seventh radio district.[2]	KDL	do	FX	N	Do.
Sixth radio district. [2]	KDE	do	FX	N	Do.
Third radio zone [7]	KDH	do	FX	X	Geophysical Research Corporation.
Do	KDV	do	FX	X	Do.
Do	KDX	do	FX	X	Do.
Do	KIB	do	FX	X	Do.
Do	KIC	do	FX	X	Do.
Do	KIJ	do	FX	X	Do.
Do	KKD	do	FX	X	Do.
Do	KKF	do	FX	X	Do.
Do	KKU	do	FX	X	Do.
Do	KKV	do	FX	X	Do.
Do	KKX	do	FX	X	Do.
Do	KKY	do	FX	X	Do.
Do	KSB	do	FX	X	Do.

[2] Type, A1. [7] 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, 1928, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

Name of vessel	Call signal	Rates	Service	Hours	Owner of vessel	Message accounts settled by—
Alabtross	KELD	8	PG	X	Deep Sea Fisheries	R. M. C. A.
Beryle E.[1]	WIDK			X	Alaska Pacific Salmon Corporation	Owner.
Buccaneer [2]	WIDH		P		Charles C. West	Do.
Caronia	WIDO	8	PG	X	James E. Whitin	R. M. C. A.
Chickamauga	KULC	8	PG	X	C. D. Mallory & Co	Do.
Doodeen [2]	WIDD		P	X	W. Charles Swett	Owner.
Fish Hawk	WKIA	8	PG	X	Deep Sea Fisheries	R. M. C. A.
Hutchinson	KUJP	8	PG	X	Chas. R. McCormick Lumber Co	
John A. Topping [4]	KFXG		PG	X	Columbia S. S. Co	R. C. A.
John R. Williams	KGAU		PG	X	Great Lakes Dredge & Dock Co	R. M. C. A.
Joseph H. Frantz [4]	WIDF		PG	X	Columbia S. S. Co	R. C. A.
Kiska [5]	WIDE				Booth Fisheries Co	
Lake Elmsford	KOVG	8	PG	X	U. S. S. B	
Leonine [1]	WIDL			X	Alaska Pacific Salmon Corporation	Owner.
Mikimiki	WIDI				Young Bros	
Mitchell	KOTF	8	PG	X	U. S. S. B	
Nosa Prince	KUML	8	PG	X	New Orleans & South American S. S. Co.	R. M. C. A.
Nosa Queen	KDCN	8	PG	X	do	Do.
Point San Pablo	KOZN	8	PG	X	Swayne & Hoyt	M. R. T. Co.
Point San Pedro	KDCO	8	PG	X	do	Do.
Sally S.[1]	WIDM			X	Alaska Pacific Salmon Corporation	Owner.
Santa Inez	WIDA	8	PG		Grace S. S. Co	R. M. C. A.
Santa Rita	WIDG	8	PG		do	Do.
Temptress	WIDJ				S. F. B. Morse	
Virginia E.[1]	WIDN			X	Alaska Pacific Salmon Corporation	Owner.
Wekika	KIXX	8	PG	X	C. D. Mallory & Co	R. M. C. A.

[1] Type, A3; power, 125.34 m. s.
[2] Type, A1,
[3] Type, A1, fy., 11,170 (26.86), 11,350 (26.43), 16,700 (17.964), 21,820 (13.749).
[4] Type, A2; fy., 375 (800), 420 (715); rates, Great Lakes service, 4 cents per word.
[5] Type, A3.

Commercial land and ship stations, alphabetically, by call signals

[a, aeronautical station; b, ship station; c, coast (PG) station; f, fixed station]

Call signal	Name of station		Call signal	Name of station	
KDCN	Nosa Queen	b	WHG	Columbus, Ohio	fa and ab
KDCO	Point San Pedro	b	WHH	Cheat Haven, W. Va	f
KDD	Fifth radio district (portable)	f	WHJ	Butler, Pa	f
KDE	Sixth radio district (portable)	f	WHL	Altoona, Pa	f
KDH	Third radio zone (portable)	f	WHM	Indianapolis, Ind	fa and ab
KDL	Seventh radio district (portable)	f	WHU	Jersey City, N. J	f
KDV	Third radio zone (portable)	f	WHV	Newark, N. J	f
KDX	do	f	WIDD	Doodeen	b
KELD	Albatross	b	WIDE	Kiska	b
KFXG	John A. Topping	b	WIDF	Joseph H. Frantz	b
KGAU	John R. Williams	b	WIDG	Santa Rita	b
KIB	Third radio zone (portable)	f	WIDH	Buccaneer	b
KIC	do	f	WIDI	Mikimiki	b
KIJ	do	f	WIDJ	Temptress	b
KIXX	Wekika	b	WIDK	Beryle E	b
KKD	Third radio zone (portable)	f	WIDL	Leonine	b
KKF	do	f	WIDM	Sally S	b
KKU	do	f	WIDN	Virginia E	b
KKV	do	f	WIDO	Caronia	b
KKX	do	f	WKIA	Fish Hawk	b
KKY	do	f	WMJ	Buffalo, N. Y	f
KNK	Palo Alto, Calif	f	WMO	Highland Park, Mich	f
KOTF	Mitchell	b	WMP	Boston, Mass	f
KOVG	Lake Elmsford	b	WMR	West Palm Beach, Fla	c
KOZN	Point San Pablo	b	WNE	Bradenton, Fla	f
KSB	Third radio zone (portable)	f	WNF	Lakeland, Fla	f
KSF	Ponca City, Okla	f	WNG	West Palm Beach, Fla	f
KSI	Albuquerque, N. Mex	fa and ab	WNH	Miami, Fla	f
KSP	Gallup, N. Mex	fa and ab	WNM	Lake City, Fla	f
KST	Clovis, N. Mex	fa and ab	WNP	Palatka, Fla	f
KSV	Winslow, Ariz	fa and ab	WNQ	Fort Lauderdale, Fla	f
KSX	Kingman, Ariz	fa and ab	WNS	Punta Gorda, Fla	f
KSY	Waynoka, Okla	fa and ab	WNT	Sanford, Fla	f
KUJP	Hutchinson	b	WNV	St. Augustine, Fla	f
KULC	Chickamauga	b	WNX	Daytona Beach, Fla	f
KUML	Nosa Prince	b	WNZ	Fort Pierce, Fla	f
WIDA	Santa Inez	b	WOF	Chicago, Ill	f
WGC	Ninth radio district (portable)	f			

Broadcasting stations, alphabetically, by names of States and cities

[Additions to the List of Radio Stations of the United States, edition of June 30, 1928]

State and city	Call signal	Frequency in kilocycles, meters in parentheses	Power (watts)
Arizona: Tucson [1]	KVOA	1,260 (238.1)	500
Nevada: Las Vegas	KGIX	1,420 (211.3)	100

[1] Day only.

Broadcasting stations, alphabetically, by call signals

Call signal	Location of station (address)	Owner of station	Frequency in kilocycles, meters in parentheses	Power (watts)
KGIX	Las Vegas, Nev	J. M. Heaton	1,420 (211.3)	100
KVOA	Tucson, Ariz. [1]	Robert M. Riculfi	1,260 (238.1)	500

[1] Day only.

Government 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, 1928, and to the International List of Radiotelegraph Stations published by the Berne bureau]

Station	Call signal	Frequency in kilocycles, meters in parentheses	Service	Hours	Station controlled by—
Crissy Field (Presidio of San Francisco), Calif. [1]	WZZ	200 (1,500), 220 (1,364)	FX	.....	U. S. Army.

[1] Loc. 122° 28′ 00″ W., 37° 48′ 18″ N.; hours, 9.30 to 10 a. m., 11.30 to 12 noon, 2 to 2.45, 4.15 to 4.30 and 5.15 to 5.30 p. m.

Government ship stations, alphabetically, by names of stations

[Additions to the List of Commerical and Government Radio Stations of the United States, edition of June 30, 1928, and to the International List of Radiotelegraph Stations published by the Berne bureau]

Station	Call signal	Frequency in kilocycles, meters in parentheses	Service	Hours	Station controlled by—
Louisville	NIFT		O	.....	U. S. Navy.
Northampton	NEFX		O	.....	Do.
Scoter	WTDF		O	X	Department of Commerce, Bureau of Fisheries.
Teal	WTDE		O	X	Do.

Government land and ship stations, alphabetically, by call signals

[b, ship station; f, fixed station; c, coast (PG) station; o, official business only]

Call signal	Name of station	Call signal	Name of station
NEFX	Northampton—b	WTDF	Scoter—b
NIFT	Louisville—b	WZZ	Crissy Field (Presidio of San Francisco), Calif.—f
WTDE	Teal—b		

Special stations, alphabetically, by names of stations

[Additions to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1928]

Station	Call signal	Frequency in kilocycles, meters in parantheses	Power (watts)	Station controlled by—
California:				
Palo Alto	W6XAU	Variable between 1,604 (187.03) and 21,380 (14.032).	5,000	M. R. & T. Co.
San Mateo County	W6XQ	Variable between 7,500 (40) and 300,000 (1).	10,000	F. T. Co.
Illinois: Chicago [1]	W9XAO	2,000 (150) to 2,100 (142.9)	500	Nelson Bros. Bond & Mortgage Co., 134 La Salle St.
Minnesota: Robbinsdale.	W9XAE	1,604 (187.03), 2,398 (125.1), 3,088 (97.15), 4,795 (62.57), 6,420 (46.73), 8,650 (34.68), 12,850 (23.35), 17,300 (17.341), 25,680 (11.682).	500	Lorenz A. Hansen and Carlton H. Kohler, 2000 Humboldt Ave., South.
New Jersey: Jersey City.[1]	W2XCR	2,100 (142.9) to 2,200 (136.4)	5,000	Jenkins Television Corp., 346–370 Claremont Ave.
New York:				
Brooklyn [1]	W2XCL	2,000 (150) to 2,100 (142.9), 2,750 (109.1) to 2,850 (105.3).	250	Pilot Electric Mfg. Co.
New York [1]	W2XCO	2,100 (142.9) to 2,200 (136.4)	5,000	R. C. A.
Do.[2]	W2XR	1,604 (187.03), 2,000 (150) to 2,100 (142.9), 2,100 (150) to 2,200 (136.4), 2,498 (120.1), 2,752 (109.01), to 2,848 (105.34), 2,854 (105.12) to 2,950 (101.69), 3,256 (92.5), 4,795 (62.57), 6,425 (46.7), 8,650 (34.68), 12,850 (23.35), 17,300 (17.341).	500	John V. L. Hogan, 144 Nassau St.
Sayville	W2XCM	Variable between 1,604 (187.03) and 21,380 (14.032).	5,000	M. R. T. Co.
Schenectady [1]	W2XCW	2,100 (142.9) to 2,200 (136.4)	20,000	General Electric Co.

[1] Visual broadcasting. [2] Visual broadcasting and experimental.

RADIOBEACON STATIONS

[Alterations to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1928, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

Canal Breakwater Light Station, Cape Cod Bay, Mass.—Loc. 70° 29′ 30″ W., 41° 46′ 48″ N. Transmits groups of 2 dots and 1 dash for 60 seconds, silent 120 seconds, thus:

••— ••— ••— etc.	Silent
60 seconds	120 seconds

Operates continuously during thick or foggy weather on a frequency of 300 (1,000).

Sand Island Station, Ala.—Loc. 88° 03′ 02″ W., 30° 11′ 15″ N. Transmits groups of 1 dot, 1 dash and 1 dot for 60 seconds, silent 120 seconds, thus:

•—• •—• •—• etc.	Silent
60 seconds	120 seconds

Operates continuously during thick or foggy weather and daily in clear weather from 5 to 5.30 and from 11 to 11.30 a. m. and p. m., ninetieth meridian time, on a frequency of 300 (1,000).

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, 1928, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

BAYTOWN, TEX.—Fy., strike out 327.9 (915), add 525 (571.4).
CAPE CHACON, ALASKA.—Owner, Alaska Pacific Salmon Corporation.
EVANS BAY, ALASKA.—Owner, Alaska Pacific Salmon Corporation.
HONOLULU, HAWAII (KYB).—Type, A2 and A3; fy., 3,160 (94.9).
ILOILO, P. I.—Type, A1.
LAKE BAY, ALASKA.—Owner, Columbia River Packers Association.
MARYSVILLE, MICH.—Type, A1, A2, and A3; fy., 3,160 (94.9), 3,166 (94.75), 3,172 (94.57), 3,178 (94.4), 3,184 (94.22), 3,238 (96.65), 3,244 (92.47).
PORT ALTHORP, ALASKA.—Owner, Alaska Pacific Salmon Corporation.
ROSE INLET, ALASKA.—Owner, Alaska Pacific Salmon Corporation.
SUPERIOR, MICH.—Type, A1, A2, and A3; fy., 3,160 (94.9), 3,166 (94.75), 3,172 (94.57), 3,178 (94.4), 3,184 (94.22), 3,238 (96.65), 3,244 (92.47).
TEXAS AND LOUISIANA.—All stations listed on page 3 of Radio Service Bulletin No. 143 should have additional frequency of 1,704 (176.06).
THIRD ZONE.—All stations listed on page 3 of Radio Service Bulletin No. 143 should have additional frequency of 1,704 (176.06).
FIFTH ZONE (portable) KHP.—Fy., 1,600 (187.5), 1,652 (181.6), 1,664 (180.29), 1,680 (178.6), 1,704 (176.06).
FIFTH ZONE portable) KHS.—Fy., 1,600 (187.5), 1,652 (181.6), 1,664 (180.29), 1,680 (178.6), 1,704 (176.06).
FIFTH ZONE (portable) KHW.—Fy., 1,600 (187.5), 1,652 (181.6), 1,664 (180.29), 1,680 (178.6), 1,704 (176.06).
FIFTH ZONE (portable) KHZ.—Fy., 1,600 (187.5), 1,652 (181.6), 1,664 (180.29), 1,680 (178.6), 1,704 (176.06).
Strike out all particulars of the following-named stations: Big Creek (Camp 62), Calif.; Big Creek (Camp 63), Calif.; Bowling Green, Ky.; Cascada, Calif.; Casper, Wyo.; East Hampton, N. Y.; Fairport, Va.; Flint, Mich.; Lima, Ohio; Los Angeles, Calif. (KVT); Los Angeles, Calif. (KZA); Miami, Fla. (WRB); Oakland, Calif. (KEB); Owensboro, Ky.; Port Beauclaire, Alaska; Quanah, Tex.; San Diego, Calif. (KVU); Shelby, Mont.; Portable: Los Angeles, Calif. (KYX); Los Angeles, Calif. (KZB); Los Angeles, Calif. (KZI).

NOTE.—All stations listed as being in a certain zone of district should be changed to show that the zone of district referred to is the radio zone or district as "Third radio zone," "Sixth radio district," etc.

COMMERCIAL SHIP STATIONS, ALPHABETICALLY BY NAME 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, 1928, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

ADMIRAL DEWEY.—Fy., 125 (2,400), 137 (2,190), 143 (2,098), 151 (1,987), 157 (1,911), 375 (800), 425 (705), 500 (600).
ADMIRAL PERRY.—Fy., 125 (2,400), 143 (2,098), 151 (1,987), 157 (1,911), 375 (800), 425 (705), 500 (600).
AGWIHAVRE.—Owner, Gulf Refining Co.
AGWIMEX.—Owner, Gulf Refining Co.
AGWIPOND.—Owner, Atlantic, Gulf & West Indies S. S. Lines.
AGWISUN.—Owner, Gulf Refining Co.
ALBACORE.—Fy., 5,525 (54.3), 5555 (54).
ALPENA.—Fy., 189 (1,587), 420 (715), 454 (660).
AMOLCO.—Owner, Steamship Amolco Corporation.
AVALON.—Type, A1 and A3; fy., 2,740 (109.5), service, P; hours, X; accounts, owner.
BATON ROUGE.—Fy., 273 (1,099).
BETTY R.—Fy., 500 (600), 2,740 (109.5), 3,420 (87.7), 5,525 (54.3), 5,555 (54).
BIRMINGHAM.—Fy., 273 (1,099).
BLAINE.—Type, A3; fy., 2,740 (109.5); service, P; hours, X; accounts, owner.
BONNIE BROOK.—Type, B; fy., 375 (800), 425 (705), 500 (600).
CAIRO.—Fy., 273 (1,099).
CAPITOL OF NEBRASKA.—Name changed to Nosa King; owner, New Orleans & South American S. S. Co.
CAPTAIN WILLIAM.—Type A1 and A3; fy., 2,740 (109.5).
CAPT. JOHN W. MCKIE.—Fy., 273 (1099).
CARNEGIE.—Fy., 4,755 (63.1), 5,525 (54.3), 5,615 (53.43), 6,575 (45.62), 9,050 (33.15), 13,600 (22.06), 18,260 (16.429), 27,320 (10.981).
C. C. WEBBER.—Fy., 273 (1,099), 500 (600).
CHARLES M. SCHWAB.—Fy., 125 (2,400), 143 (2,098), 167 (1,796), 375 (800), 420 (715), 454 (660), 5,525 (54.3), 6,275 (47.81), 8,390 (35.76).
CITY OF CLEVELAND III.—Fy., 167 (1,796), 375 (800), 420 (715), 454 (660); service, PG; hours, N.
CITY OF DETROIT III.—Fy., 167 (1,796), 375 (800), 420 (715), 454 (660); service, PG; hours, N.
CONNEAUT.—Fy., 189 (1,587), 420 (715), 454 (660).
CORDOVA (KFMF).—Fy., 273 (1,099).
CORMORANT.—Type, A2; fy., 375 (800), 400 (750), 425 (705), 500 (600); service, PG; hours, X; rates, 8 cents per word.
CURLEW (KOSZ).—Type, A2; fy., 375 (800), 425 (705), 500 (600).
CUTTY SARK.—Name changed to Mary Pinchot; owner, Gifford Pinchot.
DAVID P. FLEMING.—Type, A1 and A3; fy., 2,740 (109.5).
DELPHINE.—Fy., 143 (2,098), 153 (1,961), 160 (1,875), 375 (800), 400 (750), 410 (730), 454 (660).
DEMOPOLIS.—Fy., 273 (1,099).
D. M. RENTON.—Type A1 and A3; fy., 2,740 (109.5).
DONNA LANE.—Type, add A2; fy., add 8,430 (35.59).
EAGLE (WSCL).—Type, A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
EASTERN GLEN.—Service, PG; hours, N.
EASTERN STATES.—Fy., 167 (1,796), 375 (800), 420 (715), 454 (660); service, PG; hours, X.
EAST INDIAN.—Fy., 125 (2,400), 143 (2,098), 151 (1,987), 157 (1,911), 167 (1,796), 375 (800), 400 (750), 425 (705), 500 (600).
EDGEFIELD.—Fy., add 375 (800).
EDWARD J. BERWIND.—Fy., 375 (800), 410 (730), 454 (660).
EDWARD Y. TOWNSEND.—Fy., 375 (800), 410 (730), 454 (660).
EELBECK.—Fy., 125 (2,400), 137 (2,190), 141 (2,128), 143 (2,098), 145 (2,069), 149 (2,013), 151 (1,987), 153 (1,961), 157 (1,911), 159 (1,887), 160 (1,875), 375 (800), 500 (600).
E. G. MATHIOTT.—Fy., 375 (800), 410 (730), 454 (660).
ELOISE.—Fy., 8,330 (36.01), 8,570 (35.01).
EL SEGUNDO.—Fy., 375 (800), 425 (705), 469 (640), 500 (600).
ELTON HOYT II.—Type, A2; fy., 375 (800), 410 (730), 454 (660).
EMIDIO.—Fy., 125 (2,400), 137 (2,190), 141 (2,128), 143 (2,098), 151 (1,987), 157 (1,911), 160 (1,875), 375 (800), 500 (600).

EMMA ALEXANDER.—Fy., 125 (2,400), 143 (2,098), 151 (1,987), 157 (1,911), 375 (800), 425 (705), 500 (600).
EMMA R. S.—Type, A1 and A3; fy., 4,148 (72.3), 8,230 (36.45); service, P; hours, X; accounts, owner.
EMPIRE ARROW.—Fy., add 400 (750).
E. R. KEMP.—Fy., add 469 (640).
ESPARTA.—Fy., 375 (800), 400 (750), 410 (730), 425 (705), 454 (660), 469 (640), 500 (600); service, PG; hours, N (first class), X (third class).
E. T. BEDFORD.—Fy., add 469 (640).
EURANA.—Type, A2; fy., add 469 (640).
EVANGELINE.—Type, A1 and A2; owner Nova Scotia S. S. Corporation.
EXARCH.—Type, A arc and B; fy., 137 (2,190), 141 (2,128), 143 (2,098), 151 (1,987), 157 (1,911), 160 (1,875), 375 (800), 425 (705), 500 (600).
EXHIBITOR.—Hours, N.
EXMOUTH.—Fy., 375 (800), 425 (705), 500 (600).
EXTAVIA.—Fy., 375 (800), 410 (730), 425 (705), 454 (660), 500 (600).
FAN KWAI.—Fy., 2,740 (109.5).
FAVORITE (KIFG).—Fy., 375 (800), 420 (715), 454 (660), 5,525 (54.3), 6,275 (47.81), 8,390 (35.76).
FELIX TAUSSIG.—Type, A2; fy., add 400 (750), 469 (640).
FIRE BOAT No. 31.—Fy., 2,584 (116.1).
FIRE BOAT No. 44.—Fy., 2,584 (116.1).
FIRE BOAT No. 47.—Fy., 2,584 (116.1).
FORTUNA (KDWU).—Accounts, R. M. C. A.
GAR, SR.—Fy., 2,590 (115.8), service, P; hours, X; accounts, owner.
GENERAL ASHBURN.—Fy., 273 (1,099), 8,060 (37.22).
GEORGE PIERCE.—Correct orthography, George Peirce.
GLADYS.—Type, A1; fy., 8,230 (36.45), 8,450 (35.5); service, P; hours, X; accounts owner.
GREATER BUFFALO.—Fy., 167 (1,796), 375 (800), 420 (715), 454 (660).
GREATER DETROIT.—Fy., 167 (1,796), 375 (800), 420 (715), 454 (660).
GRECIAN.—Fy., 375 (800), 410 (730), 425 (705), 500 (600); service, PG; hours, N (first class), X (third class).
GULFPORT.—Fy., 273 (1,099).
HALIGONIAN.—Fy., 4,188 (71.66), 8,670 (34.6).
HARVARD (WTBY).—Type, A2; fy., 375 (800), 400 (750), 425 (705), 500 (600).
HENRY FORD II.—Fy., 375 (800), 420 (7.5), 454 (660); service, PG; hours, X.
HOLY CROSS.—Type, A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
HOMER.—Fy., 375 (800), 400 (750), 410 (730), 454 (660), 500 (600).
HURON (WBCC).—Type, A1 and A2; fy., 189 (1,587), 420 (715), 454 (660).
IDALIA.—Type, B and A1; fy., 500 (600), 3,436 (87.3), 4,148 (72.3), 6,275 (47.81), 12,820 (23.4); service, P; hours, X.
ILLINOIS (KFMC).—Fy., 273 (1,099); owner, Inland Waterways Corp.
IOLANDA.—Accounts, Marconi International Marine Communication Co.
ISONZO.—Name changed to Catherine O'Boyle; owner, Wm. E. Hedger.
J. A. BOSTWICK.—Name changed to Cities Service Toledo; owner, Cities Service Transportation Co.
JOHN A. KLING.—Fy., 375 (800), 410 (730), 454 (660).
JOHN ANDERSON.—Fy., 375 (800), 410 (730), 454 (660).
JOHN F. CUSHING.—Type, B; fy., 375 (800), 410 (730), 454 (660); service, PG; hours, X; rates, 8 cents per word.
JOHN MCCARTNEY KENNEDY.—Fy., 375 (800), 410 (730), 454 (660).
JOHN N. STEWART.—Type, A1 and A3; fy., 2,740 (109.5); service, P; hours, X.
JOHN S. MANUEL.—Fy., 375 (800), 410 (730), 454 (660).
JOHN STANTON.—Fy., 375 (800), 410 (730), 454 (660).
JOHN W. BOARDMAN.—Type, A2; fy., 189 (1,587), 454 (660).
JOHN WORTHINGTON.—Fy., add 469 (640).
JONANCY.—Fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
JOSEPH G. BUTLER, JR.—Fy., 375 (800), 410 (730), 454 (660).
JOSEPHINE.—Type, A1 and A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
JUNIATA (WADM).—Type, A1, A2, and B; fy., 375 (800), 410 (730), 454 (660).
KATHERINE.—Type, A1, A2, and A3.
KEARNY.—Hours, X.
KNOXVILLE CITY.—Hours, N.
KVICHAK.—Hours, X.
LACKAWANNA.—Fy., 375 (800), 410 (730), 454 (660).

LAKE BENBOW.—Type, B; fy., 375 (800), 410 (730), 425 (705), 454 (660), 500 (600).
LEBANON.—Fy., 375 (800), 410 (730), 454 (660).
L. E. BLOCK.—Fy., 375 (800), 410 (730), 454 (660).
LEHIGH (WCDN).—Fy., 375 (800), 410 (730), 454 (660).
LEWIS LUCKENBACH.—Hours, N.
LEXINGTON.—Type, A1 and A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
LIEUT. COL. ROBERT G. GILDART.—Fy., 273 (1,099).
M. A. BRADLEY.—Fy., 375 (800), 410 (730), 454 (660).
MACOM.—Type, A1 and A2; fy., 375 (800), 410 (730), 425 (705), 500 (600).
MADISON.—Type, A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
MALAMA.—Fy., add 375 (800).
MALIBU.—Service, PG; hours, X; rates, 8 cents per word.
M. & J. TRACY.—Fy., add 375 (800).
MANUKAI.—Type, A1 and A2; fy., 125 (2,400), 143 (2,098), 151 (1,987), 160 (1,875), 375 (800), 400 (750), 410 (730), 425 (705), 454 (660), 469 (640), 500 (600).
MARQUETTE.—Fy., 375 (800), 410 (730), 454 (660).
MARQUETTE & BESSEMER No. 2.—Accounts, R. C. A.
MARTHA FOSS.—Service, PG; hours, X; rates, 6 cents per word.
MARTIN MULLEN.—Fy., 375 (800), 410 (730), 454 (660).
MARYLAND.—Fy., 375 (800), 410 (730), 454 (660).
MARY LUCKENBACH.—Fy., add 469 (640).
MASSMAR.—Type, A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
MATINICOCK.—Fy., 375 (800), 425 (705), 500 (600).
MAUNA ALA.—Fy., 375 (800), 410 (730), 425 (705), 454 (660), 500 (600).
MAURICE TRACY.—Type, B; fy., add 375 (800).
MAYAN.—Type, A1 and A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600); accounts, R. M. C. A.
MAZAMA.—Hours, X.
MEMPHIS.—Fy., 273 (1,099).
MEVANIA.—Type, A arc and B; fy., 125 (2,400), 137 (2,190), 141 (2,128), 143 (2,098), 151 (1,987), 157 (1,911), 159 (1,887), 160 (1,875), 375 (800), 425 (705), 500 (600).
MICHAEL GALLAGHER.—Fy., 375 (800), 410 (730), 454 (660).
MICHAEL TRACY.—Fy., add 375 (800).
MICHIGAN (KEGS).—Fy., add 375 (800).
MICHIGAN (KFLN).—Fy., 375 (800), 410 (730), 454 (660).
MIMI.—Type, A1; fy., 2,740 (109.5).
MISSOURI.—Fy., 273 (1,099).
MIST.—Service, PG; hours, X; rates, 8 cents per word.
MOBILE.—Fy., 273 (1,099).
MOHAWK (WRCE).—Type, A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600); hours, X.
MOHEGAN.—Type, A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
MONGOLIA.—Owner, Atlantic Transport Co.
MONTGOMERY.—Fy., 273 (1,099).
MORRIS S. TREMAINE.—Fy., 375 (800), 410 (730), 454 (660).
MUNARGO.—Fy., add 410 (730).
MUNISING.—Fy., 375 (800), 410 (730), 454 (660).
MUNORLEANS.—Hours, X.
MUSKOGEE.—Fy., add 400 (750), 469 (640).
NARBO.—Fy., 125 (2,400), 137 (2,190), 141 (2,128), 143 (2,098), 151 (1,987), 157 (1,911), 160 (1,875), 375 (800), 500 (600).
NASHABA.—Fy., 125 (2,400), 137 (2,190), 141 (2,128), 143 (2,098), 151 (1,987), 157 (1,911), 160 (1,875), 375 (800), 500 (600).
NATCHEZ.—Fy., 273 (1,100).
NATIRAR.—Fy., 125 (2,400), 137 (2,190), 141 (2,128), 143 (2,098), 151 (1,987), 157 (1,911), 160 (1,875), 375 (800), 425 (705), 500 (600).
NEGAUNEE.—Fy., 375 (800), 410 (730), 454 (660).
NEVADA.—Accounts, owner.
NEW HAMPSHIRE.—Type, A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
NEW HAVEN.—Type, A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600); hours, X.
NEW JERSEY.—Fy., 375 (800), 410 (730), 425 (705), 454 (660), 500 (600).

NEWTON.—Type, A1 and A2.
NIPPEKONTU.—Type, A1 and A3; fy., 4,148 (72.3).
NISHMAHA.—Fy., add 410 (730), 454 (660).
NOMAD.—Type, A2; fy., 425 (705), 469 (640), 500 (600), 5,615 (53.43), 8,370 (35.84), 12,550 (23.9); accounts, owner; owner, Damon (Inc.).
NORMAN BRIDGE.—Fy., add 469 (640).
NORTH DAKOTA.—Type, A arc, A1 and B; fy., 8,250 (36.36); service, P; hours, X; accounts, owner; owner, Utopian Fisheries Co.
NORTHERN LIGHT.—Type, A1 and A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600); accounts, R. M. C. A.
NORWOOD.—Hours, X.
OAKSPRING.—Fy., strike out 410 (730), 454 (660).
OLYMPIA.—Accounts, owner.
ONTARIO (WMCZ).—Hours, N (first class), X (third class).
ONTARIO (WSBP).—Service, PG; hours, X.
ORIZABA.—Fy., strike out 153 (1,961).
O. S. MCFARLAND.—Fy., 375 (800), 410 (730), 454 (660).
OTSEGO.—Hours, N (first class), X (third class).
PACIFIC HEMLOCK.—Fy., 375 (800), 425 (705), 500 (600).
PACIFIC SPRUCE.—Fy., 125 (2,400), 137 (2,190), 141 (2,128), 143 (2,098), 151 (1,987), 157 (1,911), 160 (1,875), 375 (800), 500 (600).
PAN AMERICA.—Fy., 125 (2,400), 137 (2,190), 141 (2,128), 143 (2,098), 151 (1,987), 153 (1,961), 160 (1,875), 375 (800), 425 (705), 500 (600).
PATRICK HENRY.—Fy., 375 (800), 425 (705), 500 (600).
PAWNEE.—Fy., 125 (2,400), 137 (2,190), 141 (2,128), 143 (2,098), 151 (1,987), 157 (1,911), 160 (1,875), 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
PEARY.—Type, A2; fy., 375 (800), 400 (750), 425 (705), 500 (600); rates, 8 cents per word; accounts, R. M. C. A.
PENGUIN (KOMJ).—Type, A1 and A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
PENMAR.—Type, A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
PENNSYLVANIA SUN.—Fy., add 469 (640).
PEQUONNOCK.—Type, A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
PERE MARQUETTE 15.—Fy., 375 (800), 410 (730), 454 (660).
PERE MARQUETTE 17.—Fy., 375 (800), 410 (730), 454 (660).
PERE MARQUETTE 18.—Fy., 375 (800), 410 (730), 454 (660).
PERE MARQUETTE 19.—Fy., 375 (800), 410 (730), 454 (660).
PERE MARQUETTE 20.—Fy., 375 (800), 410 (730), 454 (660).
PERE MARQUETTE 21.—Fy., 375 (800), 410 (730), 454 (660).
PERE MARQUETTE 22.—Fy., 375 (800), 410 (730), 454 (660).
PERRY L. SMITHERS.—Type, A2 and B; fy., add 400 (750); hours, N (first class), X (third class).
PETER KERR.—Accounts, owner.
PETER REISS.—Fy., 375 (800), 410 (730), 454 (660).
PETER WHITE.—Fy., 375 (800), 410 (730), 454 (660).
PHILIP D. BLOCK.—Fy., 375 (800), 410 (730), 454 (660).
PIONEER (KFMK).—Fy., 375 (800), 410 (730), 454 (660).
PLOVER.—Type, A2; fy., 375 (800), 400 (750), 425 (705), 500 (600).
PLYMOUTH (WRCH).—Type, A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600); hours, X.
POINT JUDITH.—Owner, Chas. R. McCormick Lumber Co.
POINT LOBOS.—Owner, Broughton & Wiggins Navigation Co.
PONTIAC.—Fy., 375 (800), 410 (730), 454 (660).
PRESIDENT TAFT.—Type, A arc, A2 and B; fy., 125 (2,400), 143 (2,098), 375 (800), 425 (705), 500 (600), 8,450 (35.5), 11,350 (26.43), 16,500 (18.182.)
PRESIDENT WILSON.—Fy., strike out 149 (2,013).
PRESQUE ISLE.—Fy., 375 (800), 410 (730), 454 (660).
PRICE MCKINNEY.—Fy., 375 (800), 410 (730), 454 (660).
PRINCETON (KDLU).—Type, A2; fy., 375 (800), 400 (750), 425 (705), 500 (600).
PRISCILLA.—Fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
PUEBLO.—Fy., add 469 (640).
QUEEN ANNE.—Fy., 137 (2,190), 141 (2,128), 143 (2,098), 157 (1,911), 160 (1,875), 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
QUEST.—Type, A1 and A3; fy., 2,740 (109.5), 5,525 (54.3); service, P; hours, X; accounts, owner; owner, Wilmington Transportation Co.
QUINCY.—Type, A1 and A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).

RADIANT.—Owner, Gladstone Transportation Co.
REPUBLIC LIFEBOAT No. 1.—Fy., add 425 (705), 500 (600).
REPUBLIC LIFEBOAT No. 2.—Fy., add 425 (705), 500 (600).
RESTORER.—Type, A1 and A2.
RICHARD J. REISS.—Fy., 375 (800), 410 (730), 454 (660).
RICHARD PECK.—Type, A1 and A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
ROBERT P. CLARK.—Fy., add 375 (800).
ROLAND.—Type, A3; fy., 2,740 (109.5); service, P; hours, X; accounts, owner.
R. W. STEWART.—Fy., add 469 (640).
SABINE SUN.—Type, A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
SALINA.—Fy., 375 (800), 425 (705), 500 (600).
SAMONA.—Fy., 500 (600), 2,740 (109.5).
SAMUEL L. FULLER.—Fy., add 469 (640).
SAMUEL MITCHELL.—Fy., 189 (1,587), 454 (660).
SANDMASTER.—Fy., 375 (800), 410 (730), 454 (660).
SANTA BARBARA.—Type, A1 and A2; fy., 125 (2,400), 137 (2,190), 141 (2,128), 143 (2,098), 151 (1,987), 157 (1,911), 160 (1,875), 375 (800), 400 (750), 425 (705), 469 (640), 500 (600); hours, N.
SANTA FLAVIA.—Owner, Alaska Fishermans Cooperative Packing Co.
SATARTIA.—Fy., 375 (800), 425 (705), 500 (600).
SAUCON.—Fy., 375 (800), 410 (730), 454 (660).
S. B. COOLIDGE.—Fy., 375 (800), 410 (730), 454 (660).
S. B. WAY.—Fy., 375 (800), 410 (730), 454 (660).
SEABORN.—Accounts, Marconi International Marine Communication Co.
SEAFORTH.—Type, A1 and A2; fy., 125 (2,400), 137 (2,190), 141 (2,128), 143 (2,098), 151 (1,987), 157 (1,911), 160 (1,875), 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
SEA HAWK.—Type, A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
SEA RANGER.—Fy., 375 (800), 425 (705), 500 (600).
SEA ROVER.—Accounts, R. M. C. A.
SEEANDBEE.—Fy., 375 (800), 410 (730), 454 (660).
SENATOR.—Fy. 375 (800), 410 (730), 454 (660).
SHELDRAKE.—Type, A2; fy., 375 (800), 400 (750), 425 (705), 500 (600).
SHENANGO.—Type, B; fy., 375 (800), 425 (705), 500 (600); service, PG; hours, X; rates, 8 cents per word.
SIALIA.—Fy., 137 (2,190), 143 (2,098), 151 (1,987), 375 (800), 425 (705), 500 (600); rates, 8 cents per word.
SOCONY 94.—Fy., add 375 (800).
SONORA.—Accounts, R. M. C. A.; owner, Nicholson-Universal S. S. Co.
SOUTHERN CROSS.—Fy., add 151 (1,987).
SOUTHLANDS.—Name changed to Ruth Lykes.
SPHYNX.—Fy., 2,740 (109.5).
SPRAY III.—Fy., 2,740 (109.5).
S. S. THORPE.—Type, A1 and A2; fy., 273 (1,099), 500 (600).
S. T. CRAPO.—Fy., 189 (1,587), 454 (660).
STEEL CHEMIST.—Fy., 375 (800), 410 (730), 454 (660).
STEEL ELECTRICIAN.—Fy., 375 (800), 410 (730), 454 (660).
STEELMOTOR.—Fy., 375 (800), 410 (730), 454 (660).
STEELORE.—Fy., add 469 (640).
STEELTON.—Fy., 375 (800), 410 (730), 454 (660).
STEELVENDOR.—Fy., 375 (800), 410 (730), 454 (660).
STEPHEN M. CLEMENT.—Fy., 410 (730), 454 (660).
ST. LOUIS.—Fy., 273 (1,099).
STOCKTON.—Fy., 125 (2,400), 143 (2,098), 151 (1,987), 157 (1,911), 159 (1,887), 160 (1,875), 375 (800), 425 (705), 500 (600).
SULPHITE.—Fy., 375 (800), 410 (730), 454 (660).
SULTANA.—Accounts, R. M. C. A.; owner, Nicholson-Universal S. S. Co.
SUNBEAM.—Type, A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
SUNOIL.—Type, A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
SWIFT ARROW.—Type, A arc and A2; fy., 125 (2,400), 137 (2,190), 141 (2,128), 143 (2,098), 151 (1,987), 153 (1,961), 159 (1,887), 375 (800), 400 (750), 469 (640), 500 (600).
SWIFTSURE.—Type, A2; fy., 125 (2,400), 137 (2,190), 141 (2,128), 143 (2,098), 151 (1,987), 153 (1,961), 159 (1,887), 375 (800), 425 (705), 469 (640), 500 (600).
TACOMA.—Accounts, owner.

TAMPA (WLCM).—Fy., 375 (800), 425 (705), 500 (600); hours, X.
TANANA.—Hours, N (first class), X (third class).
TERN.—Type, A2; fy., 375 (800), 425 (705), 500 (600).
THALASSA.—Accounts, Marconi International Marine Communication Co.
THEODORE H. WICKWIRE.—Fy., 410 (730), 454 (660).
THEODORE H. WICKWIRE, Jr.—Fy., 410 (730), 454 (660).
THOMAS BRITT.—Fy., 375 (800), 410 (730), 454 (660).
TIGER (WSCY).—Fy., add 469 (640).
T. J. WILLIAMS.—Fy., add 469 (640).
TRACY BROTHERS.—Type, A1 and A2.
TRADER.—Owner, Durham Navigation Corporation.
TURRIALBA.—Fy., 137 (2,190), 141 (2,128), 143 (2,098), 151 (1,987), 153 (1,961), 160 (1,875), 375 (800), 400 (750), 425 (705), 454 (660), 469 (640), 500 (600).
TUSCALOOSA.—Fy., 273 (1,099).
TUSTEM.—Fy., 125 (2,400), 131 (2,290), 137 (2,190), 141 (2,128), 143 (2,098), 149 (2,013), 151 (1,987), 157 (1,911), 160 (1,875), 375 (800), 500 (600).
TYEE (KFXP).—Fy., 375 (800), 425 (705), 500 (600).
TYEE (WDDM).—Fy., 375 (800), 425 (705), 500 (600).
UNGAVA.—Fy., 500 (600), 2,740 (109.5), 8,450 (35.5), 12,820 (23.4).
UTOWANA.—Fy., add 469 (640).
VENTURA.—Fy., add 157 (1,911).
VICKSBURG.—Fy., 273 (1,099).
VIGILANT (KOZP).—Fy., add 425 (705); owner, City Mill Co.
WABASH.—Fy., 375 (800), 410 (730), 454 (660); owner, Ann Arbor R. R. Co.
WACOSTA.—Type, add B.
WALTER A. LUCKENBACH.—Service, PG; hours, X.
WALTER JENNINGS.—Fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
WANDERER.—Fy., 375 (800), 425 (705), 2,320 (129.3).
WARRIOR.—Service PG; hours, N (first class), X (third class).
WASHINGTON.—Accounts, owner.
W. D. ANDERSON.—Type, A1 and A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
W. D. CALVERLEY, Jr.—Fy., 375 (800), 410 (730), 454 (660).
W. E. FITZGERALD.—Fy., add 500 (600).
WEST CAMPGAW.—Accounts, R. M. C. A. (U. S. L.).
WEST ELCASCO.—Fy., add 375 (800).
WESTERNER.—Fy., 375 (800), 425 (705), 500 (600).
WEST GRAMA.—Fy., 375 (800), 410 (730), 425 (705), 454 (660), 500 (600).
WEST HAVEN.—Owner, Los Angeles S. S. Co.
WEST HEMATITE.—Accounts, R. M. C. A.
WEST IMBODEN.—Fy., add 375 (800).
WEST KATAN.—Owner, Kenneth D. Dawson.
WEST KEATS.—Owner, Kenneth D. Dawson.
WEST MINGO.—Owner, Kenneth D. Dawson.
WEST MONTOP.—Owner, Kenneth D. Dawson.
WEST NOSSKA.—Hours, add N (first class).
WEST NOTUS.—Fy., 137 (2,190), 141 (2,128), 143 (2,098), 151 (1,987), 153 (1,961), 157 (1,911), 159 (1,887), 160 (1,875), 375 (800), 425 (705), 500 (600).
WESTPORT.—Fy., add 410 (730), 454 (660).
WEST WAUNA.—Fy., 375 (800), 425 (705), 500 (600); accounts, R. M. C. A. (U. S. L.).
W. G. POLLOCK.—Fy., 375 (800), 410 (730), 454 (660).
W. H. BECKER.—Fy., 375 (800), 410 (730), 454 (660).
W. H. MCGEAN.—Fy., 375 (800), 410 (730), 454 (660).
WILD GOOSE.—Accounts, R. M. C. A.
WILLAMETTE.—Hours, X.
WILLANGLO.—Fy., add 375 (800).
WILLBORO.—Fy., 375 (800), 425 (705), 500 (600).
WILLET.—Owner, Merritt-Chapman & Scott Corporation.
WILLIAM A. PAINE.—Fy., 375 (800), 410 (730), 454 (660).
WILLIAM C. ATWATER (WDDL); fy., 375 (800), 410 (730), 454 (660).
WILLIAM G. MATHER.—Type, A2; fy., 375 (800), 410 (730), 454 (660).
WILLIAM K. FIELD.—Fy., 375 (800), 410 (730), 454 (660).
WILLIAM NELSON.—Fy., 375 (800), 410 (730), 454 (660).
WILLIAM PENN.—Type, A arc and B; fy., 125 (2,400), 137 (2,190), 141 (2,128), 143 (2,098), 151 (1,987), 157 (1,911), 160 (1,875), 375 (800), 425 (705), 500 (600).
WILLIAM P. SNYDER, JR.—Type, A2; fy., 375 (800), 410 (730), 454 (660).

WILLIAM T. ROBERTS.—Fy., 375 (800), 410 (730), 454 (660).
WILSCOX.—Type, B; fy., 375 (800), 425 (705), 500 (600).
WISCONSIN (KEXM).—Accounts, owner.
WM. A. LYDON.—Type, A2; fy., 375 (800), 410 (730), 454 (660); accounts, R. C. A.
WM. BOYCE THOMPSON.—Fy., add 469 (640).
W. S. MILLER.—Fy., 375 (800), 400 (750), 425 (705), 454 (660), 500 (600).
WYANDOTTE.—Fy., 189 (1,587), 454 (660).
WYNOKA.—Fy., 273 (1,099).
WYTHEVILLE.—Hours, X.
YALE (WTBT).—Type, A2; fy., 375 (800), 425 (705), 500 (600); service, PG; hours, X; accounts, R. M. C. A.
YANKEE ARROW.—Type, A2; fy., add 400 (750), 469 (640).
YOMACHICHI.—Type, A arc and B; fy., 125 (2,400), 137 (2,190), 141 (2,128), 143 (2,098), 151 (1,987), 157 (1,911), 160 (1,875), 375 (800), 425 (705), 500 (600).
YOSEMITE.—Fy., 375 (800), 410 (730), 454 (660); rates, Great Lakes, 4 cents per word.
ZELDA.—Type, A1 and A2; fy., 375 (800), 400 (750), 425 (705), 469 (640), 500 (600).
Strike out all particulars of the following-named vessels: Alloway, Blue Sea, Caddo, Crest (KGAU), Kaala, Lake Charles, Seiner, S. O. Co. No. 93, St. Heliers Viking (KDYC).

COMMERCIAL LAND AND SHIP STATIONS, ALPHABETICALLY, BY CALL SIGNALS

KDLT, *read* George Peirce; KFZD, *read* Catherine O'Boyle; KFZU, *read* Mary Pinchot; KOKS, *read* Ruth Lykes; KUSF, *read*, Nosa King; WOCS, *read* Cities Service Toledo; strike out all particulars following the call signals KDC, KDFN, KDYC, KEB, KFDK, KFFS, KLF, KGAU, KPG, KRY, KTAA, KVT, KVU, KVX, KWO, KXU, KYX, KZA, KZB, KZI, WBY, WGDE, WGF, WJA, WJC, WOCG, WOZ, WPCO, WRB, WSE, WTBN.

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, 1928]

KFDY (Brookings, S. Dak.).—Power, 500 day, 1,000 night.
KFEC (Portland, Oreg.).—Call changed to KIT.
KFVD (Culver City, Calif.).—Owner, Los Angeles Broadcasting Co.
KGGM (Albuquerque, N. Mex.).—Owner, New Mexico Broadcasting Co.
KGIQ (Twin Falls, Idaho).—Owner, Radio Broadcasting Corporation.
KLDS-KMBC (Independence, Mo.).—Call KLDS deleted.
KLRA (Little Rock, Ark.).—Power, 1,000.
KOCW (Chickasha, Okla.).—Fy., 1,400 (214.3); power, 250 night, 500 day.
KRGV (Harlingen, Tex.).—Power, 500.
KSBA (Shreveport, La.).—Call changed to KTBS.
KTSL (Shreveport, La.).—Power, 100.
WBIS (Boston, Mass.).—Changed to Quincy, Mass.; power, 1,000.
WEAN (Providence, R. I.).—Power, 250 night, 500 day.
WEVD (Woodhaven, N. Y.).—Changed to Forest Hills, N. Y.
WFLA (Clearwater, Fla.).—Power, 1,000 night, 2,500 day.
WHFC (Chicago, Ill.).—Changed to Cicero, Ill.; owner, Triangle Broadcasters.
WJAK (Kokomo, Ind.).—Changed to Marion, Ind.
WJAY (Cleveland, Ohio).—Fy., 620 (484), day only.
WLBG (Petersburg, Va.).—Changed to Ettrick, Va.; power, 100 night, 250 day.
WMAZ (Macon, Ga.).—Owner, Macon Junior Chamber of Commerce.
WMBS (Lemoyne, Pa.).—Call changed to WHP; owner, Pennsylvania Broadcasting Co.; post-office address, 39 South Cameron St., Harrisburg, Pa.
WMC (Memphis, Tenn.).—Power, 500 night, 1,000 day.
WNAC (Boston, Mass.).—Changed to Quincy, Mass.; power, 1,000.
WRBT (Wilmington, Del.).—Power, 100.
WSAI (Mason, Ohio).—Changed to Harrison, Ohio.
WSUN (Clearwater, Fla.).—Power, 1,000 night, 2,500 day.
WTBO (Cumberland, Md.).—Owner, Cumberland Broadcasting Co.
WWL (New Orleans, La.).—Power, 5,000.
WWRL (Woodside, N. Y.).—Owner, Long Island Broadcasting Corporation.
Strike out all particulars of the following-named stations: KKP (Seattle, Wash.); KOW (Denver, Colo.—near); WRBW (Columbia, S. C.).

RADIO-COMPASS STATIONS, ALPHABETICALLY, BY NAMES OF STATIONS [1]

[Alterations and corrections to be made to the list of Commercial and Government Radio Stations of the United States, edition of June 30, 1928, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

CAPE MAY, N. J. (NSD).—Call changed to NKC–NSD remains as group call for the Delaware Bay RC group.

MANASQUAN, N. J.—Call changed to NFK–NJY remains as group call for New York Bay RC group.

SANDY HOOK, N. J.—Call changed to NHD–NJY remains as group call for New York Bay RC group.

RADIO-COMPASS STATIONS, ALPHABETICALLY, BY CALL SIGNALS

NFK, *insert*, Manasquan, N. J.; NHD, *insert*, Sandy Hook, N. J.; NKC, *insert* Cape May, N. J.

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, 1928, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

SCORPION.—Strike out all particulars.

GOVERNMENT LAND AND SHIP STATIONS, ALPHABETICALLY, BY CALL SIGNALS

NIKJ, strike out all particulars.

SPECIAL STATIONS, BY NAMES OF STATIONS

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1928]

CALIFORNIA:

Avalon (W6XAD).—strike out all particulars.

Oakland (W6XN).—Fy., 6,425 (46.7), 8,650 (34.68), 12,850 (23.35), 17,300 (17.341), 25,680 (11.682), 27,325 (10.979), 34,240 (8.76), 36,585 (8.68).

DISTRICT OF COLUMBIA: Washington (W3XK).—Fy., 2,000 (150) to 2,100 (142.9), 2,850 (105.3) to 2,950 (101.7); visual broadcasting.

FLORIDA: Winter Park (W4XE).—Fy., 2,000 (150) to 2,100 (142.9); visual broadcasting.

ILLINOIS:

Chicago (W9XAA).—Fy., 2,000 (150) to 2,100 (142.9); power, 1,000; visual broadcasting.

Chicago (W9XAG).—Fy., 2,000 (150) to 2,100 (142.9); visual broadcasting.

IOWA: Council Bluffs (W9XU).—Fy., 6,060 (49.5).

MASSACHUSETTS: Springfield (W1XAE).—Change to East Springfield, Mass; Fy., 2,000 (150) to 2,100 (142.9); power, 20,000; visual broadcasting.

NEW JERSEY: Newark (W2XBA).—Fy., 2,750 (109.1) to 2,850 (105.3); visual broadcasting.

NEW YORK:

Richmond Hill (W2XE).—Fy., 6,120 (49.02); power, 5,000.

Schenectady, N. Y. (W2XC).—Call changed to W2XCW.

OHIO: Harrison (W8XAL).—Fy., 6,060 (49.5).

PENNSYLVANIA:

East Pittsburgh (W8XAV).—Fy., add 2,200 (136.4), 2,750 (109.1) to 2,850 (105.3); power, 20,000.

East Pittsburgh (W8XK).—Fy., 6,140 (48.86), 9,570 (31.35), 11,880 (25.25), 15,210 (19.724), 17,780 (16.873), 21,540 (13.928); power, 20,000.

PORTABLE:

New Jersey: Bound Brook (W2XBW).—Fy., 2,000 (150) to 2,100 (142.9); visual broadcasting.

New York: New York (W2XBV).—Fy., 2,000 (150) to 2,100 (142.9); visual broadcasting.

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[1] Beginning with this edition, radio-compass stations will be separated from other Government land stations.

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, 1923, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Portland Lightship, Me.—Characteristic changed to groups of 1 dash, 1 dot, and 1 dash, thus:

—·— —·— etc. / 60 seconds ; Silent / 120 seconds

Nantucket Shoals Lightship, Mass.—Fy. changed to 310 (968).

Stratford Shoal (Middle Ground) Light Station, N. Y.—Characteristic changed to groups of 1 dot, 2 dashes, and 1 dot, thus:

·——· ·——· etc. / 60 seconds ; Silent / 30 seconds

Execution Rocks Light Station, N. Y.—Characteristic changed to groups of 1 dash, 1 dot, and 1 dash, thus:

—·— —·— etc. / 60 seconds ; Silent / 15 seconds

Fire Island Lightship, N. Y.—Fy. changed to 300 (1,000).

Ambrose Channel Lightship, N. Y.—Characteristic changed to groups of single dots, thus:

····· etc. / 60 seconds ; Silent / 120 seconds

Barnegat Lightship, N. J.—Fy. changed to 300 (1,000).

Five Fathom Bank Lightship, N. J.—Characteristic changed to groups of 2 dots and 2 dashes, thus:

··—— ··—— etc. / 60 seconds ; Silent / 120 seconds

MISCELLANEOUS

GENERAL ORDERS OF THE FEDERAL RADIO COMMISSION

Extension of coastal, point-to-point, and experimental station licenses until June 1, 1929 (General Order No. 60, March 9, 1929).—It is ordered that all existing licenses covering coastal, point-to-point, and experimental radio transmitting stations, heretofore extended by the commission's General Orders 3, 26, 39, 47, 54, and 58, be, and the same are hereby, further extended for a period of 75 days to terminate at 3 o'clock a. m., eastern standard time, June 1, 1929.

This order, however, is subject to the conditions that it shall not be deemed or construed as a finding or decision by the commission, or as any evidence whatsoever, that the continued use or operation of any of said stations serves, or will serve, public interest, convenience or necessity, or that public interest, convenience or necessity would be served by the granting of any pending application for a renewal of any of said licenses; and any licensee subject to this order who continues to use or operate his station during the period covered by this order shall be deemed to have consented to said conditions. The commission reserves the right to change the frequency assignment of any station, the license of which is affected by this order, during the extension herein provided if, in the opinion of the commission, such change is advisable.

This order shall not apply to any existing license heretofore issued by this commission (as distinguished from licenses issued by the Department of Commerce prior to the establishment of the commission under the radio act of 1927, approved February 23, 1927); each license in such cases to be governed by its own terms and conditions.

This order shall not apply to any existing license application for renewal of which shall not have been made to the commission prior to March 16, 1929. This order shall not apply to any existing license application for the renewal of which has been denied by the commission.

Regulations governing the hours of operation of broadcasting stations affected by daylight-saving time (General Order No. 61, March 23, 1929).—It is ordered that the following regulations will govern the hours of operation of all broadcasting stations where such time of operation may be affected by daylight-saving time:

1. Where the local time is changed from standard time to daylight-saving time at the location of all the stations sharing time on the same frequency, the

hours of operation of all said stations on said frequency shall be understood to have reference to daylight-saving time and not standard time, so long as daylight-saving time is so observed. This provision shall govern whether the time is changed by provision of law or by the general observance of daylight-saving time by the local business community, and whether the time of operation of said stations is specified in the licenses or is mutually agreed upon between the licensees.

2. Where the local time is not changed from standard time to daylight-saving time at the location of all the stations sharing time on the same frequency, the hours of operation of all said stations on said frequency shall be understood to have reference to standard time and not daylight-saving time, unless said licensees mutually agree upon a new schedule which shall be effective only while daylight-saving time is observed at the location of some of said stations. This provision shall be effective whether the time of operation of said stations is specified in the licenses or is mutually agreed upon between the licensees.

3. The time of operation of all broadcasting stations which do not share time with other stations on the same frequency shall be understood to have reference to standard time whether the local time is changed as referred to herein or not, unless and until modification of such licenses with reference to hours of operation is made by the commission. This provision shall be effective where the time of operation of said stations is specifically stated in the licenses.

RULES AND REGULATIONS GOVERNING RELAY BROADCASTING

The Federal Radio Commission has adopted the following rules and regulations covering experimental relay broadcasting.

Relay broadcasting is defined as the transmission on high frequencies over long distances of broadcast programs from one broadcasting station to another such station or stations which rebroadcast the program to the public on the regular broadcast frequency of the receiving station. Licenses will be issued only when applicants agree to arrange for a rebroadcasting on regular broadcast channels of their program transmitted initially on a high frequency relay channel.

The frequencies designated to be assigned to relay broadcasting stations in North America are:

6020	6120	9570	11840	15250	21500
6040	6140	9590	11880	15290	21540
6060	9510	11720	15130	15340	
6080	9530	11760	15170	17780	
6100	9550	11800	15210	21460	

The use of three frequencies will not be designated exclusively to licensees but will be shared jointly by the licensees authorized to operate experimental relay broadcast transmitters. The commission requires detailed reports from licensees as to the use made of these frequencies and the results accomplished. Based upon results of the experimental licensees, and others which may be designated, the commission may issue licenses for a longer period than six months to those found qualified after six months experimental operation. The commission will only issue licenses to applicants who are qualified to operate experimental relay stations over long distances, transoceanic or transcontinental, strictly for relay broadcast use or experimental relay broadcasting. The priority of assignment will be given to applicants who present satisfactory evidence that they will provide (1) adequate power for transoceanic distribution, (2) satisfactory programs for transoceanic distribution, (3) adequate and regular reception and distribution of their programs.

Since local broadcasting would utilize for short distances radiofrequencies which should be reserved primarily for long distances and would be a duplication of a possible service available by wire lines, applications for such a service will be considered only in the exceptional cases where wire-line service is not available.

Local broadcasting on these high frequencies would likewise utilize for short distances radiofrequencies which should be reserved primarily for long distances and would furthermore duplicate the service given on 550 to 1,500 kilocycles, thus requiring special receiving apparatus on the part of listeners. Local broadcasting will not be permitted on these high frequencies.

Experimental licenses will be granted only to those who are seriously engaged in improving the technique of the art and show satisfactory evidence of being able to contribute substantially toward its progress. (February 18, 1929.)

(RULES AND REGULATIONS GOVERNING VISUAL BROADCASTING)

The Federal Radio Commission has adopted the following rules and regulations governing visual broadcasting:

That visual broadcasting be designated to include both television broadcasting and picture broadcasting, or moving-picture broadcasting and still-picture broadcasting, and that all licenses issued be of an experimental nature for a period of six months only, the licensees to report to the commission the results of their experiments; the transmitters to be located outside the city limits and sufficiently distant from important receiving centers to avoid interference.

For joint use to visual broadcasting licensees the commission authorizes the following bands of frequencies for experimental use only; 2,000 to 2,200 and 2,750 to 2,950 kilocycles. In addition, the commission will authorize the operation of visual radio broadcasting transmitters in the band between 2,200 and 2,300 kilocycles, on the condition that they do not interfere in any way whatever with the services of any other nation on the North American Continent and in the West Indies, and that licenses be subject to revocation in case there are any complaints from any other nation of any such interference. The commission may continue to issue experimental television or visual licenses in the broadcast band for operation between 1 and 6 a. m. only, in accordance with General Order 50.

The commission adopted the following rules of priority in the granting of applications:

1. Those engaged in experimentation to improve the technique of visual broadcasting.
2. Those who employ methods which give the maximum definition with the minimum radio frequency band widths. (February 18, 1929).

ACT CONTINUING THE POWERS AND AUTHORITY OF THE FEDERAL RADIO COMMISSION UNDER THE RADIO ACT OF 1927, AND FOR OTHER PURPOSES

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That all the powers and authority vested in the Federal Radio Commission by the radio act of 1927, approved February 23, 1927, shall continue to be vested in and exercised by the commission until December 31, 1929; and wherever any reference is made in such act to the period of one year after the first meeting of the commission, such reference shall be held to mean the period until December 31, 1929.

SEC. 2. The period during which the members of the commission shall receive compensation at the rate of $10,000 per annum is hereby extended until March 16, 1930.

SEC. 3. Prior to January 1, 1931, the licensing authority shall grant no license or renewal of license under the radio act of 1927 for a broadcasting station for a period to exceed three months and no license or renewal of license for any other class of station for a period to exceed one year.

SEC. 4. The term of office of each member of the commission shall expire on February 23, 1930, and thereafter commissioners shall be appointed for terms of two, three, four, five, and six years, respectively, as provided in the radio act of 1927.

SEC. 5. The commission is authorized to appoint a general counsel and pay him a salary of $10,000 per annum and not to exceed three assistants to such general counsel, at salaries of $7,500 each per annum. It may appoint such other legal assistants as it may from time to time find necessary for the proper performance of its duties and as from time to time may be appropriated for by Congress.

Approved, March 4, 1929.

List of Mexican broadcasting stations

Location	Call signal	Frequency in kilocycles, meters in parentheses	Power (watts)
Chihuahua	XFF	923 (325)	250
Guadalajara	XEA	1,200 (250)	100
Jalapa	XFC	631 (475)	350
Lerdo	XES	1,200 (250)	250
Merida	XEY	546 (548.6)	100
Mexico City	XEB	667 (450)	1,000
Do	XEN	732 (410)	1,000
Do	XEX	923 (325)	500
Do	XFA	0–21,430 (0–14) 7,140–6,980 (42–43) 600–500 (500–600)	50
Do	XFG	638 (470)	2,000
Do	XFI	591 (507)	1,000
Do	XFX	840 (357)	500
Do	XC51	6,820 (44)	
Monterrey	XEH	965 (311)	100
Morelia	XEI	1,000 (300)	100
Oaxaca	XEF	1,132 (265)	100
Puebla	XEE	962 (312)	100

List of Cuban broadcasting stations

Location	Call signal	Frequency in kilocycles, meters in parentheses	Power (watts)
Caibarien	CM6EV	1,200 (250)	50
Do	CM6LO	923 (325)	250
Camaguey	CM7AZ	1,333 (225)	10
Do	CM7GT	1,538 (195)	5
Do	CM7LO	1,304 (230)	20
Camajuani	CM6YR	1,500 (200)	20
Ciego de Avila	CM7BY	1,277 (235)	20
Do	CM7FU	1,500 (200)	15
Do	CM7HS	1,563 (192)	15
Cienfuegos	CM6BY	1,154 (260)	200
Colon	CM5EV	833 (360)	100
Guanajay	CM1AZ	1,091 (275)	30
Habana	CMI	822 (365)	500
Do	CMC	865 (347)	500
Do	CM2AB	1,200 (250)	10
Do	CM2AR	880 (341)	75
Do	CM2AZ	898 (334)	30
Do	CM2CP	1,071 (280)	10
Do	CM2HP	1,463 (205)	200
Do	CM2JP	1,222 (245.5)	15
Do	CM2OH	1,000 (300)	15
Do	CM2OK	833 (360)	100
Do	CM2RK	920 (326)	50
Do	CM2SE	1,422 (211)	10
Do	CM2TW	1,111 (270)	10
Do	CM2UF	1,316 (228)	100
Do	CM2WX	1,149 (261)	150
Do	CM2XA	1,304 (230)	200
Do	CM2XX	1,333 (225)	10
Hershey	CM2FG	1,327 (226)	20
Marianao	CM2JF	1,190 (252)	20
Do	CM2JL	1,020 (294)	15
Do	CM2MA	1,083 (277)	7½
Do	CM2SW	1,095 (274)	50
Nuevitas	CM7NM	1,136 (264)	7½
Sagua la Grande	CM6HS	1,500 (200)	20
Sancti Spiritus	CM6KP	1,071 (280)	10
Santa Clara	CM6MN	1,429 (210)	20
Santiago	CM8HS	1,500 (200)	20
Do	CM8BY	2,000 (150)	30
Do	CM8KW	1,200 (250)	30
Tuinucu	CM6KW	815 (368)	15
			100

RADIO PUBLICATIONS FOR SALE BY GOVERNMENT PRINTING OFFICE

The following-named publications are available for distribution by the Superintendent of Documents, Government Printing Office, Washington, D. C., at the prices indicated. *Do not send remittances to this division.*

Commercial and Government Radio Stations of the United States, 15 cents. Contains lists of commercial and Government land and ship stations, broadcasting stations, and experimental (both low and high frequencies) as of June 30, 1928. Also contains a list of the international abbreviations (Q signals) and the international Morse code.

Amateur Radio Stations of the United States, 25 cents. Contains a list of approximately 17,000 names of owners of amateur stations, together with call signals and locations. Also contains a list of the international abbreviations (Q signals) and the international Morse code.

Radiotelegraph Convention and General Regulations Between the United States and Other Powers, Treaty Series No. 767, 30 cents. Contains text in both French and English of the international regulations of the International Convention, Washington, 1927, and effective January 1, last.

Radio Act of 1927, 5 cents. Contains text of law under which the operation of stations of this country are governed in addition to the international law.

Kilocycle-Meter Conversion Table, 5 cents. Contains table whereby the equivalent of kilocycles in meters may be ascertained or vice versa.

Air Line Distances in Statute Miles, 5 cents. Contains table of distances between 50 of the larger cities in the United States.

The February, 1929, edition of this publication contains a list of the broadcasting stations of the United States, as of the last day of that month, alphabetically by States and cities. The price of this publication is 5 cents a copy; subscription price, 25 cents a year.

RADIOBEACON ESTABLISHED AT KINNAIRDS HEAD, SCOTLAND

A radiobeacon has been established at the lighthouse located in approximately latitude 57° 42′ N., longitude 2° 00′ W. Transmissions are made on a frequency of 300 (1,000) during thick weather whenever the atmosphere in the vicinity of the lighthouse is obscured so as to impede navigation. The signal will be transmitted continuously for 1 minute, every 4 minutes, as follows: The signal MMK (— — — — —·—) will be emitted continuously at the rate of 15 words per minute for 48 seconds (approximately), a continuous dash (————) for 10 seconds (approximately), the signal MMK made once, of 2 seconds duration (approximately), the whole transmission occupying 1 minute, followed by a silent period of 3 minutes. During clear weather, in order to afford facilities for obtaining bearings, three emissions of the whole character of the signal described above will be made consecutively, at half-hourly intervals approximately, commencing at the hour. Although this signal is to be permanent, it may be found necessary to make some adjustment after establishment, and the station should be considered as under test for a period of three months, from the date of its establishment (March 20), during which time the signals may be subject to temporary interruptions.

RADIO COMPASS ESTABLISHED AT TARIFA POINT, GIBRALTAR, SPAIN

A radio compass has been established at this point in approximately latitude 36° 00′ N., longitude 5° 37′ W. Bearings are transmitted on a frequency of 375 (800), calling frequency 500 (600). Call signal EBQ.

CALL SIGNAL OF EIFFEL TOWER (FRANCE) STATION CHANGED

The call signal of this station has been changed to FLE.

WEATHER BULLETINS TRANSMITTED BY AALESUND (NORWAY) STATION

Weather bulletins and storm warnings are now transmitted from this station, located in approximately 62° 28′ N., 6° 09′ E., at 1,150 on a frequency of 500 (600) c. w. Call signal has been changed to LGA.

WEATHER BULLETINS TRANSMITTED BY WELLINGTON (NEW ZEALAND) STATION CHANGED

A general weather bulletin is now transmitted from this station located in approximately 41° 16′ S., 174° 46′ E.; call signal ZLW, at 0930 on a frequency of 500 (600), spark. The message contains a general statement of the weather systems affecting New Zealand waters, forecasts for New Zealand, New Zealand

waters, and the Tasman Sea followed by reports containing observations of barometric pressure in inches, air temperature in degrees Fahrenheit, wind direction and force (Beaufort scale) and the state of the sea in plain language.

WEATHER FORECASTS TRANSMITTED BY SAMBRO OUTER BANK LIGHT VESSEL (CANADA) STATION

Weather forecasts issued by the Canadian meteorological service followed by a special message containing information of interest to fishermen are transmitted by this station by radiophone at 1,200 and 1,730 on a frequency of 902 (332.4).

WEATHER FORECASTS TRANSMITTED BY LOUISBURG (CANADA) STATION

Weather forecasts issued by the Canadian meteorological service followed by a special message to fishermen are transmitted by this station at 0418 on a frequency of 107 (2,804) i. c. w. and at 0800 and at 1,700 on a frequency of 690 (434.5), radiophone.

RADIOBEACON ESTABLISHED AT SANDETTIE LIGHT VESSEL, FRANCE

A radiobeacon has been established on this vessel located in approximately latitude 51° 13′ N., longitude 1° 54′ E. Transmissions are made on a frequency of 300 (1,000), i. c. w. The signal is transmitted every minute as follows:

••—•• ••—•• ••—•• ••—••	——— etc.
10 seconds	30 seconds
••—•• ••—•• ••—•• ••—••	Silent
10 seconds	10 seconds

During fog five successive repetitions of the above signal are transmitted, commencing at the 5th, 15th, 25th, 35th, 45th, and 55th minutes of each hour.

RADIO OPERATORS WARNED NOT TO MISUSE THE DISTRESS SIGNAL

Attention has been called to difficulties experienced through the misuse of the distress signal (SOS) by vessels not in imminent danger for obtaining tugs or other assistance.

The use of this signal except in cases of imminent danger when immediate assistance is necessary may result in insufficient attention being paid to really an urgent call under the impression that they have been transmitted by a vessel not in real danger.

Where the transmission of the distress signal is not fully justified use should be made of the urgency signal (XXX). This signal has priority over all other communications except distress and should be quite sufficient for the purpose of obtaining assistance.

DISCONTINUANCE OF OCEAN LETTER SERVICE BY RADIOMARINE CORPORATION OF AMERICA

Ship stations operated by the Radiomarine Corporation of America will no longer handle ocean letters, effective May 1 this year.

LIST OF COUNTRIES WHICH HAVE DEPOSITED THEIR RATIFICATIONS OF INTERNATIONAL RADIO CONVENTION OF 1927 AND REGULATIONS ANNEXED THERETO

In addition to the list promulgated in the February, 1929, edition of this publication the following-named countries have deposited their ratifications with the Department of State: Czechoslovakia, March 1, 1929; Hungary, February 20, 1929; Morocco, January 31, 1929; Sweden, March 1, 1929.

REFERENCES TO CURRENT RADIO LITERATURE

This is a monthly list of references prepared by the Bureau of Standards and is intended to cover the more important papers of interest to professional radio engineers which have recently appeared in periodicals, books, etc. The number at the left of each reference classifies the reference by subject, in accordance with the scheme presented in A Decimal Classification of Radio Subjects—An Exten-

sion of the Dewey System, Bureau of Standards Circular No. 138, a copy of which may be obtained for 10 cents from the Superintendent of Documents, Government Printing Office, Washington, D. C. The various articles listed below are not obtainable from the Government. The various periodicals can be secured from their publishers and can be consulted at large public libraries.

R100.—*Radio principles*

R113 Barfield, R. H. The attenuation of wireless waves over towns. Jour. Inst. of Elec. Engrs. (London), **67**, pp. 253–270; February, 1929.

Shows that the rate of change of attenuation with wave length of the radiated field over towns is rather great. A theoretical discussion is given by means of Sommerfeld's numerical distance and the same applied to the absorbing effect of vertically grounded conductors which exist in the towns in many forms. Also a theoretical discussion on selective absorption due to tuned antennas and their reradiation. Sommerfeld's theory seems to confirm the high rate of attenuation over towns.

R113 Sacklowski, A. Die Ausbreitung der Elektromagnetischen Wellen. (The propagation of electromagnetic waves.) Book published by Weidmannsche Buchhandlung, Berlin, 1929. Noted in Experimental Wireless and Wireless Engr. (London), **6**, p. 83; February, 1929.

Review of work which was published by the author in the Elektrische Nachrichten Technik, 1927.

R113 Eve, A. S., Steel, W. A., Olive, G. W., McEwan, A. R. Reception experiments in Mount Royal Tunnel. Proc. Inst. of Radio Engrs., **17**, pp. 347–376; February, 1929.

Experiments presented which were carried out in the Mount Royal Tunnel of Canadian National Railways at Montreal in order to determine how radio waves reach the receiving set.

R114 Yokoyama, E., and Nakai, T. A note on the directional observations on grinders in Japan. Proc. Inst. of Radio Engrs., **17**, pp. 377–379; February, 1929.

Direction of grinders taken in Japan during 1927 showed diurnal and seasonal changes in the direction of atmospheries.

R125.6 Transmitting aerials (editorial). Experimental Wireless and Wireless Engr. (London), **6**, pp. 59–61; February, 1929.

Discusses the features of the beam system developed by A. Meissner (F=15,000 kilocycles) and that due to P. P. and T. L. Eckersley and H. L. Kirke for the broadcast range. Shows the importance of emphasizing the ground ray.

R125.6 Eckersley, P. P. and T. L., and Kirke, H. L. The design of transmitting aerials for broadcasting stations. Experimental Wireless and Wireless Engr. (London), **6**, pp. 86–92; February, 1929.

It is brought out that the radiation along the tangent of the earth's surface should be emphasized and any appreciable intensities upwards suppressed. It is shown that this can be accomplished with high antennas working with more than quarter wave length distribution (for instance, full wave length distribution utilizing phasing coils). The attenuation due to ground absorption is also studied by means of Sommerfeld's formula.

R132 Garton, C. G., and Lucas, G. S. An apparatus for the projection of frequency output chacacteristics. Experimental Wireless and Wireless Engr. (London), **6**, pp. 62–70; February, 1929.

Description of a system for studying frequency amplitude characteristics of audio frequency amplifiers.

R132 Nelson, J. R. Circuit analysis applied to the screen grid tube. Proc. Inst. of Radio Engrs., **17**, pp. 320–338; February, 1929.

General radio frequency circuit theory is discussed in this paper. Amplification equations for impedance and transformer coupling using an untuned primary whose period is above the highest frequency considered are derived and discussed for the case of a screen grid tube.

R133 Hollmann, H. E. On the mechanism of electron oscillations in a triode. Proc. Inst. of Radio Engrs, **17**, pp. 229–251; February, 1929.

Considers the different types of electron oscillations which occur in the Barkhausen and Kurz retarding field of a triode having a high positive potential applied to its grid, and zero or small negative potential applied to its plate.

R134.4 van der Pol, B. The effect of regeneration on the received signal strength. Proc. Inst. of Radio Engrs., **17**, pp. 339–346; February, 1929.

Theory of the effect of regeneration using the solution of a nonlinear differential equation. Experimental verification of the theory given.

R144 Cockcroft, J. D. Skin effect in rectangular conductors at high frequencies. Proc. Royal Soc. A (London), **122**, pp. 533–542; February 4, 1929.

Deduction of formulas for the high frequeney resistance of conductors with rectangular cross section.

R200.—*Radio measurements and standardization*

R210 Hull, L. M., and Clapp, J. K. A convenient method for referring secondary frequency standards to a standard time interval. Proc. Inst. of Radio Engrs., **17**, pp. 252–271; February, 1929.

Method is described for obtaining a convenient low frequency from a high frequency standard by means of harmonic control of distorted wave oscillators (multivibrators).

R210 Hall, E. L. A system for frequency measurements based on a single frequency. Proc. Inst. of Radio Engrs., **17**, pp. 272–282; February, 1929.

Method is described which is suitable for calibration of either piezooscillators or frequency meters in terms of an accurately standardized temperature controlled piezooscillator.

R300.—*Radio apparatus and equipment*

R320 Landon, V. D. A multiple receiver antenna system. Radio Broadcast, **14,** pp. 291–293; March, 1929.

System for apartment houses.

R333 Weaver, K. S. A high power output tube—The 250. Radio Broadcast, **14,** pp. 329–330; March, 1929.

Characteristics of tube.

R333 What is a good tube? Radio Rroadcast, **14,** pp. 335–45; March, 1929.

Data given on the Cunningham, Sylvania, Ceco, and Raytheon tubes.

R343 Hull, R. A. Improving short wave phone reception. QST, **13,** pp. 9–20; March, 1929.

Description of a modern superheterodyne for short wave phone, code, and general broadcasting.

R376.3 Bostwick, L. G. Acoustic considerations involved in steady state loud-speaker measurements. Bell System Technical Journal, **8,** pp. 135–158; January, 1929.

Describes certain difficulties encountered in acoustic measurements of performance of loud-speakers. Data given for two representative types of loud-speakers when measured in space free from reflections and when measured under varying conditions in a special acoustic laboratory.

R381 Siegmund, H. O. The aluminum electrolytic condenser. Bell System Technical Journal, **8,** pp. 41–63; January, 1929.

Action of the aluminum electrolytic condenser and method of avoiding the rectification effect. Shows that the life of such condensers is high, some having been in use for seven years.

R500.—*Applications of radio*

R521 Pickerill, E. N. A modern radio aircraft installation. Radio Engineering, **9,** pp. 46–48; February, 1929.

Description of new transmitter and receiver designed for airplane communication.

R521 Drake, F. H. An aircraft radio receiver for use with rigid antenna. Proc. Inst. of Radio Engrs., **17,** pp. 306–319; February, 1929.

Outline is given of physical and electrical requirements of an aircraft receiver suitable for reception of radio beacons and telephone service on a small rigid antenna. Describes the design of a special unicontrol receiver calculated to fulfill these requirements.

R521 Pratt, H., and Diamond, H. Receiving sets for aircraft beacon and telephony. Proc. Inst. of Radio Engrs., **17,** pp. 283–305; February, 1929.

Design details for three receiving sets of slightly different types with characteristic and performance curves are discussed. Reprint of Bureau of Standards Research Paper No. 19, Bureau of Standards Journal of Research, October, 1928.

R526.4 Alexanderson, E. F. W. Height of airplane above ground by radio echo. Radio Engineering, **9,** pp. 34–35; February, 1929.

Preliminary work on a radio altimeter.

R531.2 Schedule of short-wave programs. Radio Broadcast, **14,** p. 298; March, 1929.

List of short-wave stations.

R800.—*Nonradio subjects*

534 MacKenzie, D. Sound recording with the light valve. Bell System Technical Journal, **8,** pp. 173–183; January, 1929.

The light valve of Wente is described. It is an electromagnetic shutter made up of a loop of duralumin tape formed into a slit at right angles to a magnetic field. Amplified currents from a microphone flow in the duralumin and open and close the loop. An incandescent filament is focused on the light valve the slit of which is focused by a lens on the sound negative film. When sound currents flow, the film receives a varying exposure.

534 Norris, R. F. The acoustimeter. Radio Engineering, **9,** pp. 36–37; February, 1929.

An electrical means for measuring sound intensity.

621.319.2 Guillemin, E. A., and Glendinning, W. On the behavior of networks with normalized meshes. Proc. Inst. of Radio Engrs., **17,** pp. 380–393; February, 1929.

Theory of normalizing meshes in electrical networks is verified and illustrated by examples and figures relating to 2 and 3 mesh circuits.

621.385 Osborne, H. S. The principles of electric circuits applied to communication. Bell System Technical Journal, **8,** pp. 3–20; January, 1929.

Discussion of method of presenting fundamental electrical principles. Outline of problems arising in application of electric principles to telephone systems.

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